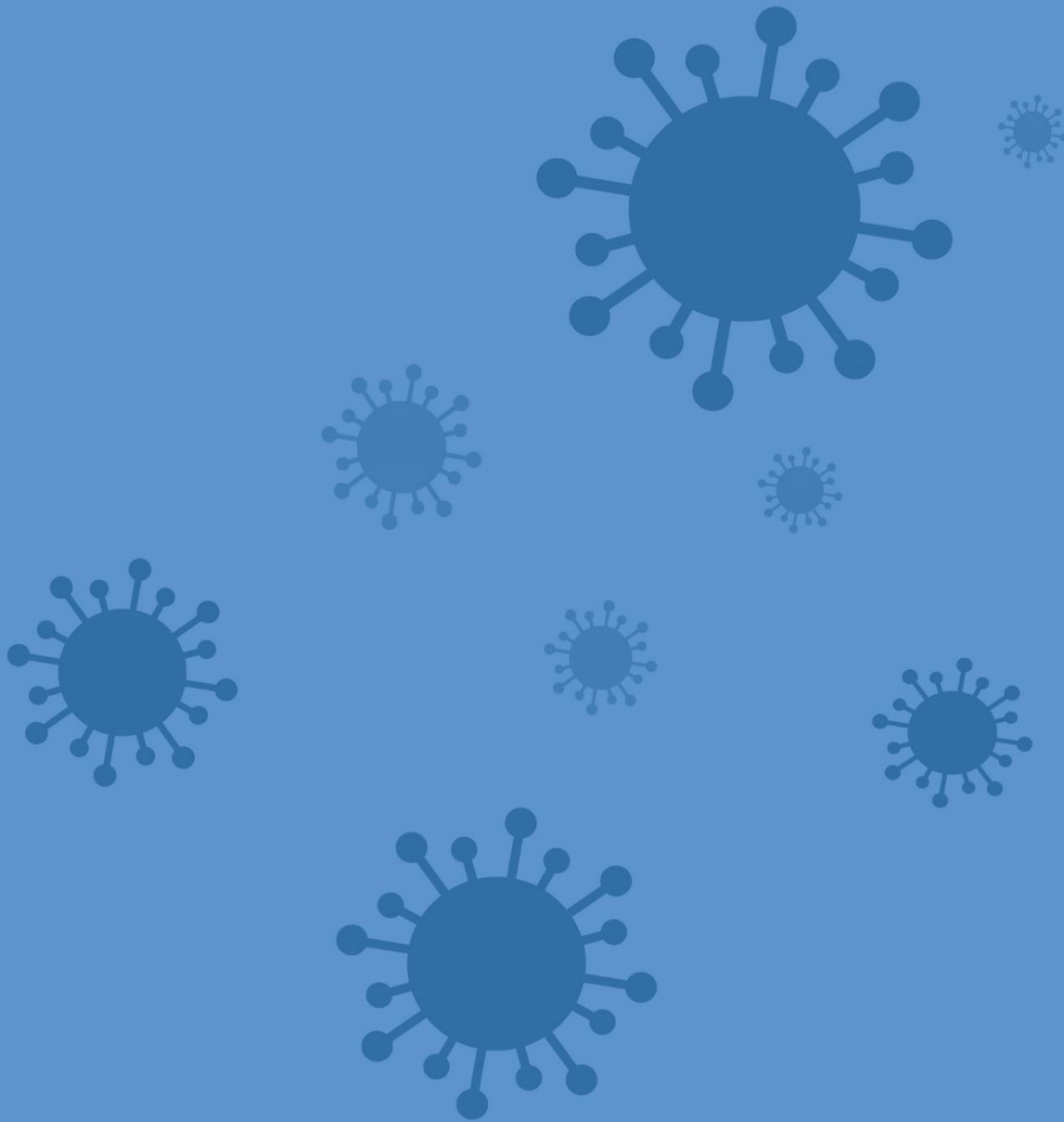




Food and Agriculture Organization
of the United Nations

COVID-19 and its impact on food security in the Near East and North Africa: How to respond?



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Executive summary

The novel coronavirus disease (COVID-19) is spreading at a fast pace in the Near East and North Africa region, albeit at slower pace than in other regions. As of 21 April, more than 40,000 people have been confirmed positive.

Since the declaration by WHO of COVID-19 as a global pandemic on 11 March, governments of the Near East and North Africa region have imposed a series of measures to slow down the spread of the disease. This policy brief aims at assessing the potential impacts of COVID-19 and associated lockdown and social distancing on agriculture and food security in the region and proposing measures to mitigate the impacts on food security and nutrition with special attention to the most vulnerable segments of societies.

Ample food supplies exist globally despite COVID-19's impacts. COVID-19 has caused disruptions to the food supply chains around the world and raised concerns about food security. However, despite these worries, global cereal markets are expected to remain well supplied and balanced. While localized disruptions, largely due to logistical issues, pose challenges to the functioning of food supply chains in some markets, their anticipated duration and magnitude are unlikely to have a significant effect on global food markets, at least in the medium term.

Food supplies and reserves are currently satisfactory in most countries in the NENA region, but worries remain for countries affected by conflict and instability. The situation of food availability in the NENA region is generally at a satisfactory level in most countries, despite the region being highly dependent on cereal imports and therefore vulnerable to global market disruption. Prospects for domestic cereal production in 2020 are generally good, with the exception of the Maghreb where drought and above average temperatures have impacted cereal production in Morocco and to a lesser extent in Algeria, and Tunisia.

However, NENA countries remain vulnerable to the multiple risks triggered by COVID-19. The NENA countries have differentiated exposure levels to the impact of COVID-19. While most countries may withstand the initial supply- and demand-side shocks associated with COVID-19, a deepening of the global economic recession and prolonged period of disruption in the global and local supply chains may have considerable impacts on production, availability and access to food. Countries in conflicts or instability and least developed countries LDCs are the most at risk, but so are countries depending on food and oil exports, though to a lesser extent.

Countries affected by conflict and instability in the region, which are already host to more than 28 million people in a crisis situation or worse, may descend further into food insecurity especially if the lifeline of food assistance is cut or disrupted.

NENA countries have limited capacities to address the challenges. Every country in the region has taken steps to mitigate the economic impact of the crisis. Economic stimulus packages, and emergency funds in some cases, are being extended to include informal sector workers in the hardest-hit tourism and services sectors, and bolstering existing social protection programmes. Agriculture sector taxes are delayed and new credit facilities are created for farmers. With the exception of the countries of the Gulf Cooperation Council (GCC), most countries in the region do not have the needed fiscal space to sustain the stimulus measures over extended periods of time, and they may face a difficult trade-offs between maintaining strict sanitary and health measures to contain the spread of the virus and keeping the economy alive.

However, the GCC countries may suffer from the collapse in oil prices, with potential spillover effects on the whole region.

COVID-19 has revealed the fragility of our health and food systems. This crisis has shown how interconnected development objectives are, and is providing a strong rationale for transforming our health and food systems to achieve the Sustainable Development Goals SDGs. The Decade for Action offers the framework needed to achieve such transformation.

Responding to the challenge: six areas for action

While continuing to give priority to the health crisis, governments need to ensure that all of their populations have access to adequate food and that all the necessary measures are taken to keep food systems working safely and efficiently. The following actions may be considered as a part of a strategic COVID-19 food security action plan:

- Countries in the region should play their role in ensuring that the global food supply chain is kept alive, through international advocacy, **implementing appropriate tax policies, facilitating trade flows and monitoring food prices.**
- **Ensure institutional coordination and consultation with all the food value chain actors while implementing health measures to stop the spread of COVID-19.** More than ever, the COVID-19 crisis requires the inclusion of the private sector and civil society in public decision-making to ensure that decisions are inclusive, understood and shared and that everyone involved plays their role in keeping the local food supply chain functional, to identify bottlenecks and respond to needs in a timely way.
- **Protect those who have lost their jobs and vulnerable groups including farmers.** Scaling up social protection measures, to the highest possible extent, is crucial to ensure the basic needs of vulnerable people who have lost their jobs because of lockdowns including the daily wage workers, and to avoid compounding the health crisis with food a security crisis.
- **Support smallholder producers and rural youth and promote innovation.** The COVID-19 crisis and its containment measures are having an impact on all sectors of the economy, including smallholder farmers, who represent a vulnerable group and need urgent assistance in terms of access to markets, inputs and credit. Digitalization can be used to facilitate access to input and output markets and to financial support. Thus the crisis should be used to advance agriculture modernization and transformation. A range of innovation options is available and should be applied to support small-scale farmers under the emergency conditions to build stronger and more resilient farming communities. Countries should take this opportunity to accelerate the digitalization of agriculture.
- **Promote healthy diets during and after the pandemic.** People affected by obesity, diabetes and other non-communicable diseases (NCDs) are at high risk from COVID-19. This underlines the importance of healthy diet as a frontline defence for disease prevention. During the pandemic and lockdown directives to stay at home, the risks of eating unhealthily become higher. It is therefore essential that governments advise all segments of society to maintain a nutritious and healthy diet.
- **Support regional collective action to protect people affected by crises in the region.** People in crisis situations depend crucially on humanitarian assistance for their food security and their survival. More than ever, regional collective action and solidarity are needed to support health systems in countries affected by conflict and to mitigate the impact of COVID-19 on food security.

Introduction

Since late 2019 early 2020, an outbreak of COVID-19 – an infectious disease caused by a newly discovered coronavirus – has rapidly spread across the world, taking a massive toll on people's lives and health and triggering a chain of containment and mitigation measures. These measures include social distancing, restricting the movement of people, and partial closure of roads, ports, airports factories, commerce and banks, bringing the world economy almost to halt.

As of 17 April, all countries in the Near East and North Africa region have registered confirmed cases of COVID-19 infections, and the numbers have been increasing steadily, albeit at a slower pace than in other regions. As of 21 April, more than 40, 000 people had been confirmed positive.

Since the declaration by WHO of COVID-19 as a global pandemic on 11 March, governments of the region have imposed social distancing measures, strict restrictions on the movement of people, curfews and in some instances total lockdowns. Businesses, banks, markets, public services and schools have closed partially or totally, bringing economic life to a halt. This has meant great losses of revenue and jobs, and threats of bankruptcy of companies, especially among Small and Medium Enterprises (SMEs).

This policy brief aims to assess the potential impact of COVID-19 and associated lockdown and social distancing on agriculture and food security in the Near East and North Africa region. It proposes measures to mitigate the impact on food security and nutrition, with special attention paid to the most vulnerable segments of society.

Impact on regional and national food and agriculture markets

Ample cereal supplies exist globally despite COVID-19's impact

COVID-19 has caused disruptions to the global food supply chains and raised concerns about food security. However, despite these worries, global cereal markets are expected to remain well supplied and balanced. While localized disruptions, largely because of logistical issues, pose challenges to the functioning of food supply chains in some markets, their anticipated duration and magnitude are unlikely to have a significant effect on food markets around the world.

The estimate of the Food and Agriculture Organization of the United Nations (FAO) for 2019 world cereal production has been revised upward by 1.2 million tonnes. As of April, it stands at 2 721 million tonnes, surpassing the 2018 global output by 64.6 million tonnes (2.4 percent). World production of coarse grains in 2019 stands at 1 445 million tonnes, 36.3 million tonnes higher year-on-year. The estimate for global wheat production stands at 763 million tonnes, 30.9 million tonnes above the 2018 output and only slightly short of the record 765 million tonnes registered in 2016. Global rice production output is expected at 512 million tonnes (milled basis), down only 0.5 percent from the 2018 high and the second largest volume on record (Figure 1).

As a result, there is ample availability of cereals for export to meet global demand, and FAO forecasts a comfortable cereal stock-to-use ratio of 30.7 percent by the close of 2020. Regarding prices, and as shown in Figure 2, the FAO Cereal Price Index averaged 164.6 points in March 2020, down 3.2 points (1.9 percent) from February 2020 and now almost at the same level as in March 2019, despite worries over COVID-19. Large global supplies, combined with generally favourable crop prospects, kept international wheat prices

under downward pressure. Moreover, the FAO Food Price Index (FFPI) averaged 172.2 points in March 2020, down 7.8 points (4.3 percent) from February. The sharp decline in March was largely driven by COVID-19 pandemic-demand contractions. Reflecting this situation, food prices have remained mostly stable or have even declined.

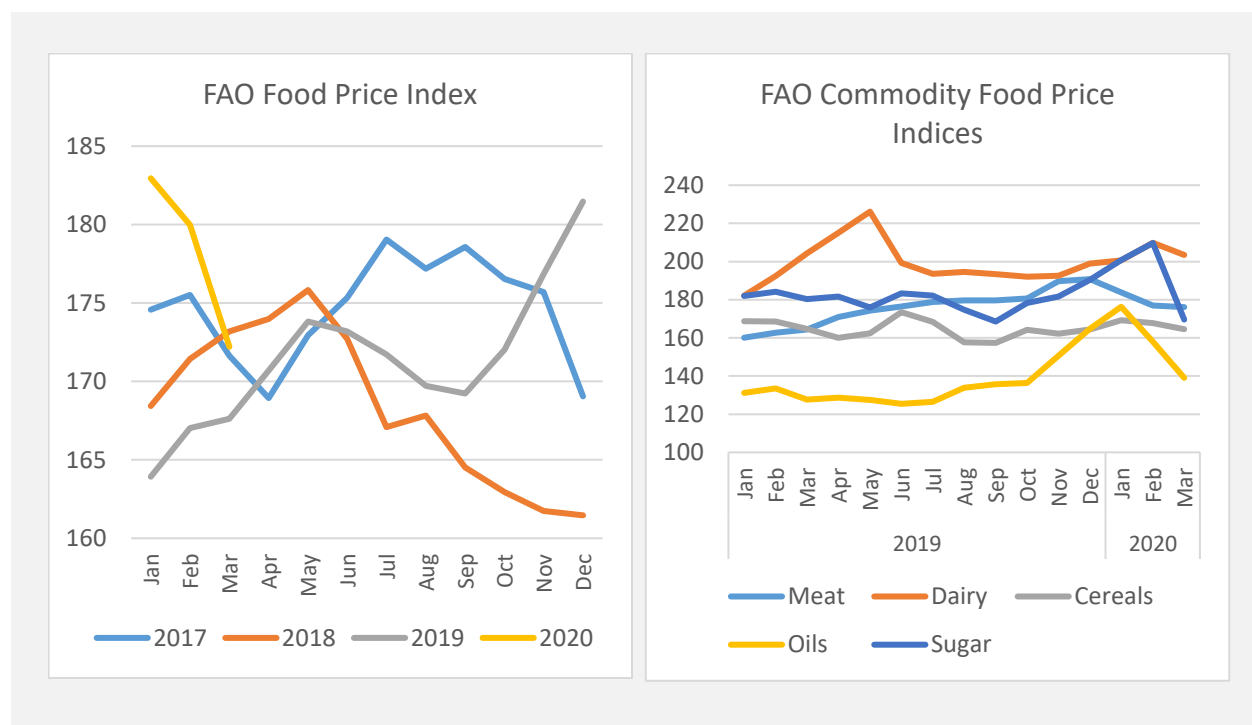
FIGURE 1 | World cereal production, utilization and stocks 2009/10–2019/20 (as of April 2020)



Source: FAO:

<http://www.fao.org/documents/card/en/c/ca8445en>

FIGURE 2 | FAO Food Price Index and Commodity Price Indices



Source: FAO:

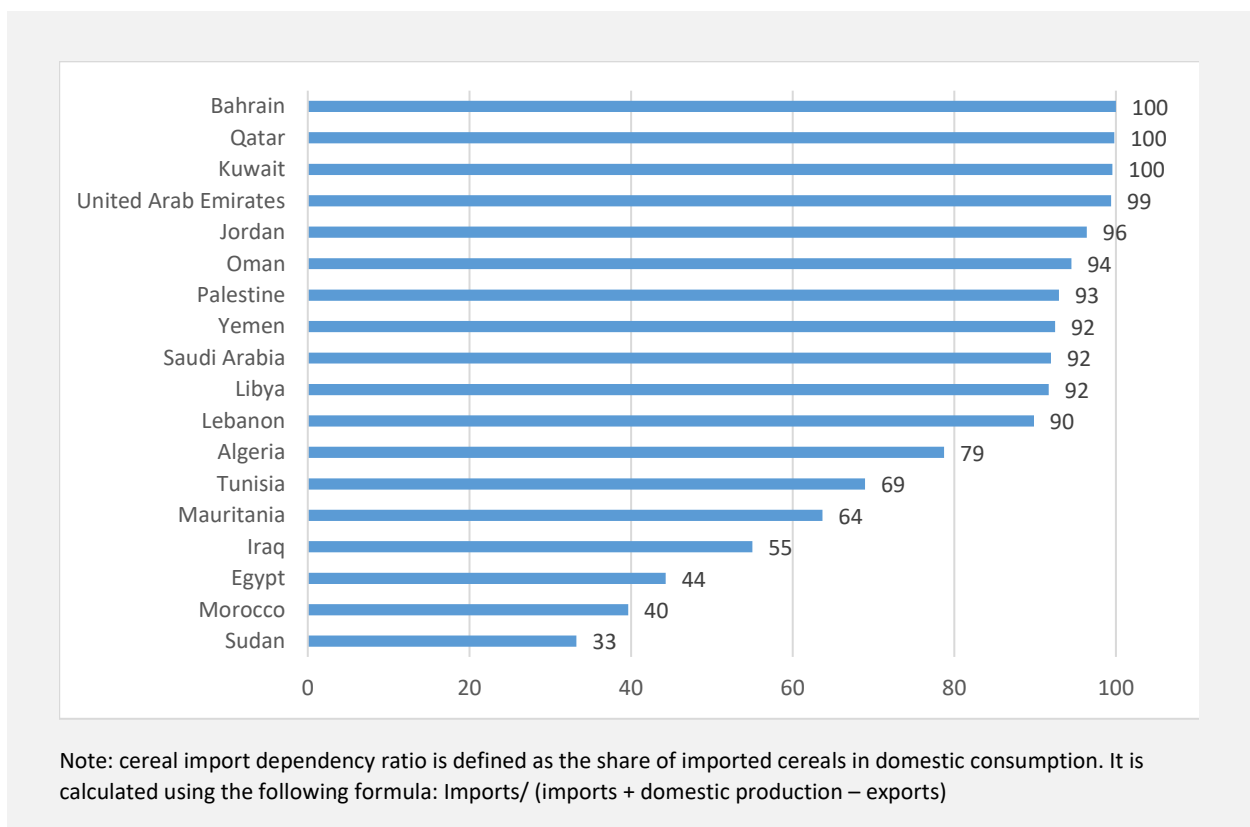
<http://www.fao.org/worldfoodsituation/foodpricesindex/en/>

Despite largely positive global food market fundamentals, prolonged lockdowns and lasting disruptions in global transport logistics worldwide, restrictions on exports and hoarding by importing countries can affect global food availability and prices. It is important, in this regard, that necessary measures are undertaken to ensure that food supply chains continue to flow smoothly and food trade markets are kept open.

Staple food supplies and reserves are satisfactory in most countries in the NENA region, but worries remain about countries affected by conflict and instability

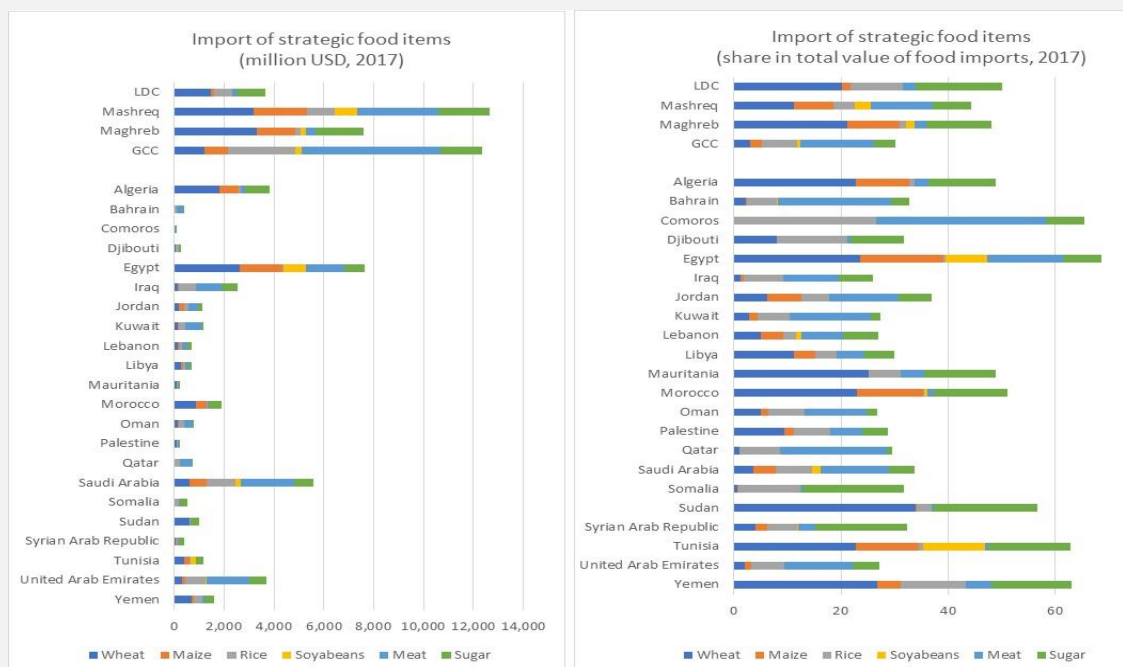
The situation of food availability in the NENA region is generally in line with global levels, with satisfactory cereal stocks in most countries. This is despite the region being highly dependent on cereal imports and therefore vulnerable to global market disruption (Figures 3 and 4).

FIGURE 3 | Cereal import dependency ratios of selected Arab countries



Source: FAOSTAT (reference year: 2017)

FIGURE 4 | Food import in the NENA countries



Note: LDC: Comoros, Djibouti, Mauritania, Somalia, Sudan, Yemen. Mashrek: Egypt, Iraq, Jordan, Lebanon, Palestine, Syrian Arab Republic. Maghreb: Algeria, Libya, Morocco, Tunisia. GCC: Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, United Arab Emirates.

Source: FAOSTAT

Looking at local production, prospects are different from groups of countries and from one country to another. In the Maghreb countries, drought and above average temperatures have impacted cereal production in the western part of the sub-region (the Kingdom of Morocco, the People's Democratic Republic of Algeria and the Republic of Tunisia). All three countries produce mostly rain-fed cereals. Production in Morocco has been the most affected, with an expected wheat production to be reduced to 50 percent of the country's average. However, all three countries have adequate cereal stock levels or have expected shipments arriving.

In the Syrian Arab Republic and the Republic of Iraq, crop conditions remain favourable from a weather point of view, but their agricultural output is affected by conflict and a lack of input availability. The prospect for grain availability in the coming months is also good in the Arab Republic of Egypt, the world's largest importer of wheat, with supplies from the new harvest coming on stream in May/June, providing enough grain to meet national demand for several months.

Overall, countries have learned from the 2007–2008 crisis and have taken measures to reduce their vulnerability to possible food shortages.

In middle-income countries, policies have encouraged domestic production of wheat using a mix of instruments including trading enterprises, border policies, government procurement and input subsidies. In most NENA countries, wheat imports and exports, marketing and storage are managed by state or semi-public trading bodies. The ability to control the flow of wheat across borders is also ensured through licensing, tariffs and quotas. In Tunisia, for instance, the Cereal Board issues tenders to international traders specifying the size and quality of import shipments, and the Ministry of Agriculture maintains

procurement prices for wheat and barley. In Egypt, the Government regulates wheat imports through state tenders issued by the Ministry of Supply's General Authority for Supply Commodities, and by support prices and state procurement of domestically grown wheat. Recently the Government of Egypt took measures to ensure domestic food supplies of various items for at least six months (Box I).

BOX I: Measures taken to shield domestic food markets in Egypt

Egypt has ample food supplies to help shield its domestic market from short-term global supply risks associated with the COVID-19 crisis. As of April 2020, Egypt has already imported substantial quantities to cover its needs for the year, particularly wheat. It has, over the years, doubled its modern grain silo capacity (from 1.5 million tonnes in 2014 to 3 million tonnes in 2019). This favourable supply environment is supported by several government measures taken to enhance food availability in the country for at least several months:

- The Government imported significant quantities of basic staples including wheat, yellow corn, soybeans and legumes.
- Egypt's cultivated wheat area this season exceeded 3.4 million feddan (1.38 million ha), and production is expected to be at least 9 million tonnes, which is the same level as last year and the five-year average. Winter crops currently being harvested include barley, fava beans, alfalfa, potatoes, onions and other vegetables. Sugar factories currently receive beet from farmers that will increase domestic sugar supplies.
- The Central Bank of Egypt (CBE) has expanded its EGP 100 billion industry stimulus initiative to include SMEs in fish, poultry and livestock companies.

These measures are helping to build reserves of the major strategic commodities including imported and local wheat (8 months), sugar (11 months), edible oil (6.5 months), white rice (4.2 months), frozen poultry (11.9 months) and frozen meat (6.2 months), among others.

In GCC countries, a variety of instruments ensures food availability and reduces the risks associated with international markets in times of crisis. They always hold large food reserves, which in some cases reach 12 months of public wheat stocks, to offset potential import supply interruptions. (The same also applies to the Hashemite Kingdom of Jordan that holds a combination of grain stocks and grain on ships that will meet the needs for at least 10 months.) Importers in the United Arab Emirates hold stocks for six months at a time, and the Federation has also acted as a regional food trade hub, ensuring that at any given time it has access to considerable food stocks that can be redirected to domestic use if necessary. The GCC countries have also established a large food processing industry that needs pipeline stocks, and which can be used as reserve stocks in times of supply disruption. For example, in 2017, the United Arab Emirates' exports of animal and vegetable seeds were about USD 521 million, while its imports of oilseeds exceeded USD 480 million.

The GCC states, which have limited natural resources, have also expanded their food stocks beyond cereals and staples. They aim to ensure that stocks exist for up to six months even for fruits and vegetables, meat, dairy products and fish. They have invested heavily in the infrastructure needed to do that, while also making every effort, whenever possible, to expand domestic production of fruits and vegetables mainly through controlled-environment agriculture. They have focused on tomatoes, peppers and eggplants, and more recently on berries.

Other measures aimed at ensuring availability are the diversification of food import contracts and options contracts (for price risk). A review of wheat tenders for Egypt from 2013 to 2018 indicates that its wheat is sourced from countries including the Russian Federation, Ukraine, Romania, the Republic of Poland, the French Republic, the United States of America and the Argentine Republic. Options are now widely used in the region to mitigate price risk, by parastatals in Algeria, Egypt, Jordan, the Kingdom of Saudi Arabia and Tunisia.

In the region, one main source of vulnerability relates to the levels of political and financial stability in the countries.

In the Lebanese Republic, where the production of grains is marginal compared with demand, the ongoing financial crisis has complicated the purchase of grains on the international market, and a special arrangement allowing traders to use the pegged exchange rate has been put in place.

Three countries in the region – Syria, the Republic of the Sudan and the Republic of Yemen – rank among the ten top crisis countries and are particularly at risk. (BOX 2).

In Yemen, where agriculture – already constrained by natural conditions – has been strained by many years of conflict, the main impact of COVID-19 is how the lockdowns will affect the humanitarian supply chain which keeps a large share of the population from starving. The country is grappling with the combined effects of conflict, climate-related shocks and crop pests, including fall armyworm and desert locust.

The Sudan has a fragile trade and food security situation. The country's sorghum and millet balance this year is predicted to be zero, and this could easily tip into deficit. Its import requirement for wheat exceeds two million tons, while export income from livestock sales to Saudi Arabia is likely to be negatively affected by the reduction in pilgrim numbers because of measures put in place by the Government of Saudi Arabia. The loss to Sudan could be as high as 50 percent of the amount exported in 2019, or USD 300 million. The decline in oil prices is also likely to reduce oil export earnings by 80 percent or USD 400 million. The country is also confronted by a difficult desert locust problem that has developed significantly since the end of 2019, and may cause significant losses of both crops and pasture.

BOX 2: Conflict-affected countries are at higher risk

The Arab region has experienced conflicts more frequently than the rest of the world for most of the post-World War II period. The region is home to seven of the current largest conflict-related humanitarian emergencies and displacement since WWII (Iraq, Syria, Libya, Yemen, Sudan, Somalia and Palestine), with more than one-third of NENA countries affected by conflict in one way or another.¹ According to the 2019 Global report on Food Crisis, three of the eight worst food crises are now found in the region (Yemen, Syria and Sudan). By the end of 2019, Yemen remained the world's worst humanitarian emergency, with more than half of its population (15.9 million) in IPC Phase 3 (Crisis phase) or higher. Syria's nine-year conflict has pushed millions of Syrians into food insecurity and has caused massive displacement felt across the region. Sudan still has 5.9 million people who urgently need food and humanitarian assistance. In addition to these three countries, several others in the region also face conflict or are recovering from the impact of conflict-induced crises (including Libya, Iraq, Palestine, Lebanon and Jordan).

Conflict and instability have been the key drivers of food insecurity in the region, and conflict-affected countries already host more than 28 million people in crisis situation or worse². They may descend further into food insecurity if the lifeline of food assistance is cut or disrupted. The COVID-19 pandemic is expected to further exacerbate pre-existing hazards and vulnerabilities in conflict-affected states where food production systems have been disrupted and where weak institutions exist. Disruption of local value chains and restricted access to humanitarian aid and essential food production supplies and services are expected to further limit access to food, livelihood and income among vulnerable communities. Food-insecure populations are likely to resort to indebtedness, poorer eating habits and other negative coping mechanisms. In addition, people in a crisis situation have less access to water, sanitation and health care, and are more likely to have underlying health concerns.

A key objective in conflict-affected countries is to keep the number of food-insecure people from further spiralling and to prevent food insecurity from worsening to famine levels (IPC 5). To do this, priority must be given to the provision of humanitarian assistance, scale-up of safety net interventions, providing production inputs to support household food security, and ensuring consistent and safe access to humanitarian aid by the needy communities.

NENA countries remain vulnerable to the multiple risks triggered by COVID-19**Transmission mechanism to agriculture and food security**

The COVID-19 pandemic affects the entire food system, from primary supply to processing trade, national and international logistics systems and intermediate and final demand. It also affects factor markets, namely labour and capital, and intermediate inputs of production. The crisis transmits directly and

¹ Regional Overview of Food Security and Nutrition in Near East and North Africa: Building Resilience for Food Security and Nutrition in Times of Conflicts and Crises, FAO, 2017

² Based on the Integrated Food Security Phase Classification (IPC): crisis (Phase 3) and worst is at famine levels (Phase 5). <http://www.ipcinfo.org/ipcinfo-website/ipc-overview-and-classification-system/en/>

indirectly to food and agriculture through different channels. In the NENA region, trade, tourism and the energy market will play an important role.

Trade: Several countries in the region depend on agriculture for much of their export earnings. A high portion of such earnings from agriculture means that these countries are particularly exposed to any shocks emanating from global agricultural markets. Conversely, countries which export commodities, but are net food importers, could face a situation where dwindling revenues from the export of non-agricultural products undermines their ability to buy enough food on the international markets.

Global economic forecasts suggest a sharp decline in overall economic activity, which, in turn, is a factor weighing on international commodity prices through a weaker import demand globally. Net agricultural importers would stand to benefit from lower import prices, easing possible contractions in purchasing power that may arise from internal economic recessions. Lower import prices could function as an automatic stabilizer for food security in low-income food-importing developing countries, allowing them to import food at lower prices. However, exchange rate swings may affect both the quantity and price of foods available to domestic consumers.

Tourism: The lockdown associated with COVID-19 since mid-March 2020 has led to a collapse in worldwide travel, including in most countries of the region. Travel bans in many countries and the temporary closure of associated business activities have led to an almost complete cessation of travel to and from the NENA countries. This has meant an immediate halt to all tourism, and uncertainty about the lockdown's duration is translating into cancellations of bookings and a complete paralysis of the tourism industry. Local tourism is also affected by the lockdown imposed by governments in the NENA region. Box 3 analyses the impact of the reduction in tourism on regional food security.

BOX 3: The impact on tourism and implications for food systems in selected NENA countries

The impact of the tourism slump will be deeply felt by NENA countries that rely on tourism for income, employment and foreign exchange earnings. The countries of the 2011 Arab Spring have not yet recovered to pre-2011 economic growth levels. Nonetheless, in 2018, tourism accounted for 11, 19 and 14 percent of GDP in Egypt, Morocco, and Tunisia, respectively, and 20 percent in Lebanon and Jordan in the Mashreq. A tourism slump will hit the agri-food sector in these countries in two ways. First, via a demand shock for food products that are normally consumed in hotels, restaurants and other tourism venues; this shock has already been widely observed and is commensurate with the containment measures taken by NENA countries. How long these measures will last is uncertain, and even less clear is how long it will take for tourism to revive afterwards. Second is the impact on incomes and employment for those working within tourism or who are strongly associated with the sector operators, driven by the pandemic itself and the resulting global economic recession. The loss of jobs and livelihoods will push large numbers of households into poverty. Access to adequate and nutritious food will be compromised for those dependent on the sector. In Egypt alone the tourism sector generates 2.5 million jobs.

Energy markets: Amid lower economic activity and decreasing demand because of COVID-19, crude oil prices have fallen sharply. While the extent and the depth of a possible economic contraction are still unknown, lower growth and reduced movements of goods and people are likely to take a particularly high

toll on energy prices. Lower energy prices will have diverse impacts on the region's agriculture and food markets.

On the agricultural output side, lower energy prices will reduce the amounts of agricultural feedstock used to produce biofuels. Typical feedstock products such as sugar cane and maize are likely to see the most pronounced contractions in demand and the most significant downward pressure on prices. However, this will benefit countries in the region overall since they are net importers of maize.

On the agricultural input side, lower energy costs will translate into reduced production costs, particularly in more capital-intensive farming in the region. Direct impacts include lower energy costs for all forms of mechanization, including the power needed to till fields, to irrigate and for transportation. Indirect impacts will be channelled through the lower cost of energy-intensive inputs such as fertilizers, pesticides and electricity. These lower input costs would act as an automatic stabilizer for farm incomes and attenuate the direct impact of the COVID pandemic in general.

On the negative side, low energy prices will affect incomes and the economies of oil-export-dependent countries in the region (GCC countries, Algeria and the State of Libya mostly). The inevitable return of overseas workers from the GCC will be a double blow to many economies in the region. Remittances to the Middle East and North Africa region are projected to fall by 19.6 percent to USD47 billion in 2020, following the 2.6 percent growth seen in 2019. The anticipated decline is attributable to the global slowdown as well as the impact of lower oil prices in GCC countries. This may have a ripple effect on the economies and on food security in the region through their impact on employment, remittances, investment flows and aid.

Supply-side shocks

Exposure to the risks associated with COVID-19 are transmitted through the impact of the restrictions imposed to combat the spread of the virus on factor markets (intermediate inputs, fixed capital and labour) and export markets. The intensity of use of each factor of production can vary considerably across agricultural systems and expose farmers to changes in input costs. These changes can be brought about by various factors related to COVID-19, including disruptions to transportation systems, clogged ports or roads, and delays in customs clearance, but also by a lack of credit, higher interest rates and capital costs or depreciations in exchange rates, which can make inputs excessively expensive.

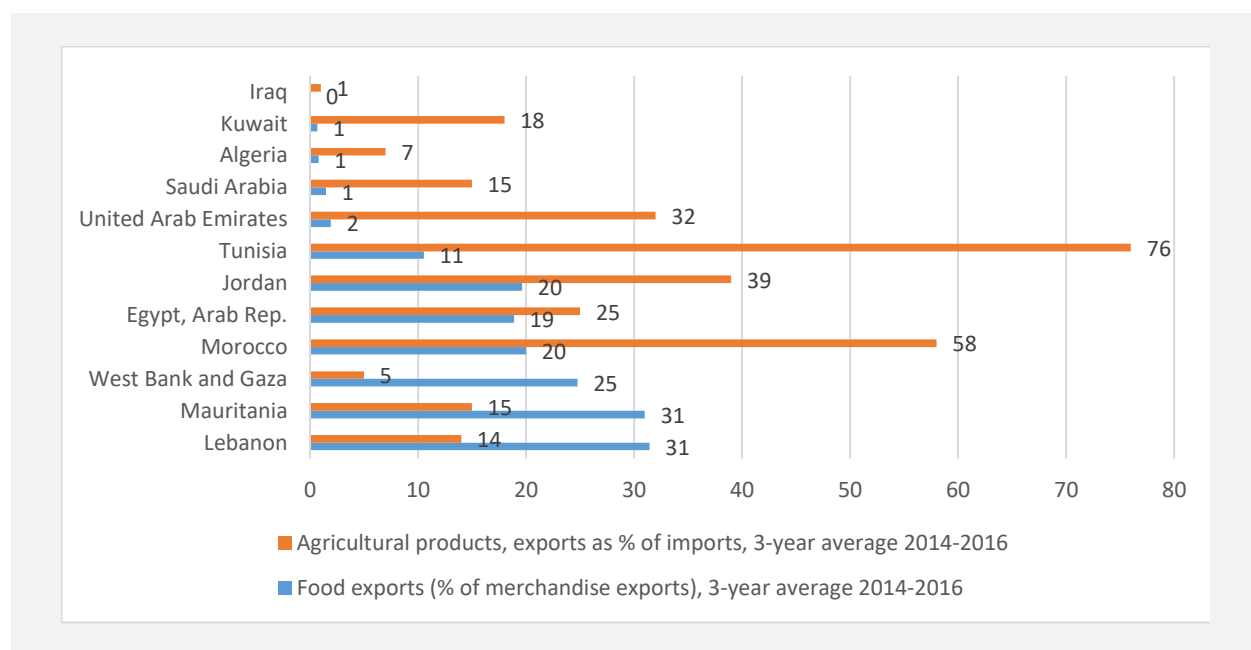
Inputs: Agricultural production depends not only on intermediate inputs (seed and fertilizer, pesticides), but also on fixed capital such as structures and machinery. A disruption in the supply chain may not affect only the availability of intermediate inputs, but may also disrupt access to fixed factors of production, such as spare parts for machinery or replacements needed to maintain structures such as processing factories and storage facilities. Typically, these inputs would not cause an immediate reduction in production; however, if the pandemic were to extend, the lack of spare parts or replacement investments could slow production growth in the medium term.

Labour: Agriculture in the region is dominated by small-scale farming. As in most low-income countries, this type of farming employs higher shares of labour for primary production, which makes it more exposed to direct disruptions in labour supply, including the farmer's own labour force. The same holds for labour-intensive production more generally. Examples from other countries show that production of fruit and vegetables as well as meat and dairy production have already been adversely affected by COVID-induced

labour shortages. These deficits can be caused by domestic labour supply disruptions as well as by shortages of seasonal or migrant workers.

Agricultural exports: Food systems are also exposed to disruptions in world trade and international food supply chains. Fluctuating demand from trading partners and disruptions to logistics may hurt countries that export high-value perishable products. Some countries in the region may face specific risks related to their agro-food import-export profiles. As shown in Figure 5, food exports make up more than 20 percent of total merchandise exports for six countries. In addition, while all countries are net importers of food, their imports mostly comprise staple commodities; they export varying amounts, in some cases substantial, of high-value products such as fruits, vegetables, fish and meat. In most cases exports come from just a few agricultural commodities, as in Morocco, the Islamic Republic of Mauritania, Jordan, Egypt and Tunisia. This implies exposure to fluctuating demand from trading partners if these exports become regarded as non-essential. This also implies exposure to supply-side risks if the countries are confronted with even temporary labour shortages as a direct effect of measures associated with COVID-19, since these are all labour-intensive commodities. Dependency on such highly perishable exports exacerbates exposure to disruptions in supply chains due to logistical problems.

FIGURE 5 | Agricultural and food exports as shares in merchandise exports and of food imports in selected Arab countries



Source: Authors' elaboration from FAOSTAT and World Bank's WDI (average 2014-2016). Note: data do not include fish.

Demand-side shocks

Demand for food staples such as grains is generally less elastic than demand for fruits and vegetables or for meat and dairy products. A possible income shock may therefore not necessarily result in a lower intake of overall calories, but in a deterioration in the quality of the diet. Some consumers will try to maintain a stable calorie intake, and in view of their smaller food budgets they may shift from more expensive and more nutritious foods such as fruits, vegetables, meats and dairy products to cheaper

staples such as grains, sugar or roots and tubers. Poorer consumers, given their low income, will mainly maintain or reduce their stable calorie intake with the consequence that they might suffer malnutrition.

The main trigger for a contraction in demand would be a protracted slowdown in overall economic growth, which would lower the purchasing power of consumers. A lower purchasing power is also being brought about by lost income in the services sector and tourism industry, which, as mentioned above, contributed directly and indirectly around 15, 19 and 14 percent of GDP in Egypt, Morocco, and Tunisia respectively in 2018, and 20 percent in Lebanon and Jordan. Tourism also generates considerable employment opportunities in other sectors. The first shock to the tourism industry was the massive cancellation of trips and tourist services that generate both wealth and employment.

The extent of COVID-19's impact on smallholder producers in terms of access to markets, credit and labour is yet to be assessed. However, unlike large-scale producers, the closure of informal or traditional rural markets in some countries in the region as a preventative measure to limit the spread of COVID-19 is likely to lead to a loss of income and market access to many smallholder farmers who used to sell their products there. Some of these farmers lack access to formal market channels. Similarly, an informal food sector in urban centres exists, playing a critical role as an outlet for small producers, and is also a source of jobs, livelihoods and food for low-income households. As such, it might be essential for cities to partner with informal food sector organizations and networks, communities and key government ministries to identify measures that will enable them to adapt their businesses and role in feeding people.

COVID-19 may affect access to food for a large number of workers in the region, many of them seasonal and informal. Economic activities in the informal sector face closure or bankruptcy, which would increase unemployment, decreasing the purchase of commodities and services and consumption. The closure of popular rural markets leads to a loss of income and market access to many smallholder farmers.

Conclusion

The NENA countries all have different exposure to the impact of COVID-19. While most countries may withstand the initial supply and demand shocks associated with COVID-19, a deepening of the global recession and prolonged disruption in the global and local supply chains could have considerable impacts on availability and access to food. Countries experiencing conflict or instability and least developed countries are the most at risk, but so are countries dependent on food exports or oil exports to a lesser extent.

TABLE 1 | Vulnerability of the Arab countries to supply- and demand shocks related to COVID-19

Country group	Supply-side shocks	Demand-side shocks
GCC countries (Kuwait, UAE, KSA, Oman, Qatar, Bahrain)	With relatively limited domestic agricultural production and limited agricultural exports, GCC countries have limited and low to intermediate low exposure to COVID-19-associated supply risks to domestic production. GCC countries shield their food supply through reserves and trade, at least in the interim.	With high food import dependency but low share of food expenditure in total expenditures, GCC countries are exposed to relatively low to intermediate low risk of exposure to demand risks. The relatively high per capita income of these countries may shield the population from potential demand shocks. Food subsidies

		are also an important 'automatic stabilizer',
Maghreb Countries (Tunisia, Algeria, Libya, Morocco)	The degree of exposure to supply risks varies considerably among the Maghreb countries. Algeria and Tunisia are exposed to low risk with minimal exposure to risk from consumption of intermediate inputs and fixed capital and low agricultural exports. Although both Tunisia and Morocco have high shares of food exports of high-value products such as fruits, vegetables, olive oil and dates, Morocco faces an intermediate high degree of exposure to risk because of its more labour-intensive production and risk associated with the availability of intermediate inputs.	Similar to the exposure to supply shocks, the degree of exposure to demand risks varies among the Maghreb countries. Algeria faces a high degree of exposure to demand risk because of its relatively high share of food expenditure and relative higher dependence on food imports. Morocco and Tunisia are exposed to intermediate low risk with relatively lower food import dependency.
Mashreq Countries (Iraq, Lebanon, Jordan, Palestine, Syria)	Jordan, Syria and Palestine are subject to a high degree of exposure while Iraq and Lebanon face a low to intermediate low degree of exposure. As a conflict-affected country, Syria faces a high degree of exposure to supply risk. Iraq, with limited agricultural exports, is faces a low degree of exposure.	Iraq, Jordan and Palestine face an intermediate high to high risk of exposure to demand risk because of a high share of imports. Syria's exposure is exacerbated by the crisis, while Lebanon is exposed to risk because of a relatively high share of food imports and its financial crisis.
Low-income countries (Djibouti, Sudan, Mauritania, Comoros, Yemen)	Djibouti, Mauritania and the Comoros face a high degree of risk exposure to COVID-19 supply shocks. Sudan, Yemen and Somalia are exposed to intermediate low risk. While all except Yemen have a high share of agricultural exports, Sudan and Somalia have relatively lower intensity of consumption of intermediate inputs and fixed capital.	All these countries are exposed to a high risk of demand shocks. This may be down to the inability of the governments of these countries to provide sufficient social protection to shield the poor from the consequences of COVID-19.
Egypt	Egypt successfully secured the availability of food through imports, domestic production and food reserves of major staples. In addition, the onset of the crisis coincided with the winter season harvest with a good harvest of wheat expected. Egypt faces a minimal level of exposure to supply risk.	With high food import dependency, a relatively high share of food expenditure, particularly for those of low income and with high rural and urban poverty, Egypt faces a high degree of exposure to demand shocks. The government has taken a host of measures to mitigate the adverse effect of the crisis on households and on the business, banking and financial sectors.

TABLE 2 | Exposure to supply and demand shocks in the Arab region, country by country

Country/ Region	Exposure -Share of II	Exposure - CFC per employee	Exposure – GO per ag worker	Exposure - Share of ag export	Overall supply exposure	Exposure - Share of food expend	Exposure - Share of ag import	Overall demand exposure
Djibouti	High	Low	High	Int. High	High	Int. High	High	High
Jordan	High	Int. High	Int. Low	Int. High	High	Int. Low	High	Int. High
Mauritania	Int. High	Int. High	Int. High	High	Int. High	High	High	High
Syria	Int. Low	Int. High	Int. High	High	High		High	
Morocco	Int. High	Int. Low	Int. High	Int. High	Int. High	Int. High	Int. Low	Int. Low
State of Palestine	Int. High	Int. Low	Int. Low	High	Int. High	Int. High	High	High
Yemen	Int. High	Int. Low	Int. High	Int. High	Int. High	Int. High	High	High
Comoros	Low	Low	High	High	Int. Low	High	High	High
Lebanon	Low	High	Low	High	Int. Low		Int. High	
Libya	Int. Low	High	Int. High	Low	Int. Low		High	
Qatar	Int. High	High	Low	Low	Int. Low	Low	Low	Low
Somalia	Low	Low	High	High	Int. Low		High	
Sudan	Low	Low	Int. High	High	Int. Low	High	High	High
Tunisia	Int. Low	Int. High	Int. Low	Int. Low	Int. Low	Int. Low	Int. Low	Int. Low
United Arab Emirates	Int. High	Int. High	Int. Low	Low	Int. Low	Low	Low	Low
Algeria	Low	Low	Int. High	Low	Low	High	Int. High	High
Bahrain	Int. Low	Int. High	Int. Low	Low	Low	Low	Int. Low	Low
Egypt	Low	Int. Low	Int. Low	Int. High	Low	Int. High	High	High
Iraq	Int. Low	Int. High	Int. Low	Low	Low	Int. High	High	High
Kuwait	Int. Low	Int. High	Low	Low	Low	Int. Low	Int. High	Int. Low
Oman	Int. Low	Int. Low	Int. High	Low	Low	Int. Low	Int. Low	Int. Low
Saudi Arabia	Low	Int. High	Low	Low	Low	Low	Int. High	Int. Low

Notes: from left to right respectively, the columns refer to country names, followed by the possible degrees of exposure derived from share of intermediate inputs, consumption of fixed capital (CFC) per agricultural worker, gross output (GO) per agricultural worker, share of agricultural exports, overall exposure to supply shocks (as integration of the preceding four exposures), share of food expenditure per capita, share of agricultural exports, and overall exposure to demand shocks (as integration of the preceding two exposures). The unweighted Manhattan distance to integrate the exposure through different channels is used to quantify the overall degrees of exposure and compare overall exposure between countries and/or regions,

Source: Schmidhuber, Josef, Jonathan Pound and Bing Qiao (2020). COVID-19: Channels of transmission to food and agriculture. Rome. FAO Accessible at <http://www.fao.org/documents/card/en/c/ca8430en>

NENA countries have limited financial capacities to address the challenges

Every country in the region has taken steps to mitigate the economic impact of the COVID-19 crisis. The governments are rolling out fiscal measures such as economic stimulus packages, emergency funds, cancelled or delayed corporate taxes, working with banks to defer credit repayments for individuals and companies, and enhancing unemployment insurance schemes with greater coverage and mobile payments. In some cases, such as in Egypt and Morocco, measures have been extended to include informal sector workers in the hardest-hit tourism and services sectors, and bolstering existing social protection programmes.

The food and agriculture sector is accorded the utmost importance, given its essential role as a major employer and contributor to the economies of countries and in ensuring food security and good nutrition for their populations. Governments have set-up committees to monitor the status of food supplies, stockpiles and agri-food sector activities, reassuring citizens of food availability and stable food prices. At the same time they have taken measures such as removing food import taxes and custom fees on certain products, delaying the payment of agriculture sector taxes, creating new credit facilities for farmers, and in a few cases curbing the exports of some essential products.

The situation is rapidly evolving, and governments have acted quickly in response to the evolving needs, but they also face their own fiscal challenges that will affect their capacity to keep doing so in the longer term. The International Monetary Fund's *World Economic Outlook, April 2020* projects that every country in the region will experience a contraction in GDP in 2020, with the exception of Egypt where the GDP is projected to expand by just 2 percent compared to 2019. Over the whole Middle East and North Africa region, the IMF projection indicated a contraction of GDP by -3.3 percent. The UN Economic and Social Commission for West Asia (UN-ESCWA) forecasts that the Arab region would lose more than USD 42 billion in 2020 because of COVID-19, and 8.3 million more people will fall into poverty. Not to mention lower foreign direct investment flows and reduced remittance receipts that provide necessary cash injections into the local economies.

With the exception of the GCC countries -and even for them the situation is becoming tighter - most countries in the region do not have the fiscal space required to sustain the stimulus measures for an extended period. Middle income oil-importing countries with large populations may face difficult trade-offs between maintaining strict sanitary and health measures and reviving the economy; they will have to balance the need between expanding social protection programmes and providing sector-specific stimuli, and once the crisis subsides, support for economic recovery while operating under shrinking revenues and tighter budgets. In this challenging context, the incentive to deter an avoidable food crisis is clearly a priority.

International cooperation is key to contain the impact of COVID-19

Since the pandemic began, international cooperation has been upscaled to address the health-related aspects of the crisis, while donors and International Financial Institutions (IFIs) have been mobilising resources to address the immediate and longer-term socio-economic consequences.

The World Bank and IFC Board approved a USD 14 billion package of fast-track financing to assist companies and countries. This will support financial institutions in continuing to offer trade financing, working-capital support and medium-term financing. Additionally, the World Bank is planning to allocate

USD 160 billion in financial support to aid economic recovery efforts over the next 15 months. The IMF released around USD 50 billion worth of funds for COVID-19 response efforts for its low-income and emerging economy members, approximately USD 10 billion to be available to its poorest members through a Rapid Credit Facility. The IMF also stands ready with a total lending capacity of USD 1 trillion to assist countries struggling with the humanitarian and economic impact of COVID-19. The African Development Bank raised USD 3 billion in a three-year bond to help alleviate the socio-economic impact of COVID-19, while the Asian Development Bank has deployed a USD 6.5 billion package for its Developing Member Countries. The Islamic Development Bank announced USD 2.3 billion in the strategic preparedness and response facility, focusing on strategic reserves, rural sustainability and food systems.

Donors are also contributing. The United States Agency for International Development (USAID) has made available nearly USD 500 million in health and humanitarian assistance to help countries respond to COVID-19, while the European Union is mobilizing EUR 15.6 billion to support developing countries on emergency response, support health care systems, and economic recovery. From the overall package EUR 2.06 billion will go to countries in sub-Saharan Africa and EUR 1.19 billion to northern African countries. Japan has also announced a package of about USD 1 billion for the response to the economic impact of COVID-19.

It is certainly in the best interest of countries in the NENA region to work closely with donors and the IFIs for the proper allocation of funds, and making sure that agriculture activities are prioritized, with a focus on vulnerable populations, smallholder farmers and rural women.

Responding to the challenge: six areas for action

Since the start of the pandemic, governments have prioritized the health and safety of their citizens, ramping up testing as much as possible and instigating isolation measures to contain the spread of the disease. This will continue as a priority until a permanent solution is found. In the meantime, governments have made every effort to sustain their countries' food security and meet the needs of the most vulnerable people, as part of the measures to contain the adverse impacts of the pandemic on economies.

While the COVID-19 crisis puts a considerable strain on the economy and society, it may also open up opportunities to transform agriculture and food systems. Countries should devise strategic food security action plans to manage the risks generated by COVID-19 and to mitigate its impact on food security and nutrition and its potentially destabilizing effect on the economy and the society. Action plans should be tailored to the context of each country and should be coherent with the health preparedness and response plan. They should be monitored continuously based on new data and information on global and local food markets and food supply and value chains. The following are recommendations that governments the NENA countries could consider to deal with the short- to medium-term impacts of the pandemic.

1- Reform trade and tax policies to facilitate trade flows and monitor food prices

Countries in the region should play an active role to ensure that the global food supply chains are kept alive through international advocacy. Reforming trade and tax policies to facilitate trade flows and monitoring food prices. During the 2007-2008 food crisis, uncoordinated policy interventions by countries contributed to trade disruption and food price spikes. Today, the Agricultural Market Information System (AMIS) provides up-to-date information on stocks and the prices of key staple crops. Cooperation among

countries can help prevent beggar-thy-neighbour policies, which were common during the 2007-2008 crisis. Lessons learned from that crisis may help governments to keep the flow of food trade open, while also preventing countries from running into supply problems. In this regard, governments may consider the following measures during the pandemic:

- **Avoid introducing export restrictions**, and lift any export bans that have recently been introduced in response to the pandemic;
- **Eliminate**, at least temporarily, **import tariffs** and non-tariff trade barriers to address exchange rate depreciation and immediate concern of disruptions in food supplies;
- **Monitor international prices of basic foods** and prices on local markets and intervene in case of speculative activities or unjustified sharp price increases;
- Consider **temporary reductions or elimination of VAT** and other taxes to help stabilize food markets.

The alleviation of trade restrictions and tax exemption should be combined with implementing food safety and quality measures related to COVID-19 risks. Egypt, for example, is sampling meat and poultry products and their packaging at the port of entry to test for possible contamination by COVID-19. For exports, especially fresh fruits and vegetables, countries should tighten the application of hygiene and food safety practices to provide assurances to clients and to comply with more stringent requirements imposed by countries in the light of COVID-19.

2- Ensure institutional coordination with all actors to keep food value chains functional

The COVID-19 crisis impacts the entire food value chain, with complex direct and indirect channels of transmission. Information is key in understanding the implication of confinement measures on the food economy and acting to protect the food supply chain.

Governments should establish platforms to exchange information and coordination and convene representatives of value chain actors (farming cooperatives, producers' associations, traders, transporters, processors/small and medium enterprise associations, etc.) to avoid disruptions to food supply chains and mitigate the impacts on food security and nutrition, while implementing health measures to stop the spread of COVID-19. At institutional levels, sectors to be involved should include planning, agriculture, finance, trade, fisheries, transport, interior, health and local communities.

More than ever, the COVID-19 crisis requires close cooperation between the public and private sectors and greater inclusion of civil society in decision-making. This will ensure that decisions are inclusive, understood and shared, and that all actors in the food chain play their role in keeping the local food value chain functional and bottlenecks can be identified and addressed in a timely manner.

Such coordination mechanisms should remain active throughout the COVID-19 crisis to develop short-, medium- and long-term responses. They should ensure that sufficient information and data are collected during the crisis to this can be analysed and used to establish a strategic dialogue on developing a new generation of more resilient and sustainable food systems.

To keep the food supply chain functional, governments should guarantee the smooth production and distribution of food while also implementing measures to stop the spread of COVID-19. The following measures could be considered in consultation with the concerned actors:

- **Establish or maintain containment exemption measures** for the whole food chain, including smallholder producers, while strengthening measures to protect the safety of farmers and

agricultural workers. Examine how the lockdown measures have blocked routes and activities in order to seek alternatives, taking into account the plans of all links in the food supply chain;

- Carry out **rapid assessments of food stocks** and **production forecasts** to assess local supplies and identify any gaps or shortages and monitor availabilities particularly in key trade partners. Consider reallocation of food stocks between different areas of the country to avoid sub-national price spikes. Understand the demand and how it may evolve, and explore how production, processing and distribution can be adapted to ensure continuity without exposing workers to risk of infection;
- **Allow farmers to work their fields and allow seasonal workers and transport operators** to move (e.g. truck drivers) domestically and across national borders, while also respecting adequate health measures. Retain agri-dealers and livestock supply shops as essential services with 'call and collect' or delivery services only;
- Support the **development of short value chains** whenever possible to allow the easy movement of food from producers directly to consumers, especially for perishable products such as fruits and vegetables, to minimize adverse impacts on availability and prices;
- Make an inventory of public and private **storage facilities**, including available cooling infrastructure, and map out and assess cold chains that can be used for emergency storage. The inventory should include storage units, warehouses and sites for sorting, grading and packing operations, to facilitate safe operation and avoid crowded areas not in accordance with physical distancing. Identify collection centres closer to producers, for example, to develop storage facilities like warehouse receipt system platforms where farmers can deliver their produce without the need to go to markets;
- Strengthen measures aiming at **reducing food losses and waste**. As much as possible, governments should allow wholesale, retail and farmers' markets to remain open, with sufficient provisions for social distancing and for maintaining food quality and safety, such as limiting the number of people who can enter the market at any one time, relocating to larger premises, installing personal hygiene stations and regularly sanitizing common spaces.

BOX 4: Food safety during the COVID-19 pandemic

The spotlight on food safety has intensified during the COVID-19 crisis as people seek to reduce their exposure to the virus, and as food systems are required to deliver food security and nutrition safely under rapidly changing circumstances. Food itself is highly unlikely to be a transmission route for the virus as coronaviruses cannot multiply in food. It is a respiratory illness transmitted person-to-person mainly through respiratory droplets created when an infected person coughs or sneezes. However, these droplets can land on surfaces and contaminate others who come in contact with them. Recent findings have shown that the virus can survive for up to 72 hours on plastic and stainless steel, 4 hours on copper and 24 hours on cardboard. While some concern is justifiable, consumers should be reassured that, firstly, products such as dairy, meat and fish do not inherently carry a risk of transmission – they are safe to eat when prepared following good hygiene and food safety practices. Secondly, value chain actors following standard food safety and hygiene practices designed to reduce the risk of food-borne illness are unlikely to contaminate food or surfaces.

Nonetheless, as an essential sector, food value chains need to keep operating amidst the risk of exposure and transmission and take additional measures to strengthen food hygiene and sanitation practices. For agro-food businesses with food safety management systems in place, this means complying with recommendations for physical distancing and providing all workers with personal protective equipment (PPE) to be worn at all times. For small-scale agribusinesses in local food value chains, the challenge is more complex and may require government assistance to raise awareness of good practices, make PPE available or accessible, or enforce new measures to ensure personal safety while facilitating value chain activities to continue taking place. The greatest challenge is for retail and wholesale markets with a large number of customers and ‘touch points’ where person-to-person transmission can occur.

BOX 5: Fisheries and aquaculture: a sector at risk, but fish is safe to eat

Under COVID-19, home confinement, travel bans and restaurant and hotel closures are directly affecting the fisheries sector. Although COVID-19 does not affect fish, the fish sector is still subject to indirect impact from the pandemic through changing consumer demands, market access or logistical problems related to transportation and border restrictions. In some countries, misleading perceptions have led to a decreased consumption of fish. This means there is a need for clear communications that fish is safe to eat.

The full range of activities required to deliver fish and fishery products from production to the consumer is diverse and complex. Each stage in the process is susceptible to being disrupted or stopped by impacts arising from COVID-19. If any part of the fish value chain is affected, the outcome is a cascade of disruptions affecting the economy of the whole sector. This in turn has a damaging effect on fishers and fish farmers' livelihoods and on nutrition for populations that rely heavily on fish for animal protein and essential micronutrients. In aquaculture, one major challenge relates to the growing of fish stocks for a longer period because of reduced demand and challenges concerning the food chain. This could lead to a decrease in the cash flow required to maintain current activities.

It is therefore of paramount importance to provide every possible protection for each stage of the fisheries and aquaculture food chain. Measures include strengthening the linkage between fishing centres to the consumer in ways such as innovative approaches like online fish auction platforms or home delivery, and applying measures to minimize the cost and fish loss. In aquaculture, it could be suggested to make sure that there is no shortage of feed and that farmers have the cash to pay for it, to avoid massive fish kills in ponds and cages. In the medium to long term, it would be useful to develop plans to cope with a new crisis (e.g. by implementing FAO guidelines on preparedness) and to implement more resilient fish value chains.

For export-oriented value chains, there will be a need to explore opportunities to reach different markets to diversify export earnings, secure infrastructure capacity for cold storage to withstand volatile market demand and prices, and evaluate domestic marketing opportunities, including for processing industries.

In addition, programmes by governments and private and development banks can also play an important role in ensuring a larger array of credit options available for different types of firms. Governments could consider providing guarantee schemes to allow banks more flexibility in servicing the debts that many operators may have already contracted before the crisis.

3- Protect those who have lost their jobs and vulnerable groups, including farmers

Scaling up social protection measures is crucial to assure the basic needs of vulnerable people, including those who have lost their jobs because of the pandemic, and to avoid adding a food security crisis to the health crisis. Vulnerable populations with compromised incomes and weakened purchasing power will find it difficult to cope with the new conditions and can see their food security seriously affected, and will need external support to deal with the crisis and its impacts. This is especially the case in conflict-affected countries, as shown in Box 2.

The state of food security and nutrition in the NENA region was already worrying prior to the outbreak. Measures associated with COVID-19 and their consequences are expected to hit the poor the hardest, with serious risks of further compromising their diets and leading to higher levels of malnutrition. To address the pandemic's impact on food security and nutrition in the poorest segments of society, the following measures and interventions could be considered:

- **Mobilize food banks** and community-based groups, supported by governments and private charities alike, to deliver food for those in need and those who cannot leave home;
- **Scale up cash transfers** to soften the full impact of the crisis, especially on the poorest. Mobile payment systems are ideal to ensure quick delivery and to minimize human contact through cash exchanges;
- **Expand social protection programmes** to assist those who did not previously have coverage and who are extremely vulnerable because of the pandemic. Complementary entitlements to offset the loss of income is a good example. Any conditionality attached to such assistance should be temporarily lifted;
- **Scale up consumer protection measures**, including strengthened the monitoring of retail prices and food quality and safety. This is important and complementary to cash transfers and safety nets that target the poor, to avoid their benefits being eroded if prices rise because of opportunistic behaviour by traders;
- In the longer term, countries need to invest in **improving emergency outbreak preparedness** across the food supply chain, to address not only the direct threat of an infectious disease but also the indirect toll that poor nutrition takes on health.

4- Support smallholder producers and rural youth and promote innovation and digitalization

The COVID-19 crisis and containment measures are having an impact on all sectors of the economy, particularly smallholder farmers. The crisis also provides an opportunity to advance agriculture modernization and transformation, with the aim to boost productivity and enhance resilience. Governments might consider the following measures to support small-scale farmers under the emergency conditions of COVID-19, and thus build stronger and more resilient farming communities:

- Promote and scale up the adoption of **digital agriculture** and the available digital extension tools and apps through targeting and training (Box 6 gives more details);
- Design new methods of **farmers' advisory services** (e.g., data-driven advisory services) and use social media and classical communication media (radio, TV programmes) for advice and information exchange;
- Promote and **support youth entrepreneurial initiatives** in the region, building on the achievements of the many existing incubators and start-ups, and engage stakeholders to become agri-entrepreneurs using digital solutions. Bridge the gap between farmers and service providers that can develop digital solutions;
- Support **e-finance** to address constraints in accessing credit and inputs;
- Support **e-commerce platforms** for food and agriculture to help link smallholder farmers to input or output providers further up the value chain;
- Adopt and scale up **smart sensing technologies to monitor food quality and safety**;
- Promote and scale up **blockchain** in support of more efficient and inclusive contract farming.

BOX 6: Upscale digital agriculture and innovation to support smallholders' production

The need to innovate, expand and promote the use of digital tools in agriculture has never been as pressing or opportune as during the COVID-19 crisis. However, digital technologies are being mainly developed and disseminated by the private sector for commercial purposes, and marketed towards large- and medium-scale farmers. When it comes to innovation, smallholders are less attractive clients for commercial firms as they are limited by constraints that require public intervention in order to establish a conducive environment for the supply and demand of digital technologies for agriculture.

Public interventions likely to be needed to promote the digital transformation of agriculture can take the form of 'push' and 'pull' actions:

- **Push actions will enhance the provision of digital services to smallholder farmers through:**
 - (i) deployment of available digital tools at sectorial level (the whole agriculture sector), national/provincial/agricultural basin level; value chain level; and specific technology level (mobile phone platforms, satellite imagery, blockchain);
 - (ii) providing urgent incentives for startup venturing in digital agriculture, including startup promotion through knowledge and innovation challenges, incubators and accelerators and an innovation cluster approach;
 - (iii) improved access to suitable financial products (debt, equity, quasi-equity, crowd-funding) for producer organizations, SMEs and startups that want to venture into digital investments;
 - (iv) improved and regulated access to data and the information necessary to conduct big data machine learning in digital agriculture;
 - (v) promotion of available e-commerce tools and improving the e-commerce regulatory framework in the medium term.
- **Pull actions will increase the demand for and use of digital services by farmers and can include:**
 - (i) awareness and promotion media campaigns for small-scale fisheries (SSFs), clients and consumers on all main digital solutions for agriculture;
 - (ii) demonstrating the activities of digital solutions at different stages of food systems and on various types of technologies;
 - (iii) e-training at different levels of the food system and on different digital technologies; establishing an incentive framework for the use and consumption of digital products relying on subsidies, voucher systems and tax deductions;
 - (iv) promoting public-private partnerships with technology suppliers and strengthening the technical capacity and market linkages of suppliers to better respond to market demand.

5- Promote healthy diets during and after the pandemic

During the pandemic and the associated lockdown, including the 'stay-at-home' directives, the risks of unhealthy diets become higher. People affected by obesity, diabetes and other non-communicable diseases (NCDs) are among the high-risk population to COVID-19. This further underlines the importance of healthy diets as a frontline defence for disease prevention. It is therefore essential that governments

raise awareness and advise all segments of the population to maintain a nutritious and healthy diet. This advice can include the following points, among others:

- **Balancing diets by introducing healthy options** that consist of more plant-based foods such as vegetables and fruits. This is important to improve the immune system and to combat various symptoms of the sickness during the pandemic. Particular attention should be paid to citrus fruits and green leafy vegetables that are high in vitamin C and other vitamins that can help reduce inflammation, and to limiting the consumption of highly processed foods high in saturated fats, trans-fats, salt and sugar, as these contribute to unhealthy diets and lead to uncontrolled weight gain;
- Enriching meals by **legumes, as a source of protein**, as well as nuts and seeds as a source of healthy fats, protein, fibre and other nutrients and that have antioxidant and anti-inflammatory properties. They are also a shelf-stable and non-perishable high-calorie food;
- **Paying special attention to children and pregnant and lactating women.** For mothers and young children in particular, more variety, more micronutrient-rich vegetables and fruits, including increasing consumption of legumes and more animal source foods, is always recommended. For infants, the protection, promotion and support for breastfeeding (early and exclusive) and age-appropriate and safe complementary foods, caring and feeding practices should remain critical;
- **Special attention should also be given to the elderly and chronically ill**, who are at a higher risk of contracting severe illness from COVID-19;
- Finally, **personal hygiene** and food safety practices are crucial for staying healthy.

6- Support regional collective action to protect people affected by crises in the region

People in acute food insecurity and in crisis situations depend crucially on humanitarian assistance for their food security and survival. Countries in the region have played an important role in providing lifesaving and livelihood support to people affected by crisis and have kept their borders open for refugees and displaced people. Such needs may be even greater in times of COVID-19, because people in need, including those displaced, generally have less access to water, sanitation and health services and are more likely to have underlying conditions that increase their vulnerabilities.

More than ever, regional collective action and solidarity are needed to support health systems in countries affected by conflicts and to mitigate the impact of COVID-19 on food security and nutrition. Interventions need to be carefully tailored and adapted to the health, humanitarian and institutional contexts of each country, and actively involve local communities.

The COVID-19 pandemic has revealed the fragility of our health and food systems, provided a strong rationale for the 2030 Agenda and demonstrated how inter-related the SDGs are. It started as a health crisis, but soon affected all sectors of the economy, imposing serious challenges to the achievement of all SDGs. This calls for the importance of forging international efforts and partnerships under the -United Nations Decade of Action framework. Despite the enormous challenges imposed by the pandemic, COVID-19 presents an opportunity for the international community to act in solidarity and to turn this crisis into an impetus to achieve the SDGs by 2030.

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