



State of Food Security in the Least Developed OIC Member Countries

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State of Food Security in the Least Developed OIC Member Countries

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No: 2022/1

Statistical, Economic and Social Research and
Training Centre for Islamic Countries
(SESRIC)

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Abstract / ملخص / Résumé

This outlook report examines the food security situation in OIC member countries with a focus on issues and trends significant to the OIC Least Developed Countries (OIC-LDCs). Despite improvement, food security remained a persistent and elusive development challenge in the OIC group like elsewhere, notably as a result of the COVID-19 pandemic and subsequent global crisis. The outlook for food security in 2022 is bleak with growing indications of rising food insecurity in many OIC countries, particularly among OIC-LDCs. The vast majority of food security issues are related to the lingering effects of COVID-19, the economic downturn, conflicts and insecurity, and climate change. The solutions to this issue may include addressing the root causes of risks, safeguarding the most vulnerable populations, enhancing infrastructure, maintaining the openness of the agri-food trade, and implementing climate-smart agricultural practices.

يستعرض تقرير الآفاق هذا وضع الأمن الغذائي في البلدان الأعضاء في منظمة التعاون الإسلامي مع التركيز على القضايا والاتجاهات ذات الأهمية للبلدان الأقل نمواً في المنظمة. فعلى الرغم من التحسن المسجل، ظل الأمن الغذائي يمثل تحدياً إنمائياً مستمراً وصعب المنال في مجموعة منظمة التعاون الإسلامي كما هو الحال في أي مكان آخر. ولا سيما نتيجة لجائحة كوفيد-19 والأزمة العالمية التي أعقبتها. وإن آفاق الأمن الغذائي في عام 2022 قاتمة مع تزايد المؤشرات على تزايد انعدام الأمن الغذائي في عدد من بلدان المنظمة، لا سيما بين البلدان الأعضاء الأقل نمواً. وترتبط الغالبية العظمى من قضايا الأمن الغذائي بالآثار المتبقية عن جائحة كوفيد-19، والانكماش الاقتصادي، والصراعات وانعدام الأمن، وتغير المناخ. وقد تشمل الحلول الممكنة لهذه القضية معالجة الأسباب الجذرية للمخاطر، وحماية السكان الأكثر هشاشة، وتعزيز البنية التحتية، والحفاظ على الانفتاح التجاري في المنتجات الغذائية الزراعية، وتنفيذ الممارسات الزراعية المتكيفة مع تغير المناخ.

Ce rapport de perspectives examine la situation de la sécurité alimentaire dans les pays membres de l'OCI en mettant l'accent sur les questions et les tendances significatives pour les pays les moins avancés de l'OCI (PMA de l'OCI). Malgré des améliorations, la sécurité alimentaire reste un défi de développement persistant et insaisissable dans le groupe de l'OCI comme ailleurs, notamment en raison de la pandémie de COVID-19 et de la crise mondiale qui a suivi. Les perspectives pour la sécurité alimentaire en 2022 sont sombres avec des indications croissantes d'une insécurité alimentaire croissante dans de nombreux pays de l'OCI, en particulier parmi les PMA de l'OCI. La grande majorité des problèmes de sécurité alimentaire sont liés aux effets persistants du COVID-19, à la récession économique, aux conflits et à l'insécurité, ainsi qu'au changement climatique. Les solutions à ce problème peuvent consister à s'attaquer aux causes profondes des risques, à protéger les populations les plus vulnérables, à améliorer les infrastructures, à maintenir l'ouverture du commerce agroalimentaire et à mettre en œuvre des pratiques agricoles intelligentes sur le plan climatique.



1 Introduction

Food security is one of the most important development challenges facing the world in the wake of COVID-19 pandemic, Russia-Ukraine war, climate change and extreme weather events. In fact, after decades of declining trend, the prevalence of hunger and malnutrition is on rise in many parts of the world including some OIC member countries. According to the latest FAOSTAT data, more than 700 million people globally struggled with hunger in 2019/2021, which is a 59 million increase from 2018/2020. This makes it more difficult to achieve Sustainable Development Goal 2 on eradicating hunger by 2030, since the number of people who do not receive enough food has increased from 8.3 percent in 2018/2020 to 9.0 percent in 2019/2021.

The outlook for global food security in 2022 and beyond is expected to deteriorate further, hitting low-income and vulnerable people hardest and pushing millions of additional people into poverty. The situation will be particularly alarming in 46 countries classified as the Least Developed Countries (LDCs) by the United Nations including 19 OIC member countries (Afghanistan, Bangladesh, Benin, Burkina Faso, Chad, Comoros, Djibouti, Gambia, Guinea-Bissau, Mali, Mauritania, Mozambique, Niger, Senegal, Sierra Leone, Somalia, Sudan, Uganda, and Yemen). The higher food insecurity vulnerability of these countries emanates from their limited capacities and insufficient resources to address this issue adequately. Moreover, pandemic-induced disruptions in the agri-food supply chain will lead to an increase in the cost of agricultural inputs and further put a strain on domestic food production and supply.

Against this backdrop, this outlook report analyses the current food security situation in OIC member countries with a focus on the major issues and challenges faced by the OIC-LDCs. The outlook report also investigates current and future risks and suggests several policy measures to improve the resilience of agri-food systems and combat food insecurity across the OIC member countries.





2 Current Status and Trends

2.1 Prevalence of Undernourishment and Food Insecurity

COVID-19 Reverses Progress in Combating Hunger

The progress of hunger eradication achieved in OIC countries in the past decades has reversed, following a sharp turn since 2017/2019 in the midst of the COVID-19 pandemic. The ongoing pandemic and its impacts, which are still being felt, have made it harder to reach the Sustainable Development Goal 2 on eradicating hunger by 2030. The prevalence of undernourishment (PoU) data show that the progress to eradicate hunger set back to around the 2010/2012 period – equivalent to a reversal of around a decade.

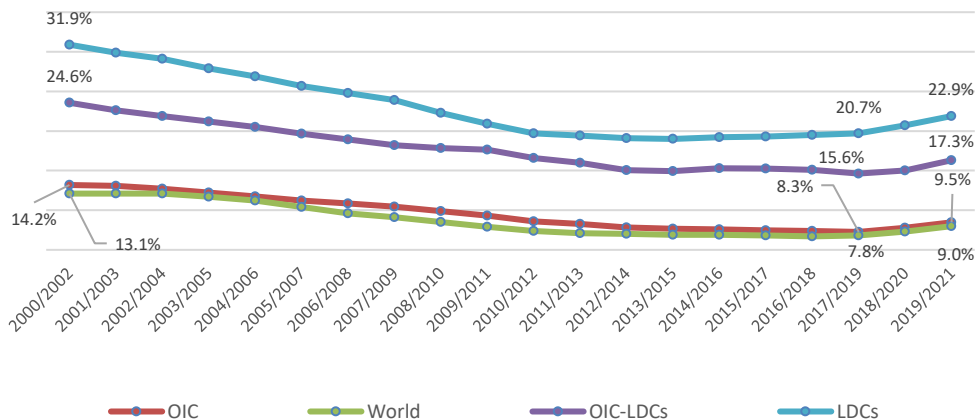
After considerable progress since 2000/2002, the average PoU level of OIC countries reached its lowest level of 8.3 percent in 2017/2019 before rising to around 9.5 percent in 2019/2021 (Figure 2.1). This level is relatively higher than the world average of 9.0 percent and slightly more than the PoU of non-OIC developing countries of 9.4 percent.

It is estimated that 180 million people in OIC member countries experienced hunger in 2019/2021, representing 26 percent of the global population affected by hunger. This suggests that hunger in the OIC group affected 16 million more individuals in 2019/2021 compared to 2018/2020, and a total of 29 million more since 2017/2019, prior to the COVID-19 pandemic.

The occurrence of hunger is particularly alarming in LDCs across the world. It is estimated that 22.9 percent of the population in LDCs faced hunger in 2019/2021, equivalent to around 200 million people. Among these, the OIC-LDCs had PoU levels of 17.3 percent, or about 70.5 million people (39 percent of the OIC total). LDCs are also a group of countries where the proportion of the population affected by hunger has increased significantly. Since 2017/2019 (pre-pandemic), the PoU for LDCs and OIC-LDCs has gone up by 2.2 and 1.7 percentage points, respectively, while it has only gone up by 1.2 percentage points for the OIC and the world.



Figure 2.1: Prevalence of Undernourishment (% of population), 2000-2021



Source: Author's calculations based on FAOSTAT.

Note: Based on a 3-year average value. E.g., the 2000/2002 value is a 3-year average of values from 2000 to 2002.

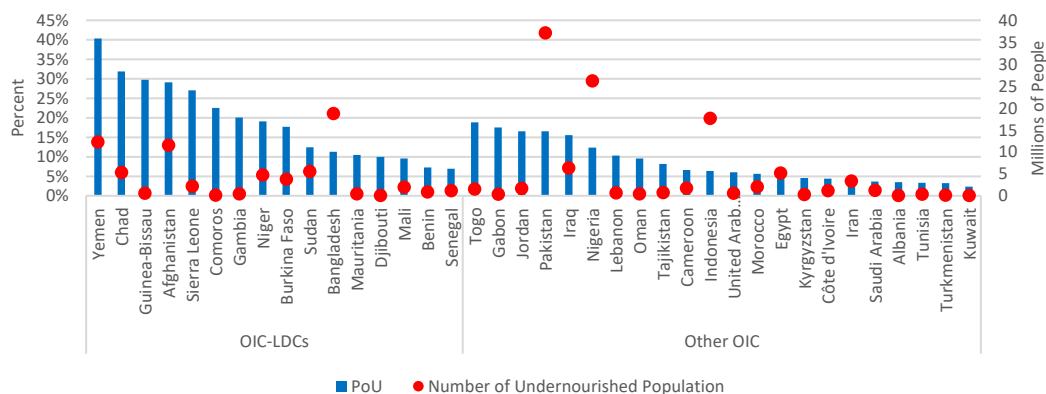
At the individual country level, as illustrated in Figure 2.2, the highest numbers of undernourished people in OIC member countries were recorded in Pakistan (37.2 million), Nigeria (26.2 million), Bangladesh (18.8 million), Indonesia (17.7 million), and Yemen (12.3 million). Together, these five member countries are home to 112.2 million or 62 percent of the total undernourished population in the OIC group.

In terms of the PoU, the highest occurrences were observed mostly in OIC-LDCs such as Yemen (40 percent), Chad (32 percent), Guinea-Bissau (30 percent), Afghanistan (29 percent), and Sierra Leone (27 percent). On the other hand, less than 5 percent of people in Côte d'Ivoire, Iran, Saudi Arabia, Albania, Tunisia, Turkmenistan, and Kuwait were undernourished.

Many OIC Countries Are Food Crisis Hotspots

FAO classifies food-insecure countries as "low-income food deficit countries (LIFDC)" and "countries in crisis requiring external assistance." LIFDC refers to those that have low income and are also net importers of food. Being both food deficient and having a low income at the same time means that the country lacks the resources not only to import food but also to produce sufficient amounts domestically. Consequently, these countries do not have enough food and are vulnerable to both internal and external shocks, which could affect the nutritional status of the people.



Figure 2.2: Prevalence (Left axis) and Number (Right axis) of Undernourishment, 2019/2021


Source: Author's calculations based on FAOSTAT.

Note: A 3-year average value. Year 2019/2021 is a 3-year average of values from 2019 to 2021.

Countries in crisis requiring external assistance, on the other hand, are those that lack the resources to manage and respond to problems arising from food insecurity. Crises in various OIC member countries result in their performing disproportionately in some critical food security-related areas, including lack of food availability, widespread lack of access to food, or severe but localised food insecurity. According to the most recent FAO classification, nine OIC countries fall under the category of LIFDC, five countries require external assistance for food, and seventeen countries are both LIFD and require external assistance for food (Table 2.1). It is worth mentioning that all 19 OIC-LDCs are classified as one of these categories.

Table 2.1: OIC Low-Income Food Deficit Countries and Countries in Crisis Requiring External Assistance

Low Income Food Deficit Countries (LIFDC)	Countries Requiring External Assistance for Food	Both LIFDC and Requiring External Assistance for Food
(9) Benin, Comoros, Côte d'Ivoire, Gambia, Guinea-Bissau, Kyrgyzstan, Tajikistan, Togo, Uzbekistan	(5) Djibouti, Lebanon, Libya, Nigeria, Pakistan	(17) Afghanistan, Bangladesh, Burkina Faso, Cameroon, Chad, Guinea, Mali, Mauritania, Mozambique, Niger, Senegal, Sierra Leone, Somalia, Sudan, Syria, Uganda, Yemen

Source: Author's compilation based on FAO.

Note: LIFDCs as per June 2021, while countries requiring external assistance as per September 2022.



The 2022 Global Report on Food Crises (Global Network Against Food Crises & FSIN, 2022) emphasises the worrisome deterioration of acute food insecurity in various food-crisis countries and territories. It is projected that, in 2022, between 179 million and 181 million people in 41 countries are in crisis or worse (IPC Phase 3 or above – see Box A). About 117 million of these people live in 25 OIC countries. This state of affairs is primarily driven by prolonged or intensifying conflicts, pre-existing and COVID-19-related economic shocks, weather extremes, or a combination of these factors.

Box A: IPC Acute Food Insecurity Classification

The Integrated Food Security Phase Classification (IPC) is a common global scale for classifying the severity and magnitude of food insecurity and malnutrition. It is the result of a partnership of various organisations at the global, regional, and country levels dedicated to developing and maintaining the highest possible quality in food security and nutrition analysis. The IPC provides differentiation between different levels of severity of acute food insecurity, classifying units of analysis into five distinct phases: (1) none or minimal, (2) stressed, (3) crisis, (4) emergency, and (5) catastrophe or famine.

IPC Acute Food Insecurity Phase Description and Response Objectives

Phase	Phase description and priority response objectives
Phase 1 None/Minimal	Households are able to meet essential food and non-food needs without engaging in atypical and unsustainable strategies to access food and income. Action required to build resilience and disaster risk reduction.
Phase 2 Stressed	Households have minimally adequate food consumption but are unable to afford some essential non-food expenditures without engaging in stress-coping strategies. Action required for disaster risk reduction and to protect livelihoods.
Phase 3 Crisis	Households either: <ul style="list-style-type: none"> - Have food consumption gaps that are reflected by high or above-usual acute malnutrition; or - Are marginally able to meet minimum food needs but only by depleting essential livelihood assets or through crisis-coping strategies. URGENT ACTION required to protect livelihoods and reduce food consumption gaps.
Phase 4 Emergency	Households either: <ul style="list-style-type: none"> - Have large food consumption gaps which are reflected in very high acute malnutrition and excess mortality; or - Are able to mitigate large food consumption gaps but only by employing emergency livelihood strategies and asset liquidation. URGENT ACTION required to save lives and livelihoods.
Phase 5 Catastrophe/Famine	Households have an extreme lack of food and/or other basic needs even after full employment of coping strategies. Starvation, death, destitution and extremely critical acute malnutrition levels are evident. (For Famine classification, the area needs to have extremely critical levels of acute malnutrition and mortality). URGENT ACTION required to revert/prevent widespread death and total collapse of livelihoods.

Source: Adopted from the 2022 Global Report on Food Crisis (Global Network Against Food Crises & FSIN, 2022).

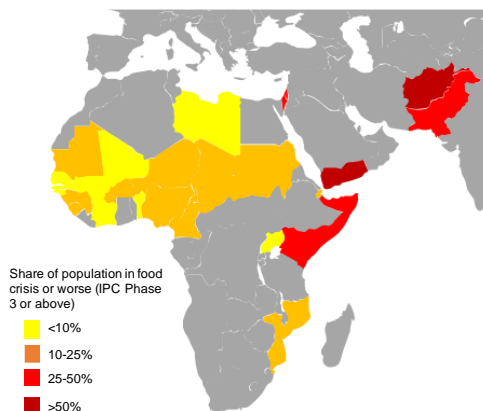
The largest number of population in crisis or worse, where it is affected more than 10 million people in the OIC group, were estimated to occur in three countries:



Afghanistan, with around 23 million people, Nigeria (19 million), and Yemen (19 million).

In relative terms, there are six OIC countries where more than 25 percent of the population is in food crisis or worse. In Yemen, 60 percent of the population is in a food

Figure 2.3: OIC Countries in Food Crisis or Worse (IPC Phase 3 or above), 2022



Source: Based on 2022 Global Report on Food Crisis (Global Network Against Food Crises & FSIN, 2022).

crisis or worse, while in Afghanistan this level reaches 55 percent. Somalia (38 percent), Palestine (31 percent), and Pakistan (26 percent) have a less severe situation, but a sizable proportion of their populations are in food crisis or worse. The population share of the other 19 OIC countries in food crisis or worse ranges from 3 to 20 percent (Figure 2.3).

Extremely high levels of severe food insecurity will continue to persist in countries where protracted conflict and displacement have occurred. In these countries, macroeconomic shocks—characterized by escalating food and fuel

costs, lack of work and declining incomes—frequently co-exist with significant and frequent weather shocks, which intensify and prolong acute food insecurity. In addition, the ongoing Russia-Ukraine has serious repercussions on food security, as many countries in food crises rely on imports of staple foods and fertilisers from these two countries(WFP, 2022).

2.2 Progress towards Improving Nutrition

The severity of food insecurity worsens malnutrition and has serious impacts on an individual's health and well-being. People who are food insecure may not be hungry, but they may lack access to nutritious and sufficient food, which exposes them to malnutrition in the form of adult obesity, anaemia in adults, child stunting, wasting, and over- and underweight children, amongst other diseases such as diabetes and cardiovascular disorders (FAO et al., 2022). From a developmental perspective, malnutrition can have critical impacts on national economies stemming from economic costs resulting from a loss of human capital combined with the direct cost of healthcare. For example, according to FAO, obesity is expected to cost 2 trillion USD

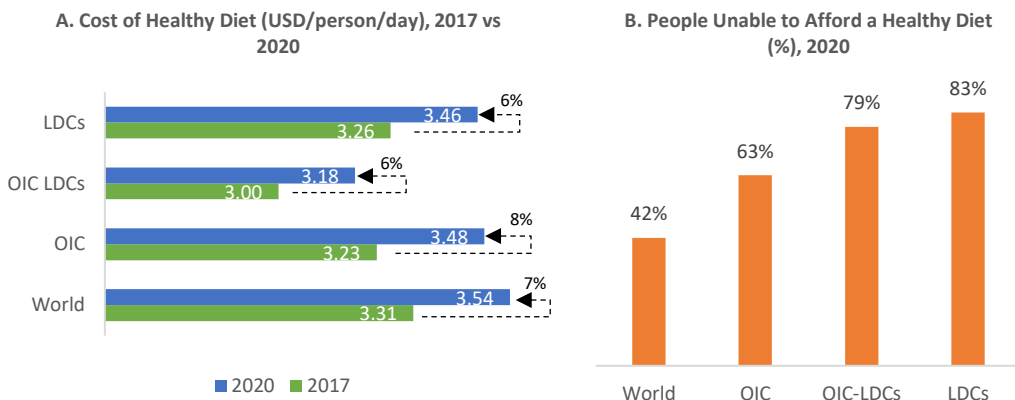


per year in lost economic activity and healthcare costs (FAO et al., 2019). Similarly, undernutrition is anticipated to result in an 11 percent decline in the GDPs of Africa and Asia.

Cost of a Healthy Diet Increased

Low disposable income relative to the high cost of food is one of the most serious impediments to accessing nutritious foods essential for a healthy, active life. The cost of a healthy diet has been increasing in the past few years, partially due to the COVID-19 pandemic. At the global level, the average cost of a healthy diet in 2020 was USD 3.54 per person per day, which represents a 7 percent increase from 2017. In comparison, the cost in LDCs increased by 6 percent to USD 3.46 per person per day. In the OIC members, the rate of increase is even higher, where the cost of a healthy diet has increased by 8 percent. This surge pushed up the average cost of a healthy diet from USD 3.23 per person per day in 2017 to USD 3.48 per person per day in 2020. During the same period, OIC-LDCs experienced a 6 percent increase, reaching an average of USD 3.18 per person per day in 2020 (Figure 2.4-A).

Figure 2.4: Cost and Affordability of Healthy Diet



Source: Author's calculations based on World Bank's Food Prices for Nutrition Database.

The rising cost of a healthy diet has impacted its affordability. Latest estimates suggest that globally, in 2020, 3 billion people (42 percent of the world's population) cannot afford even the average cost of the cheapest healthy diet (FAO et al., 2022). In OIC countries, the share of people who cannot afford healthy diets is even larger, standing at 63 percent of the population. Lower-income populations are suffering more, where in LDCs and OIC-LDCs, a healthy diet is unaffordable for 83 and 79 percent of the population respectively (Figure 2.4-B).



Growing Concern over Malnutrition

Diet quality is a critical link between food security and nutrition. Poor diet quality can lead to different forms of malnutrition, including undernutrition, micronutrient deficiencies, overweight, and obesity. Throughout the world, overweight and obesity are on an upward trajectory and are responsible for approximately 4 million deaths (FAO et al., 2019). In OIC member countries, over 17.5 percent of the adult population above the age of 18 was obese in 2016 (SESRI, 2019).

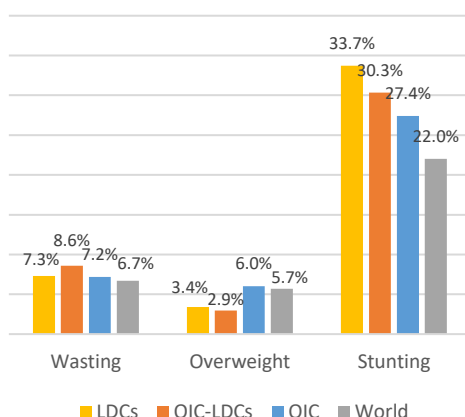
For children under 5 years of age, being overweight can have lifelong adverse health consequences. In 2020, globally there were around 38.9 million children under the age of 5 who are overweight (or 5.7 percent of total children under-5-year-old). In OIC, the prevalence of overweight in children under the age of 5 was greater at 6 percent, or 13.6 million overweight children. However, among LDCs and OIC-LDCs, the prevalence of overweight under-5-year-olds was just 3.4 and 2.9 percent, indicating that excessive nutrient intake is not the primary concern in low-income countries (Figure 2.5).

In contrast, the prevalence of stunting and wasting in children under 5 due to malnutrition continues to be a persisting issue for OIC member countries, even as the global prevalence of malnutrition-related issues in children has improved in the past few years. Proper child nutrition helps not only improve children's chances of survival

during the early years of life but also contributes to their physical and cognitive development. Without adequate food security, proper child nutrition is in jeopardy.

The prevalence of stunted children in the OIC region was 27.4 percent in 2020, which was higher than the global average of 22.0 percent. This is equivalent to 61.8 million under-5-year-old stunted children, or 41 percent of the world total. The issue is more critical in the least developed OIC countries, where three out of every 10 children under the age of 5

Figure 2.5: Nutritional Status of under 5 Children (% of total children under-5), 2020



Source: Own calculations based on FAOSTAT.

are stunted.



Similarly, the wasting prevalence of under-5-year-old children in OIC member countries was relatively higher at 7.2 percent as compared to the global average of 6.7 percent. The problem is more serious in OIC-LDCs, where the prevalence of wasting children is as high as 8.6 percent, much higher than even the LDCs group (7.3 percent).

Based on the above discussion, it is evident that malnutrition is the primary concern among OIC countries, particularly in low-income countries such as LDCs. Priority must be placed on advancing toward improved nutrition. There is a need for integrated multisectoral policies combining the food and health sectors, as well as an increase in activities and investments in agri-food systems, in order to promote the transition to dietary patterns that are beneficial to nutrition, human health, and the environment.



3 Present and Future Risks

Lowest-income countries are expected to have the most severe food insecurity situation, notably due to a lack of resources to deal with crises. Table 3.1 lists the current status and drivers of food insecurity in various OIC-LDCs. The list indicates that OIC-LDCs are experiencing a food crisis in terms of lack of food availability, widespread lack of access to food, or severe but localised problems. Internal conflict and insecurity (e.g., civil conflicts, refugee situations), economic shock (e.g., rising food prices, reduced income), and climate-driven drivers (e.g., drought, extreme weather) are all potential causes of food insecurity.

Table 3.1: Food Insecurity in Various OIC-LDCs, 2022

Country	Population in Food Crisis or Worse (IPC 3 and above)	Type of Food Insecurity	Drivers of Food Insecurity
Afghanistan	23 Million (55% of total population)	Severe localized food insecurity	Civil conflict, population displacement, economic slowdown
Burkina Faso	3.5 Million (16%)	Severe localized food insecurity	Civil insecurity in the north, shortfall in cereal production, high food prices
Chad	2.1 Million (13%)	Widespread lack of access	Civil insecurity, shortfall in cereal production
Djibouti	0.2 Million (16%)	Widespread lack of access	Unfavorable weather, high food prices
Mali	1.8 Million (8%)	Severe localized food insecurity	Civil insecurity, high food prices
Mauritania	0.9 Million (20%)	Severe localized food insecurity	Shortfall in agricultural production, economic downturn
Mozambique	1.9 Million (13%)	Severe localized food insecurity	Insecurity in northern areas, extreme weather impacts
Niger	4.4 Million (18%)	Exceptional shortfall in aggregate food production/supplies	Conflict, shortfall in cereal production
Senegal	0.9 Million (5%)	Severe localized food insecurity	Localized shortfalls in cereal production, reduced incomes
Sierra Leone	1.6 Million (19%)	Severe localized food insecurity	High food prices, reduced incomes
Somalia	6 Million (38%)	Exceptional shortfall in aggregate food production/supplies	Drought conditions, civil insecurity
Sudan	6 Million (13%)	Severe localized food insecurity	Conflict, civil insecurity, high food prices, tight supplies
Uganda	1.5 Million (3%)	Severe localized food insecurity	Weather extremes, insecurity, high food prices
Yemen	19 Million (60%)	Widespread lack of access	Conflict, poverty, floods, high food and fuel prices

Source: Author's compilation based on Global Network Against Food Crises & FSIN (2022) and FAO (2022).



For example, in Afghanistan, Burkina Faso, Chad, Mali, Mozambique, Niger, Somalia, Sudan, Uganda, and Yemen, food insecurity stems from localised drivers such as the presence of conflicts and insecurities, including large refugee populations. The problem is sometimes exacerbated by economic factors such as rising food prices and reduced income, as well as weather extremes that reduce agricultural production. In Djibouti, Mauritania, and Senegal, unfavourable weather, high food prices, and reduced incomes are the main drivers of food insecurity. In Sierra Leone, the main driver of the food crisis is related to economic shocks.

In the longer run, it is estimated that food security will continue to be a problem of access (i.e., inability to afford food) rather than availability. While future extreme weather events and emerging diseases are projected to threaten food production and supply, the overall risks to food systems will also be caused by demand-side effects (FAO, 2021). Increasing demand due to population growth, conflicts and insecurities, and job losses and reduced earnings connected with the global economic recession are likely to result in more fundamental changes in food consumption, shifting away from higher-value foods such as animal-sourced products and towards more affordable staples.

3.1 Economic Downturn

The lingering effects of the COVID-19 pandemic continue to exert inflationary pressure on foods and are contributing to a mixed picture of economic recovery among countries. At the same time, geopolitical instability, conflicts, and insecurities play a significant role in inciting an economic downturn. This, in turn, may have negative repercussions on food security.

The conflict in Ukraine is currently aggravating the situation by interrupting supply chains and influencing global food markets. First, the price of staple commodities such as wheat and cereals rose significantly. Russia and Ukraine are both substantial exporters of wheat. When export routes are restricted, food supplies become limited and prices go up. The war has also disturbed supplies of fertiliser from Russia, which was the biggest exporter in the world. This is made worse by the rising price of gas, which is needed to make fertiliser.

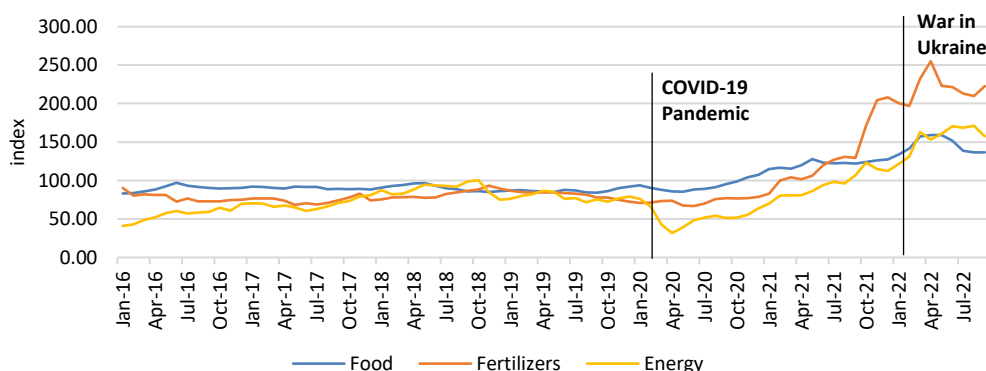
Second, Western countries adopted severe sanctions against Russia, which impeded free trade and led to the return of protectionism. In addition, disruptions in the oil supply shook global markets, resulting in an increase in oil prices, which was followed



by a quick rise in food costs. Thirdly, these supply-side variables invariably result in demand-side repercussions; as food costs rise, it becomes more difficult for individuals to afford agricultural items. Demand inevitably declined. Obviously, poorer regions are more severely affected than wealthy countries.

Consequently, the prices of foods, fertilisers, and energy have been on an upward trend since early 2021 and continue to rise amid the war in Ukraine (Figure 3.1). Levels that have not been seen in decades.

Figure 3.1: Global Food, Fertilizers, and Energy Price Indices



Source: Based on World Bank Commodity Price Index.

Conflict-induced economic downturns are projected to have the greatest detrimental effect on food security in OIC countries. During the ongoing crisis, many people lost their jobs or had their incomes drastically reduced, which will push some households into poverty and threaten overall food security. The population that suffers a loss of income is at risk of not being able to afford their daily food needs. This situation is exacerbated by the increased cost of food as a result of a supply disruption. Member countries that rely substantially on food imports may be at a higher risk. Shock to international trade and currency exchange fluctuation could hamper the food stock, rising local prices, and threatening food security even more. In Sudan for instance, amid the fight to control the COVID-19 outbreak, the prices of various staple foods have increased to record highs in March following a further devaluation of the country's currency (FAO, 2020b).

It is projected that the trend of economic decline would persist through 2022 and beyond. Global growth is anticipated to fall from 6.0 percent in 2021 to 3.2 percent in 2022 and then to 2.7 percent in 2023, while global inflation is projected to increase



from 4.7 percent in 2021 to 8.8 percent in 2022 before declining to 6.5 percent in 2023 (IMF, 2022). However, due to their distinct production and trade structures, as well as the varying rates of economic recovery, consumer food price increases are anticipated to vary significantly between regions. The current situation demonstrates how crucial it is for nations to create self-sufficient and sustainable agricultural systems. To achieve this, OIC countries, notably the least developed ones, must reform their agricultural systems.

3.2 Increasing Demand

There is a high risk of insufficient food and agricultural product output due to an increase in demand for food that cannot be satisfied by an adequate supply. This could be a result of the rapidly expanding population.

It is estimated that the world population to exceed 8.5 billion by 2030 and to continuously increase –though at a significantly reduced rate– to reach 10 billion in the second half of the 2050s (SESRIC, 2021a). The population of developed countries, growing at a rate already as low as 0.26 percent in the last 5-year period of 2015-2020 is expected to enter a declining trend after the mid-2030s. Thus, almost all of the population growth until the mid-2030s and all further growth is expected to occur in the developing world.

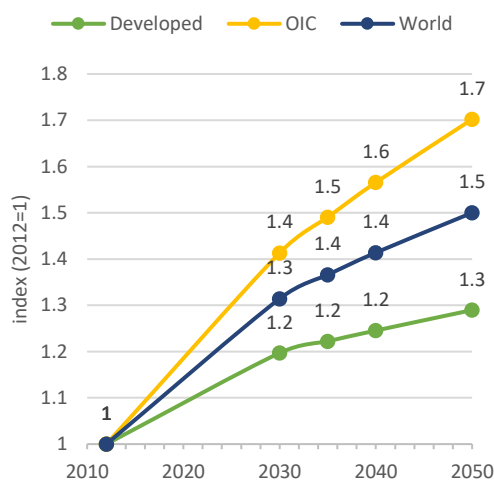
In the OIC countries, the population has doubled in 33 years and exceeded 1.9 billion in 2020, accounting for 24.5 percent of the global population. Although the population growth rate is declining in the OIC as well, these ratios are estimated to rise by 26.3 percent by 2030 and to increase even further in the following years (SESRIC, 2021a). With these in mind, statistics show that developing countries and OIC countries in particular have been growing at much faster rates than developed countries in the last two decades, and this trend is expected to continue in the decades to come.

Consequently, this high-growth performance requires more attention to be paid to its food security reflections in the coming years, with the aim of providing sufficient and healthy food for the population while at the same time minimising the negative impacts on human health and on the environment.



Future agricultural supply will respond to demand from the growing population, increasing per capita income, and changing consumer preferences (FAO, 2018). It is estimated that 50 percent more agricultural production (in terms of value) relative to 2012 will be needed by 2050 to meet the food requirements of a growing global population. While agricultural production is projected to grow less in developed countries, in the OIC, it is expected that faster population growth will require higher growth in agriculture production. To meet future food demand, at least 70 percent more agriculture production will be needed in OIC by 2050 (Figure 3.2).

Figure 3.2: Gross Agricultural Production Projection to 2050 (index 2012=1)



Source: Author's calculations based on "Business as Usual" scenario in FAO (2018).

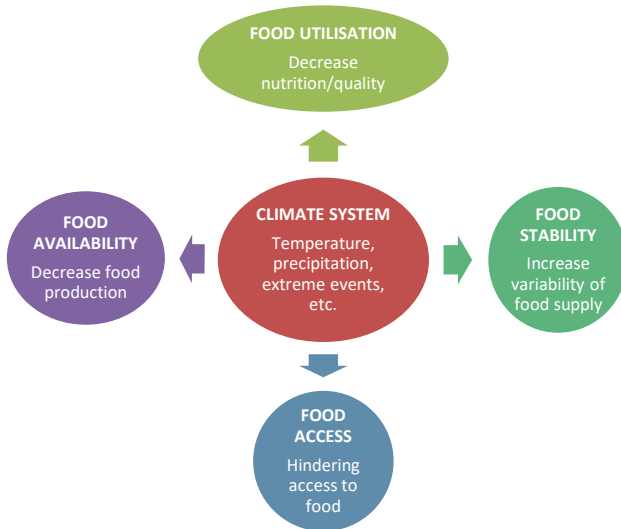
In the years to come, it will be necessary for the farmers in the OIC to produce an extra quantity of food. This will be challenging as the OIC continues to be a net importer and more than half of its population still cannot afford a healthy diet. Climate change could also make it more difficult to find natural resources, particularly in areas where there is insufficient land or water for agricultural and food production to be viable. Meeting these challenges would require dramatic changes must be made to food production and consumption while keeping the agriculture sector productive and sustainable.

3.3 Climate Change

The present vulnerabilities of food insecurity and malnutrition due to the crisis are further pressured through the compound impacts of climate change on the agri-food systems. In fact, climate change is already contributing to reduced food security and nutrition and will continue to do so through its direct and indirect impacts on all four dimensions of food security: agricultural production (availability), access to food (sufficient income), utilization (nutrition, quality), and stability (Figure 3.3).



Figure 3.3: Climate Change and Food Security



Food Availability and Access

Impacts of the climate change on food availability relate to the supply side of food, from the farmer's level all the way to food processing, supply and distribution of foods. Agriculture, as the primary sector of food production, is highly vulnerable to the adverse impacts of global climate change since higher temperatures,

lower precipitation levels, CO₂ concentration, and extreme climatic events (such as drought or floods), can lead to reduced crop yields or even crop failures.

Climate change has been observed to have impacts on food availability in OIC countries. In Pakistan, climate warming is seen to be the reason for the change in crop growing patterns. During 1980-2014, the spring maize growing season moved forward by an average of 4.6 days per decade, while the sowing of autumn maize has been pushed back by an average of 3.0 days per decade (Abbas et al., 2017). There is growing evidence that climate change is reducing crop yields in Africa, including for staple foods like maize, wheat, sorghum, and fruit crops like mangoes, which is contributing to already severe food insecurity throughout the continent (Ketiem et al., 2017). There is an intensifying problem with malnutrition in the Sahel region, which, in part is due to the impacts of climate change, as harsh climatic conditions that result in extreme drought have a negative effect on agriculture (Chabejong, 2016).

Climate change may also have negative impacts on access to food. Access to food relates to income and the ability of individuals to acquire sufficient food and nutrition. During the COVID-19 crisis, access to food is the main source of food insecurity in many OIC countries, notably due to the loss of jobs and income in the midst of the COVID-19





pandemic. In the case of climate change, people working in the agriculture sector, as well as the most vulnerable part of society, is highly at risk of not being able to access sufficient food.

Box B: Desert Locust Outbreak

Desert locust swarms infested Eastern Africa at the end of 2019 and caused extensive damage to crops and pastures, endangering food security and livelihoods. According to the FAO, over 200,000 hectares of cropland and pastureland were destroyed, making it extremely difficult for 2 million people in the region to obtain food.

Although desert locusts have existed in this region for centuries, this recent outbreak can be attributed to a unique characteristic of the positive Indian Ocean Dipole event (IOD), which was partially caused by long-term sea surface temperature trends. The western Indian Ocean's warming has increased the frequency and intensity of severe weather, including tropical cyclones. Extreme positive IODs are anticipated to occur twice as frequently under a 1.5 °C warmer climate, which could also increase the frequency of pest outbreaks.

Climate change increases the need for robust adaptation measures, such as transnational early warning systems, biological control mechanisms, crop diversification, and additional technological advancements in the fields of sound and light stimulants, remote sensing, and modelling for tracking and predicting movement.

Source: Adapted from IPCC (2019)

Furthermore, increased extreme events may disrupt agricultural trade and transportation infrastructure. Climate change has caused increasingly unprecedented extreme weather conditions and natural hazards during the past decades. According to the latest data from the Centre for Research on the Epidemiology of Disasters (CRED), the number of natural disasters globally increased from 3,374 in 1992–2001 to 3,802 in 2012–2021, with a peak of 4,300 in 2002–2011. A similar trend is happening in OIC countries. The number of natural disasters has increased from 820 in 1992–2001 (24 percent of the global total) to 911 in 2012–2021 (26 percent of the world total), peaking at 1,114 occurrences of disasters in 2002–2011 (24 percent of the world total). The rising number of natural disasters in OIC countries was driven by climate-related disasters such as floods, earthquakes, storms, wet mass earth movements, and droughts, suggesting a clear link to climate change. These disasters have caused major economic and human losses. Between 1992 and 2021, around 600 million people in OIC countries were impacted, with more than half a million mortalities and over \$200 billion in economic damage.

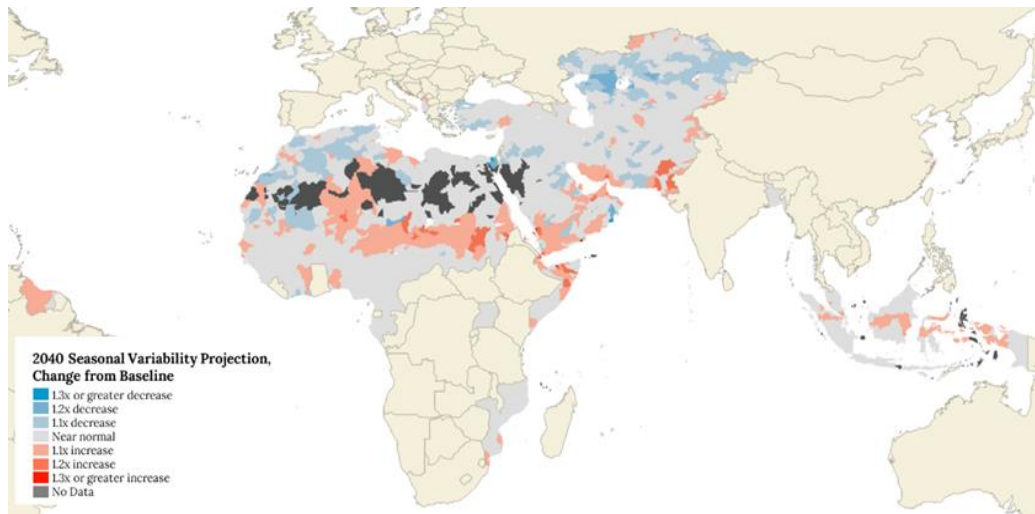


Food Stability and Utilization

A core element of food security – ‘food stability’ – is directly related to shock factors that can affect both, national and household, food security. Food stability is ensured when “a population, household or individual have access to adequate food at all times, i.e. they should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity)” (FAO, 2008). Events affecting food stability also have an impact on both the availability and access to food, which makes them particularly important for policy makers.

Increased frequency and severity of extreme events (e.g., droughts and heatwaves) lead to greater instability of supply through production losses and disruption to food transport. Furthermore, water, as one of the primary inputs in food production is at risk of increasing its variability. The variability makes water availability less predictable, thereby constraining the effectiveness of water planning and management.

Figure 3.4: Projected Change in Seasonal Water Supply Variability by 2040



Source: Adopted from (SESRIC, 2021b)

Variability of water supply in some areas in OIC is already high and the future supply of water is predicted to be more erratic and uncertain due to increasing water supply variability. Figure 3.4 shows that some member countries in Sub-Saharan Africa (SSA), Middle East and North Africa (MENA), and Asia are expected to have an increase in seasonal variability of at least 1.1 times relative to the baseline level. The areas that have high supply variability coincide with the ones that already have high water stress,





implying that climate change will put more stress on these areas. Climate-related disturbance in water systems is already being felt in various OIC regions. For instance, the degradation of quality and quantity of water resources is recorded in OIC countries in North Africa (Hamed et al., 2018), while an important basin in SSA such as Lake Chad is already experiencing a significant decrease in its surface area (Mahmood et al., 2019). A further change in climate, as a result, will potentially deteriorate the water resources in OIC even further, which will potentially result in a disturbance in the steady supply of food in the region.

The food utilization indices, the fourth core factor contributing to food security, determine the quality of food being consumed and its impact on individuals' nutritional status. In theory, 'food utilization' looks at how adequate access to water, sanitation, healthcare, feeding practices, food preparation, diet diversity, and household distribution of food is optimally utilized to generate energy and nutrients required by individuals to lead a healthy life (FAO, 2008). For instance, a lack of purchasing power leads households to change their eating habits, resorting to cheaper, unhealthier foods. When combined with the quality and distribution of food supply, this can have impacts on meeting the average dietary energy supply of populations.

To some extent, climate change will have an impact on food utilisation through changes in food safety and quality. A change in temperature, increase in the intensity of extreme events, and other climate-related disturbances may influence food safety by changing the population dynamics of contaminating organisms (IPCC, 2021). For instance, the prevalence of pathogens (such as mycotoxins), the occurrence of harmful algal blooms, and the bioaccumulation of contaminants will all increase as temperatures and CO₂ levels rise, posing a threat to human health through pollutant contamination of food (IPCC, 2019). Increased CO₂ concentrations in the atmosphere would also diminish the nutritional value of grains, some fruits, and vegetables. Moreover, the rising frequency and severity of extreme events drive up the price of healthy produce compared to alternatives that are lower in nutrients.



4 Improving Resilience of Agri-food Systems

Low-income countries are disproportionately affected by the current crisis, which further increases the risk of falling deeper into food insecurity. This is a result of the lack of institutional and financial support required to compete in a global economy with more equipped infrastructure, institutions, and social capital.

In the context of growing threats to food security, the OIC and its member countries must implement immediate short- and long-term steps to increase food security, reduce risks, and strengthen the resilience of agri-food systems. Solutions include addressing the fundamental cause of risks, safeguarding the most vulnerable population, modernising infrastructure, maintaining the openness of agri-food trade, and implementing climate-smart agricultural practices.

Addressing the Root Causes of the Crisis

In a world that is becoming more unstable and is still dealing with the effects of the COVID-19 pandemic, it is important to address all of the root causes of hunger, such as conflicts and insecurities, the climate crisis, and the lingering impacts of the COVID-19 pandemic. During the aftershocks of the pandemic, society must maintain vigilance in order to restore pre-pandemic levels of development and prevent more socioeconomic damage.

Conflicts and insecurities are the drivers of food security in the majority of OIC countries. It is crucial to prevent conflicts by addressing economic and structural factors of conflict, such as low income levels, poor growth, inadequate institutional capacity, and inequality (UN & World Bank, 2018). In conflict-affected regions, efforts should be made to limit the loss of human and physical capital. This can be achieved, for instance, by preserving social and development spending and attempting to keep institutions functioning efficiently. This will aid in mitigating the long-term harmful consequences of conflict on the economy.

Governments should also work to improve the overall resilience of the sector to future shocks and disasters, including climate change. The development of the agriculture and



food sectors should be inclusive and focused on increasing the long-term sustainability of the sectors, partly through practicing climate-smart agricultural practices.

Focusing on Vulnerable and Smallholder Farmers

To strengthen food security and increase resilience to future shocks, vulnerable communities and smallholder farmers should receive special attention. Humanitarian aid needs to be supplied at the appropriate time and in a manner that satisfies fundamental needs, causes no harm, is accessible to all, and provides enhanced capacity and resilience. Well-targeted social protection measures, such as horizontal or vertical expansions of current programmes, can alleviate difficulties during the crisis. In the current escalating food price situation, it is crucial to ensure that cash-based transfers still have enough value to meet essential needs despite rising costs.

Other examples of measures that can be used to protect the most vulnerable are as follow (FAO, 2020a): shock-responsive social protection schemes; food assistance/cash transfer distribution; school feeding programs; combining cash transfer and technical assistance; labour market interventions such as public work schemes; insurance, microfinance, and credit schemes; and access to liquidity and finance for vulnerable groups.

Improving Infrastructure

Infrastructure development is critical for growth and resilience in the agriculture sector, as well as rural development. There are still infrastructure gaps in some OIC countries that prevent them from developing strong agricultural and food sectors. Three critical infrastructure needs must be prioritised in OIC countries: rural roads and accessibility; water resource development (i.e., irrigation and dams); and electricity.

Increased use of digital technologies in supply chain management can also help increase resilience and decrease the likelihood of disruptions by providing data for identifying and evaluating a variety of resource efficiency risks and opportunities. In order to speed up the adoption of these new technologies, governments can impose conditions on stimulus packages and implement targeted innovation policies. However, because job creation is frequently a primary objective of stimulus measures, the implications of automation for the labour force would require careful consideration and active labour market management.



Maintaining Agri-food Trade and Minimising Supply Chain Disruptions

Trade restrictions in varying degrees may disrupt the flow of food and agricultural inputs and outputs. Access to food should be sufficiently provided to ensure the continuity of agricultural activities and prevent shocks to the supply chains. Any barriers that hinder the supply of food from the producer to the customer need to be removed. Locally produced foods also need to be prioritised, which will also help rural farmers get their income. This would also assure food supply sufficiency and maintain price stability.

Keeping trade open and preventing disruptions in supply chains for food, fuel, and fertiliser is crucial to containing the increase in food insecurity. This includes safeguarding agricultural production and food supply chains more broadly, including the storage facilities and infrastructure needed to move foodstuffs.

Adopting Sustainable "Climate-Smart" Agriculture Practices

Climate change is a global problem needing local actions in various economic sectors as a solution. When all the adverse impacts of climate change are taken into account, it is apparent that the agricultural capacities of OIC countries will have to be reinforced. Efforts to mitigate and adapt to climate change will not only contribute to reducing stress on the environment but will also provide various socio-economic benefits and increase food security.

To cope with the climate change challenge, the solution is through the realisation of the sustainability of food production by adopting "climate-smart" agricultural practices. Climate-smart agriculture has the main aim of increasing agricultural productivity while at the same time reducing GHG emissions and increasing capacity and resiliency to climate shocks (FAO, 2017). Several practical measures are available, such as cropland management, grazing land management, and livestock management.

Measures in the agriculture sector should aim to reshape policies to promote environmental sustainability and resilience, as well as innovation for improved productivity, in addition to securing jobs and preventing short-term supply disruptions. Investments and training aimed at encouraging farmers to adopt more sustainable agricultural practices would benefit both the environment and the climate, as well as the farmers' livelihoods.





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