

FOOD SECURITY IN IRAQ

IMPACT OF COVID-19

APRIL - JUNE 2020



Photo/ Emilienne Malfatto

EXECUTIVE SUMMARY

The COVID-19 pandemic continues across the world, and in Iraq the number of cases is rising. As of 30 June 2020, the World Health Organization reported 49,109 cases in Iraq, with 1,943 fatalities. Since March, the government has been enforcing movement restrictions and curfews to help slow transmission of the virus. As the livelihoods of many people have been affected as they are unable to work, humanitarian, social protection and development responses have also stepped up, both from the government and supporting partners.

Since April, the Food and Agriculture Organization (FAO), World Food Programme (WFP) and World Bank have published new weekly reports on the impact of COVID-19 on food security in Iraq. Together with the International Fund for Agricultural Development (IFAD), and with further assistance from Food Security Cluster partners such as the Cash Consortium of Iraq (CCI), the organizations are collaborating to build on the work so far with new research and analysis, in this new monthly assessment.

The global economic slowdown and reduced demand have led to a sharp decline in commodity prices, particularly oil. In Iraq's oil-based economy, the decline in global oil prices has put pressure on national finances. This drop, plus the government stimulus package introduced in October 2019 are expected to increase the need for deficit financing.

Global food markets remain well supplied and international prices relatively stable. Some health checks and quarantines have resulted in delays on the borders, increased transit times and transportation costs. On the other hand, in the current agricultural year, conditions for crop development in Iraq have been generally favorable with timely and well distributed rains. With above average domestic production, depending on the quality of the wheat purchased, it is estimated that Iraq has sufficient wheat stocks to cover its food needs until at least autumn 2020. The third Public Distribution System (PDS) cycle for wheat flour, although delayed, was completed in May. Distributions of the remaining sugar and oil stocks will continue, to families registered as vulnerable under the Ministry of Labor and Social Affairs (MoLSA) programme for social protection.

In response to the increased needs of many households without income during the lockdown, the government established a new cash disbursement program, "Minha" ("Grant"). The Central Bank of Iraq (CBI) has also introduced measures to mitigate the impact of the crisis on households and businesses, but a larger stimulus package is still needed to re-start the economy.

With strict price control measures in place after initial spikes, food prices generally started stabilizing from April. The latest mobile Vulnerability Analysis and Mapping (mVAM) data indicates that price stability is still a challenge where most retailers remain uncertain of future prices. However, the overall functionality of markets is improving. The Market Functionality Index score rose from 6.5 to 7.2 by the third round of data collection. Meanwhile, mVAM household data revealed that people's food consumption patterns improved during the month of Ramadan - largely because of religious charities (known as zakat). Around 4.8 million people (12% of the total population) are using negative coping strategies to meet their food needs.



Photo/ Emilienne Malfatto

I. POLICY RECOMMENDATIONS

1. MACROECONOMIC SITUATION.

The difference between the planned and actual oil price, which decreased as a result of the global slowdown, is putting a dent in the budget balance, endangering the government's ability to maintain its commitments to deliver PDS rations as well as basic services and salaries. The government needs to consider preparing for various scenarios of its budget depending on the speed of the global recovery post-COVID-19, and to consider alternative funding sources and eventual adjustments to spending.

2. RETHINKING INTRA-REGIONAL TRADE

Turkey and Iran remain important trading partners, among others - Iraq officially imports around USD 2.8 and USD 2.2 billion worth of food and agriculture products from the two countries respectively. For certain commodities (i.e. wheat and barley), Iraq has an incentive to review its agriculture export and import policies. However, these protectionist policies should not be at the expense of larger food and agriculture trade and regional integration. A broader trade regional integration framework and dialogue needs to be prioritized, and could be a starting point for mutual cooperation and broader strategy on regional food security. Thus, an in-depth value and supply chain analysis is required to re-assess Iraq's comparative advantage with respect to specific commodities, and how it integrates into the broader regional food system.

3. INCREASING FOOD AVAILABILITY

The government procures locally and internationally major staples such as wheat and rice as part of its price support subsidy program for producers, while other food products on the market are imported by local traders in the private sector. The CBI has removed restrictions on foreign transfers; however, traders are reporting that they are still encountering procedural delays and difficulties to obtain letters of credit for merchandise imports. The government and CBI are encouraged to set aside funds from the remaining foreign reserves for food imports that could be tapped by private banks and traders to ensure stable supplies on the domestic markets.

4. CREATING AN ENABLING ENVIRONMENT FOR INCREASING DOMESTIC PRODUCTION

In order to improve food self-reliance of Iraq, the government supports local farmers to boost domestic production. The Ministry of Agriculture (MoA) imposed import bans and tariffs on 25 vegetable and fruit products; however, agriculture products from neighboring countries (Turkey, Iran, and Syria) continue to seep into the country. As their currencies continue to depreciate while Iraq maintains its peg of the Iraqi Dinar constant to the US Dollar, the prices of these foreign products on Iraqi market remain depressed, benefitting the Iraqi consumer and harming Iraqi producers. Foreign competition results in reduced returns for farmers and the continued depletion of the daily foreign currency reserve. Until border control measures are fully enforced, the government has an incentive to revise its monetary policy as part of a larger economic strategy, depreciating the currency as a tool to protect local industry and stimulate local growth, as well as protect the remaining foreign currency reserves.

5. COVID-19 AND AGRIFOOD SECTOR:

Despite the rising number of COVID-19 cases, farmers and workers in agricultural and food sectors should be granted continued exceptions from lockdowns and curfews for an uninterrupted supply of local markets. Sufficient amounts of personal protection material including masks, sanitizer, etc. at reasonable prices should be provided to those working in the sector. As transportation bottlenecks have become an issue in other countries, resulting in excess production on the farm gate but shortages in urban centers, governments have opened markets and facilitated transportation from rural to urban areas to ensure an outlet for local farm products and supply for urban centers. Similar arrangements can be explored in Iraq.



6. INVESTING IN PRODUCTIVE INFRASTRUCTURE

Rehabilitating agriculture infrastructure, particularly structures damaged by the Islamic State of Iraq and the Levant (ISIL), has remained a national priority. In light of high unemployment rates due to COVID-19 containment measures, which constrained livelihood opportunities for many casual workers, these types of programmes should continue to be prioritized as they have the distinct advantage of employing large numbers of individuals, while also improving agricultural productivity and natural resource use efficiency. For example, revamping Iraq's canals and irrigation system and building local reservoirs (i.e. hafirs) will improve water use efficiency, a critical topic as water availability is anticipated to decrease due to upstream riverbank development, dwindling non-renewable sources and potential climate change effects.

7. SUPPORTING SECTORS NON-INTEGRATED IN THE FORMAL ECONOMY

While CBI has introduced multiple measures to mitigate the impact of the crisis on households and businesses, a larger stimulus package is needed to re-start the economy. A moratorium on loan payments and interest, plus the suspension of vendor commissions on electronic payment tools for a period of six months, will have a positive effect on medium-size food and agriculture enterprises already integrated within the banking economy and that have digitized their payments. Nevertheless, the majority of the food and agriculture sector remains cash-based and not engaged with the private banking sector. The government and the central bank need to stimulate the engagement of the food and agriculture sector with an improved private banking sector, in addition to providing the stimulus for digitization across the food value chain.

8. STRENGTHENING SOCIAL SAFETY NETS

Although MoLSA has launched the Minha program to support affected families, implementation remains problematic due to depleted government financial resources as a result of global oil prices. With the delayed PDS distribution (up to three months), more households will be affected, as the proportion of the population living under the national poverty line has likely increased as lockdown and curfews constrained opportunities of casual labor. The government needs to urgently prioritize funding for existing programs such as the PDS, in addition to programmes that target those most in need. For example, MoLSA, the Ministry of Trade (MoT) and Ministry of Migration and Displacement (MoMD) should explore data integration, leveraging the ongoing PDS digitalization process, to improve targeting for all existing social assistance programs and more efficient use of available resources.

9. IMPROVE FOOD SECURITY MONITORING AND SURVEILLANCE CAPACITY

Strengthen information systems on production, livestock, water, trade, prices, market functionality and health/nutrition, and support networking between relevant Ministries under a National Early Warning System in Iraq that brings together key data sets on Iraq's overall food supply and demand, to allow for in-depth analysis, regular reporting and policy recommendations. Specific attention needs to be given to the impact of the COVID-19 pandemic on critical infrastructure, services and support functions and actors.



TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
I. POLICY RECOMMENDATIONS	4
II. SOCIOECONOMIC CONTEXT	8
Global Developments	
Global Commodity Prices	
Global Trade	
Bilateral Food Trade	
National Developments	
Fiscal and Monetary Pressures	
Subsidies and Social Protection	
III. FOOD AVAILABILITY	14
Food Production	
Food Imports and Reserves	
IV. FOOD ACCESS AND STABILITY	17
Food Price Trends	
Local Market Trends	
Household Food Consumption	
Household Income and Coping Strategies	

II. SOCIOECONOMIC CONTEXT

GLOBAL DEVELOPMENTS

GLOBAL COMMODITY PRICES

Responding to a global economic slowdown driven by measures introduced by governments in an effort to contain the spread of COVID-19, commodities – oil in particular – faced a sudden collapse in demand and a massive decline in prices globally. Although energy prices increased by 32% in May compared to April as crude oil prices recovered, the index is just half its end-2019 level. The average crude oil price decreased from USD 53.3 per barrel (bbl) in February to USD 21 in April, but recovered to USD 30.4 in May. In 2019, the crude price averaged USD 61.34 per bbl.¹ Low oil prices present a particular challenge for economies reliant on hydrocarbons for income, including Iraq.

Global food markets have remained well supplied and aggregate international prices have been stable or easing as of May. The FAO Food Price Index (FPI, Figure 1) averaged 162.5 points in May, down 3.1 points (1.9%) from April and reaching the lowest monthly average since December 2018. The May decline marked the fourth consecutive monthly decrease in the value of the index. With the exception of sugar which rose for the first time in three months, all the other sub-indices of the overall index registered month-on-month declines in May.

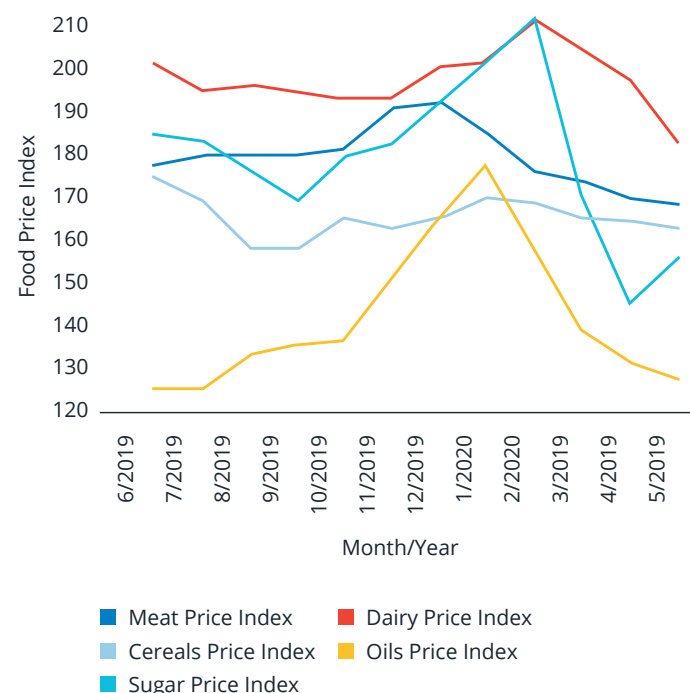
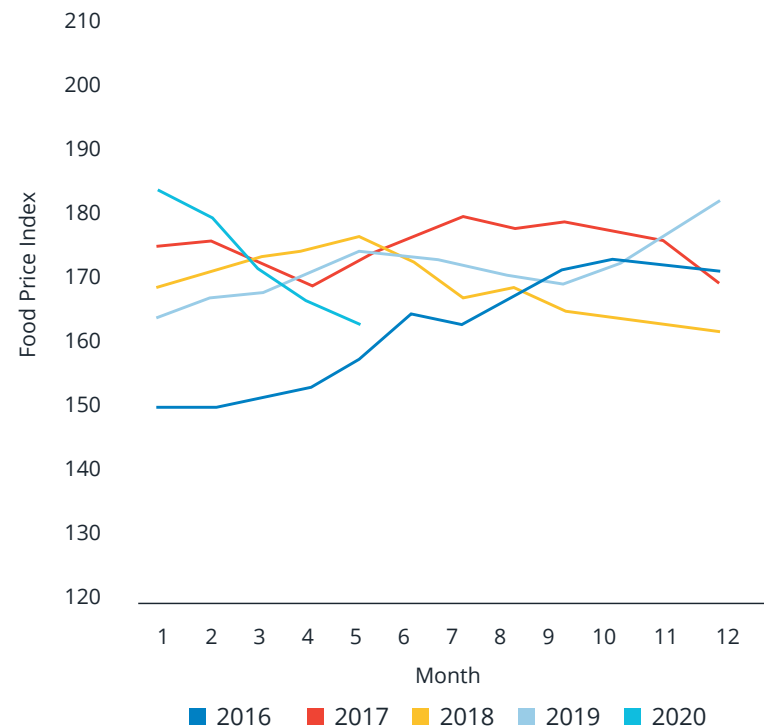


Figure 1: FAO Food Price Index (FPI) where a) is the overall Food Price Index by month from 2016 to 2020 and b) is the FPI by staple commodity from June 2019 to May 2020.

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



The FAO Cereal Price Index averaged 162.2 points in May, down 1.6 points (1.0%) from April and very close to its level of the corresponding month last year. Among major cereals, only rice prices rose in May, mainly on rising Japonica and Basmati quotations. By contrast, international maize prices registered a fourth consecutive month of decline as newly harvested crops in South America expanded already large export availability despite weaker demand for animal feed and fuel ethanol.

Despite relatively contained adjustments in the price index, in anticipation of the export limits by major producing countries, wheat prices in the global market changed considerably in a short time period. On international markets, wheat in early March was traded at as low as USD 170 per tonne, while the price rose to USD 217 in April. This may be related to the Russian Federation's export quota of 7 million tonnes introduced in March being exhausted by 26 April. Prices decreased again in May as a slowdown in trade activities and harvesting in the northern hemisphere got underway, increasing expectations of ample global supplies in the new season. The week of 2 June, one tonne of HRW wheat was quoted on average at USD 221, slightly below USD 226 per tonne quoted one year ago.

As of May 2020, presuming favorable conditions for the rest of the season, FAO forecasts the 2020 world cereal production at a record level of 2,780 million tons, driven by promising maize and rice production prospects. Wheat production is forecast at 758 million tons, a decline of about 4 million from the previous year's good level. Decreased production is anticipated in the European Union, Ukraine and the US, but expected production increases in the Russian Federation and Austria will largely offset that decrease. Global wheat utilization in the 2020/21 marketing season will likely stagnate at around 754 million tons as demand for animal feed and biofuel feedstock decreases. As the current 2019/20 (July/June) season for wheat is drawing to a close, the preliminary forecast for wheat trade in 2020/21 stands at 177.5 million tons, representing 1.4% over the 2019/20 estimated volume. While early indications for most countries suggest that in 2020/21 imports will remain close to the 2019/20 levels, several countries, including those in the Middle East and North Africa, are likely to increase their wheat purchases amidst below-average domestic harvests and stockpiling.

GLOBAL TRADE

Overall trade has declined substantially because of the global economic slowdown. The World Trade Organization estimates that world trade will fall by 13 to 32% in 2020, depending on the speed of the economic recovery.² Overall available shipping capacity was reported to be down 50%, but trade in essential goods, including food, has continued at all ports without any major interruptions, despite reduced availability of port workers because of sickness or fear of being infected. Physical distancing measures and health checks have caused delays, but ports and sea freight remain operational. Shipments of refrigerated containers with agricultural produce and food have always carried a premium (sometimes up to 3 to 4 times over bulk shipments), which translates into higher food prices, of particular importance for food import dependent countries such as Iraq.

Global airfreight capacity remained constrained in some destinations, including to and from the Middle East. In general, some trade in high value agricultural products was affected in countries experiencing labor shortages to harvest horticultural crops (e.g., Europe), despite high demand and prices for some of these products.

Trade finance is expected to be disrupted, requiring greater US dollar liquidity to keep critical supply chains working. Commodity traders are leaning towards direct cash transfers as trade finance conditions worsen and credit facilities dry up, even though global interest rates have decreased and central banks are pumping liquidity in efforts to revive economies.

BILATERAL FOOD TRADE

Although international markets remained well supplied and food commodity prices stable, export-restricting policies introduced by several major exporters of staple commodities have raised concerns among the importers. That being said, Iraq's major risks do not stem from exogenous shocks as much as from indigenous factors arising from lack of liquidity and localized supply chain disruptions caused by ongoing domestic challenges. Turkey and Iran remain the most important bilateral food trade partners, although part of the trade flows are informal (including cross-border smuggling). In an effort to protect domestic producers, MoA imposed an import ban on 25 agricultural and animal products. However, agricultural products particularly from Iran and Syria continue to be sold to Iraq due to macroeconomic problems in the countries of origin. In Syria, in September 2019, USD 1 was traded for SYP 600, while in May 2020 it was exchanged for SYP 1 550. Iraq continues to peg its Iraqi Dinar to the US Dollar. While smuggled products put a downward pressure on prices, thus benefiting the Iraqi consumers, Iraqi producers complain of unfair competition and lower returns for farmers. Payments for smuggled goods also contribute to the depletion of foreign currency reserves.

Iraq is heavily dependent on imports (estimated at around 50% of food needs). With the exception of rice imports from Vietnam, Iraq was not directly affected by export restrictions introduced by some exporting countries to ensure stable supplies for their domestic markets. Even the effect of Vietnam's initial rice export ban in March was short lived; Vietnam replaced its export ban with an export quota in April and rice exports fully resumed from May.

¹ <http://pubdocs.worldbank.org/en/959181588615089571/CMO-Pink-Sheet-May-2020.pdf>

² https://www.wto.org/english/news_e/pres20_e/pr855_e.htm

Export restrictions in one country are likely to increase competition for other origins. Although the Russian Federation’s wheat export quota for the 2019/20 marketing year introduced in March 2020 contributed to a temporary increase of global wheat prices in April, Iraq does not import from the Russian Federation. In 2019, wheat origins approved to participate in tenders issued by Iraq were the US, Canada, and Australia. Before 2015, Kazakhstan, Russia and Romania were also approved. Russia has been trying to regain entry into the Iraq market, but the prevalence of wheat smut remains an obstacle. For the PDS program, long grain rice is imported from approved origins such as the US, Vietnam, Argentina and Uruguay. In addition, the private sector also imports rice from India, Turkey, and Thailand.

In addition to the main cereal exporters, other countries put in place measures aimed at ensuring supplies for their domestic markets. For example, Syria put export restrictions on eggs, cheese, yoghurt, processed cereal and beans, while Egypt banned pulse exports until 28 June. Turkey restricted the export of lemons until 31 August.

Despite a relatively small number of export restrictions in place, policies requiring health checks and quarantines to prevent the spread of COVID-19 have resulted in delays at borders, increased transit times and higher transportation costs.



NATIONAL DEVELOPMENTS

As of 30 June, the World Health Organization reported 49,109 cases in Iraq, with 1,943 fatalities. The number of COVID-19 cases in Iraq surged in late May, increasing by 171% while the global caseload increased 6%. From March, the government has enforced movement restrictions and curfews in an attempt to slow transmission of the virus.

Responding to the pandemic declaration by the WHO, the Government established a Crisis Cell Committee chaired by the Ministry of Health and under the authority of Cabinet Order Decision No. 55 at the end of March. Each Ministry also formed their own Crisis Cell. The Prime Minister issued Order 151, which outlined committee membership. The Council of Ministers also formed the Supreme Committee for Health and National Safety. In April and May, Parliament and the established government committees and councils issued the following decisions:

Date	Government Decision
7 April 2020	The government of Iraq established the “Minha” grant programme for families impacted by COVID-19 restrictions. Cash disbursements under this programme began on 8 May 2020.
15 April 2020	The Supreme Committee for Health and National Safety (SCHNS) excluded officials and employees of the Ministries of Agriculture and Trade from curfew.
15 April 2020	The Council of Ministers allowed agriculture tenants to delay the payment of land rental fees.
22 April 2020	The Ministry of Planning (MoP) launched a National Food Security Project (2020—2022) in Iraq to increase food self-sufficiency.
3 May 2020	Parliament announced it would start implementing an emergency agriculture plan in light of the COVID-19 pandemic.
20 May 2020	SCHNS established a Food and Social Security team under the Ministry of Planning, with membership from other ministries and stakeholders, in addition to banning the import of watermelon, melon and green broad beans as local production could meet local demand.
31 May 2020	SCHNS announced that wheat and barley collection points would remain open to farmers, despite planned curfews and movement restrictions.



FISCAL AND MONETARY PRESSURES

The country's economy is affected by the decline in global oil prices, which is putting pressure on the national budget. Oil revenues account for approximately 90% of the state's total revenue. The 2020 budget was prepared with the assumption of USD 56 per bbl of crude oil. The Iraqi economy is projected to contract by 9.7% in 2020, down from a real GDP growth of 4.4% in 2019, with both oil and non-oil sectors contracting by 13% and 4.4% respectively. Iraq did agree to an OPEC+ agreement to reduce oil production quotas in an attempt to stabilize prices. Economic contraction is driven by low oil prices; and reduced local economic activity due to private sector and government closures.

The unsustainable stimulus package introduced following the demonstrations in October 2019 — including increasing public sector employment, lowering the retirement age, and providing various cash transfers —coupled with weaker oil revenues are expected to have detrimental fiscal effects. Government transfers, particularly pensions and PDS food rations, increased by 127% and 18% year-on-year respectively. Increased fiscal outlays have eroded the buffers available to respond to the unexpected economic downturn in light of the COVID-19 pandemic. At the current rate of spending, Iraq requires an oil price of USD 76 per bbl to finance its recurrent 2020 expenses.

If oil prices stabilize at USD 30 – 35 per bbl for the rest of 2020 and no reform measures are taken, the budget deficit would exceed 29% of GDP in 2020 and gross financing needs would reach USD 67 billion, around 39% of GDP. Under this scenario, Iraq will have to resort to a mixture of domestic and foreign sources to finance the deficit. Heavy reliance on local banks will crowd out the available liquidity for private sector credit facilities, while borrowing from international markets may prove to be difficult given global market conditions and a weak macroeconomic framework in Iraq.

Financing the budget deficit and the current account deficit, estimated at 18.8% of GDP in 2020, while maintaining the pegged exchange rate with the US dollar (unchanged since 2009) will put pressure on Iraq's foreign currency reserves. As for May 2020, foreign currency reserves can only cover up to 6 months of imports, exacerbating the vulnerability of the country to external shocks and undermining the country's ability to finance food imports and local subsidy programs.

The upside of the current fiscal and monetary stress is that inflationary pressures remain largely muted due to cheaper consumer goods. Additionally, Turkish and Iranian currencies continue to depreciate, affecting the two main official trading partners of Iraq. Headline inflation, which is a measure of the total inflation within an economy and includes commodities such as food and energy prices, remains under control and below 1%.

To mitigate the impact of the crisis on households and businesses, the CBI has introduced multiple measures, but a larger stimulus package is still needed to re-start the economy. The CBI issued new operational modalities for banks to serve clients under the COVID 19-imposed curfew, and resumed its services for all payment systems and the investment window on a daily basis. To boost liquidity in the market and support households and small and medium enterprises (SMEs), the CBI applied a three-month moratorium on interest and principal repayments for both consumer and SME loans, suspended all fines imposed on commercial banks, and enhanced banks' cash liquidity by IQD 1 trillion (approximately USD 840 million). It also suspended vendors' commissions on electronic payment tools and reduced bank reserve requirements to 13% over the same period. While these steps will help medium enterprises that have already digitized their payments and integrated with the banking economy, a large majority of food businesses, especially those outside Baghdad and Erbil, remain cash-based and informal.



SUBSIDIES AND SOCIAL PROTECTION

Despite prioritizing salaries and pension payments for Iraqi government civil servant retirees, these payments were slightly delayed in May due to fiscal pressure. The public sector remains the largest employer in Iraq – any delays or suspension of salaries and pensions, in addition to reduced incomes of employees in the private and informal sector, will impact household food expenditures, food markets and the food security of the country.

Since the beginning of the year, the PDS cycles have been delayed by two months. The third PDS cycle for wheat flour was completed in May. The General Company for Grain Trade announced that in preparation for the fourth cycle, mills are being supplied with 1.2 million metric tons of wheat (from local production) to produce 40 million bags of flour. The lack of financial allocations is challenging the ability of the PDS to procure goods consistently, including the four basic PDS items (rice, wheat, sugar, and vegetable oil) approved in the General Budget Law passed in 2019. Nevertheless, MoT is continuing to distribute imported and locally produced flour and rice from the reserves. Both oil and sugar will also continue to be distributed in the coming month, but only to families registered as vulnerable under the MoLSA programme for social protection.

MoP and MoLSA continued their new COVID-19 response. MoLSA continued to distribute one-time cash assistance under the “Minha” (“Grant”) program. MoLSA approved grants for 11.6 million people, the majority of the 12.3 million individuals who applied nationwide. The MoP Minha team simplified the mechanism to transfer IQD 30,000 cash per person to selected households, leveraging cash-out points that are located throughout the governorates and approved by the Central Bank. Targeted households receive a text message (SMS) on their mobile phones, informing them of their grant amount and the nearest cash-out point.

MoLSA announced that it allocated around USD 328 million to this year's third round of regular social protection assistance. This ongoing assistance will be distributed to roughly 1.3 million pre-registered households, reaching about 6.5 million people.

In the Kurdistan Region, MoLSA of the Kurdish Regional Government distributed 178,000 food baskets to vulnerable households against the planned 200,000 baskets in Erbil (70,000), Sulaymaniyah (58,000) and Duhok (50,000) over the past weeks during the pandemic. A remaining 22,000 food baskets are yet to be distributed. Approximately 88,000 households who received a food basket were already registered recipients of the government's social safety net programmes. In addition, in April and for the very first time, MoMD distributed food baskets to refugee camps throughout the Kurdistan Region, complementing its ongoing food distributions to families of internally displaced people (IDPs).

III. FOOD

AVAILABILITY

FOOD PRODUCTION

Across Iraq, both wheat (mostly common bread) and barley are grown as winter cereal and are planted between the end of October and early December to take advantage of seasonal winter rains. The winter cereal harvest starts in the southern part of the country in April, and moves north as crops gradually mature (Figure 2). The bulk of the cereal production – both in terms of area harvested and production volume – is collected in May and early June as most fertile lands are located in the north and northeast parts of the country.

In the current agricultural year, no shortages of inputs were reported. Conditions for crop development have been generally favourable across the country with timely and well distributed rains. The northern cereal producing belt of Kirkuk, Ninewa and Sulaymaniyah governorates experienced an early autumn dryness until late November 2019, but abundant precipitation starting in December significantly improved soil moisture content. In Ninewa, almost all wheat and barley areas are rainfed. In Kirkuk, about one third of wheat and two thirds of barley areas are rainfed. Elsewhere in the country, only a small share of cereals is cultivated as rainfed, and supplementary irrigation is required.

A number of localised pest outbreaks were recorded in April and May, but the estimated damages do not exceed average levels. For example, Desert Locusts were reported in eight governorates in the center and south, but government control operations limited their spread. Fires in cereal crop fields also proved a challenge; however, these incidences are not uncommon in the country and most are accidental. From 21 April to 29 May, the Civil Defense Directorate reported 207 fires, with 2,140 ha of cropland burned and 34,579 ha rescued. In comparison to the same period last year, the number of fires has decreased by approximately 17% and the hectares burned decreased by around 73%.



As of 19 May, Iraq's grain board has procured about 1.36 million tons of local wheat since the start of purchasing on 16 April, an increase from the 542,000 tons purchased by 9 May. This indicates that harvesting shifted towards more productive, northern areas. In the first half of April, winter cereal crops in the most southern governorates of Basra, Thi-Qar, Muthanna, Qadissiya, Karbala and parts of Maysan and Babil were harvested. In the second half of April, harvesting activities moved towards the central region, including Salah-al-Din and Diyala. In Ninewa governorate, which produces more than a third of total wheat and barley output combined, harvesting started in the second decade of May. Figure 3A illustrates decreasing NDVI in Ninewa as the crops matured, reaching postharvest levels later than the south. For example, harvesting activities were already completed in Wassit in the first decade of May (Figure 3B).

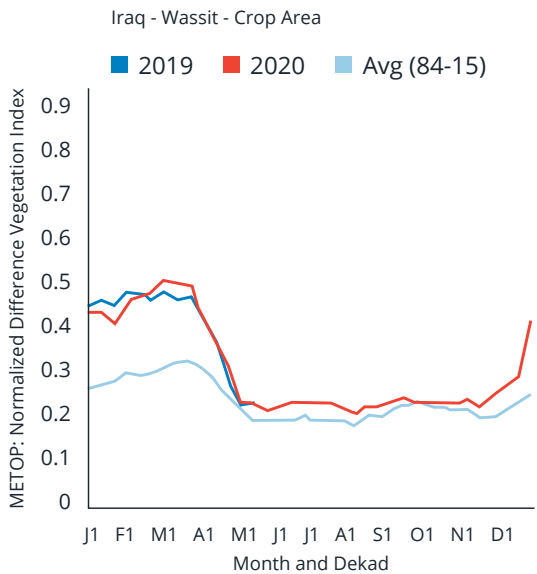
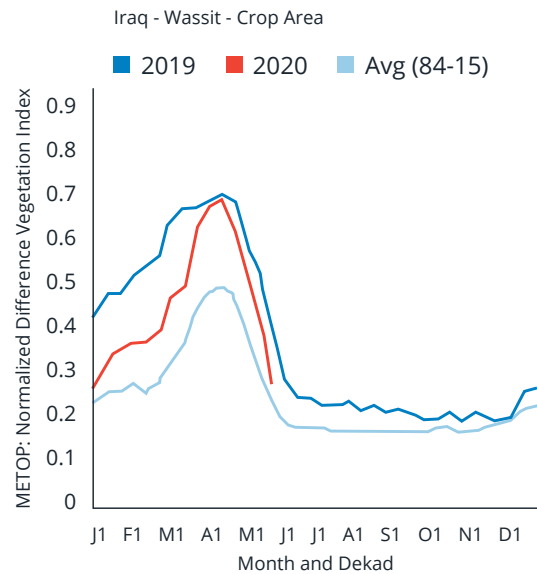
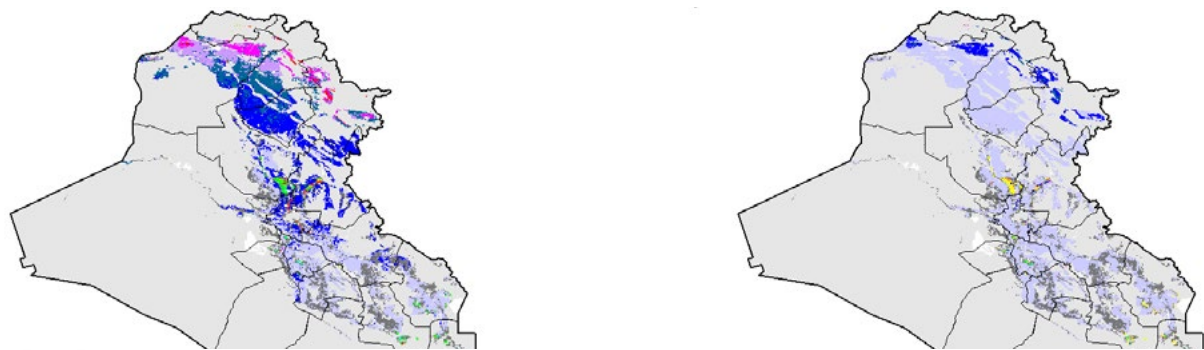


Figure 3: Normalized Difference Vegetation Index for 2020, 2019 and the long-term average (1984-2015) in a) Ninewa Governorate and b) Wassit Governorate.

Source: <http://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&code=IRQ>

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_3456

