Food and Agriculture Organization of the United Nations

World Food Programme

S P E C I A L R E P O R T

FAO/WFP CROP AND FOOD SECURITY ASSESSMENT MISSION TO THE SYRIAN ARAB REPUBLIC

5 September 2019


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ACRONYMS AND ABBREVIATIONS

ACB	Agricultural Cooperative Bank
AEZs	Agro-Ecological Zones
AI	Artificial insemination
ASI	Agricultural Stress Index
bbl/d	barrels per day
CCCM	Camp Coordination and Camp Management
CFSAM	Crop and Food Security Assessment Mission
ESCWA	Economic and Social Commission for Western Asia
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Data programme of FAO Statistics Division
FGDs	Focus Group Discussions
FSS	Food Security Sector
FMD	Foot-and-Mouth Disease
GDP	Gross Domestic Product
GOF	General Organization for Feed
GORS	General Organization for Remote Sensing
GOSM	General Organization for Seed Multiplication
GOT	General Organization of Tobacco
ha	hectare
Hoboob	General Establishment for Cereal Trade and Processing
HTR	Hard-To-Reach
ICRC	International Committee of the Red Cross
IDPs	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IS	Islamic State
kg	kilogramme
MAAR	Ministry of Agriculture and Agrarian Reform
MITCP	Ministry of Internal Trade and Consumer Protection
mm	millimetre
MWR	Ministry of Water Resources
mVAM	mobile Vulnerability Analysis and Mapping
PLW	pregnant and lactating women
rCSI	reduced Coping Strategy Index
SARC	Syrian Arab Red Crescent
SYP	Syrian Pound
t	tonne
ToT	Terms of Trade
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UN-OCHA	Office for the Coordination of Humanitarian Assistance
USD	US Dollar
WFP	World Food Programme
WoS	Whole of Syria
XB	cross-border
y-o-y	year-on-year

HIGHLIGHTS

- **Security:** Although pockets of active conflict are still prevalent, much of the country is now more secure than it has been for several years, and significant numbers of Internally Displaced Persons (IDPs) have begun to return to their homes and farms. The Ministry of Agriculture and Agrarian Reform estimates that around 800 000 IDPs, mostly farmers, returned to their areas of origin in 2018. Further return estimates by UN-OCHA place IDP returns at an additional 130 000 people in the first half of 2019.
- **Crop production:** Ample and well distributed rainfall in the 2018/19 agricultural season, coupled with improved security, resulted in a significant expansion of the area under cereals. The harvested wheat area (1.26 million hectares) was almost double that of 2018, but it is still 25 percent below the pre-crisis harvested wheat area (2002-2011 average). The harvested barley area (1.34 million hectares) increased by 73 percent from last year and is on par with the pre-crisis average. The yield of wheat, at 1.73 tonnes/hectare, was unexceptional as high temperatures in May had an adverse effect on grain filling, but the yield of barley, at 1.5 tonnes/hectare, was the highest for at least the last ten years. Wheat production is estimated at 2.2 million tonnes, up from 1.2 million in 2018, but still below the pre-crisis level of 4.1 million tonnes (2002-2011). At 2 million tonnes, up from 0.4 million tonnes in 2018, barley production exceeds pre-crisis levels.
- **Fires** in standing cereal crops are not unusual near harvest time in the country, but this year, with high temperatures and strong winds, they were much more frequent and more intense. The Government estimates that 85 000 hectares of crops were burnt this year. Many of the fires may have been started accidentally, but there is evidence to suggest that some were started maliciously.
- **Main agricultural constraints for crop production:** Farmers continue raising concerns about high production costs, high transportation costs and lack of quality inputs. Government initiatives have led to an increase in the availability of farm machinery, but overall availability remains insufficient. Some progress has been made on the rehabilitation of irrigation structures, although illegal drilling over the past years is likely to lower the underground water table in a year of average rains. High rates of wastage were reported in fruit and vegetable production, constrained by low consumer purchasing power, the inability to export and a shortage of processing factories.
- **Livestock**: Nationally, overall livestock numbers stabilized despite a slight reduction in sheep and cattle in 2018/19, as compared to the previous year. While the prevalence of common epizootic diseases remained relatively stable, the incidence of lumpy-skin disease increased in some locations in 2018/19, possibly due to high temperatures and high humidity which favoured the proliferation of the insect vectors. Artificial insemination, although widespread, has often low success rates, possibly due to poor timing and lack of breeder awareness of oestrus. Feed prices remained high, but pasture conditions improved. Prices of animals and meat generally showed an upward trend compared to 2017/18, while milk prices eased.
- **Beekeeping**, which used to be a prolific traditional industry in the country, has suffered similar problems as other sectors during the crisis. Efforts are being made by the Government and international organizations to restore the sector to increase pollination as well as provide livelihood options. However, concerns prevail about mortality resulting from the misuse of pesticides and lack of marketing channels for honey and bee products to guarantee viable livelihoods.
- **Humanitarian access:** The number of people residing in hard-to-reach locations continued to decline in 2018 and 2019. By October 2018 (latest date for which information is available), 1.2 million people were estimated to be residing in hard-to-reach areas, down from 4.1 million people in January 2017. Since April 2018, there are no longer besieged areas in the Syrian Arab Republic. Previously besieged and hard-to-reach areas represent locations that have suffered a high human and economic cost, as they were exposed to heavy fighting and widespread destruction.
- **Displacement:** Even though decreasing from around 6.2 million in 2018, IDP numbers in the Syrian Arab Republic remain staggering. The Inter-Agency Population Task Force estimated that in May 2019, 29 percent of Syrians (5.9 million people) were currently internally displaced. While returns have started taking place across central, eastern and southern parts of the country, new displacements, estimated at around 518 000 since May 2019 due to ongoing conflict, were being reported in northwest Syrian Arab Republic (Hama, Idleb and Aleppo). Displacement due to conflict continues to be one of the main drivers of food insecurity, as IDPs tend to lose most of their livelihoods and productive assets by moving.
- **Markets and trade:** Access to markets has greatly improved across the Syrian Arab Republic since the height of the conflict (2014-2016), as key east-west and north-south supply routes have become accessible and active. While internal trade is picking up, export markets remain limited/inaccessible for much of Syrian produce. Due to the increasing cost of transportation in 2018/19, worsening

consumer purchasing power and a better-than-average agricultural season, many traders are not able to sell their produce. This was particularly pronounced for typical fruit and vegetable surplus producing areas such as Lattakia and Tartous governorates, where traders reported high levels of food waste and possibly closing their food trade businesses.

- **Price trends:** Food prices have drastically increased in the Syrian Arab Republic as a result of the conflict. The main causes of the price increase have been the limited access to land and inputs, reduced local production, damage and looting of production assets and processing plants as well as the devaluation of the national currency. While prices had initially decreased since their peak in December 2016, they have been gradually increasing again over the past 12 to 14 months largely as a result of higher fuel prices and a continuous depreciation of the Syrian Pound on the informal exchange market (the SYP has depreciated by 34 percent against the US Dollar since June 2018).
- **Food consumption and coping:** Despite an initial improving trend, households adopting negative coping mechanisms to meet food shortages has slightly increased compared to the first semester of 2018 (+15 percent), without exceeding, however, the negative coping levels recorded in 2016. Households' limited purchasing power is also reflected in the nature of food coping strategies, with more than 50 percent of the households reported to rely on less preferred and less expensive food, 46 percent reduced the number of meals and 38 percent restricted the consumption of adults to prioritize children's food habits. Consuming less preferred and less expensive food is by far the most widely adopted food comping mechanism across the Syrian Arab Republic.
- **Food security trends and assistance needs:** The overall situation with respect to food security has improved compared to last year in almost all the assessed areas. The most vulnerable governorates of the country remain those where localized military operations are still ongoing, such as Aleppo, Raqqa and Deir-ez-Zor. The governorate with the highest proportion of households with poor food consumption is Raqqa. Vulnerability to food insecurity in the Syrian Arab Republic remains at worrying levels across both urban and rural areas.

INTRODUCTION

A joint FAO/WFP Crop and Food Security Mission (CFSAM) visited the Syrian Arab Republic between 8 June and 4 July 2019 to estimate crop production and to assess the country's overall food-security situation.

On arrival in the country, the international members of the CFSAM team spent three days in Damascus prior to going to the field. During that time, joined by a small number of national FAO and WFP staff, they held meetings with the Ministry of Agriculture and Agrarian Reform (MAAR) and several other relevant Ministries and State bodies of the Government of the Syrian Arab Republic. The team, consisting of national and international staff, then spent three weeks in the field collecting data and observing the agricultural and food-security situation in nine of the country's 14 governorates. In Hama Governorate the team met national staff from two governorates, Raqqa and Idleb, which it was unable to visit for security reasons, to discuss the situation in those governorates. On return to Damascus, the CFSAM team held meetings with the agricultural directors of Quneitra and Sweida, the two remaining governorates that it was unable to visit. The team also discussed its field findings and observations with the principal technical staff of MAAR. Prior to departure from the country, the Mission briefed the Minister of Agriculture and Agrarian Reform on its main findings.

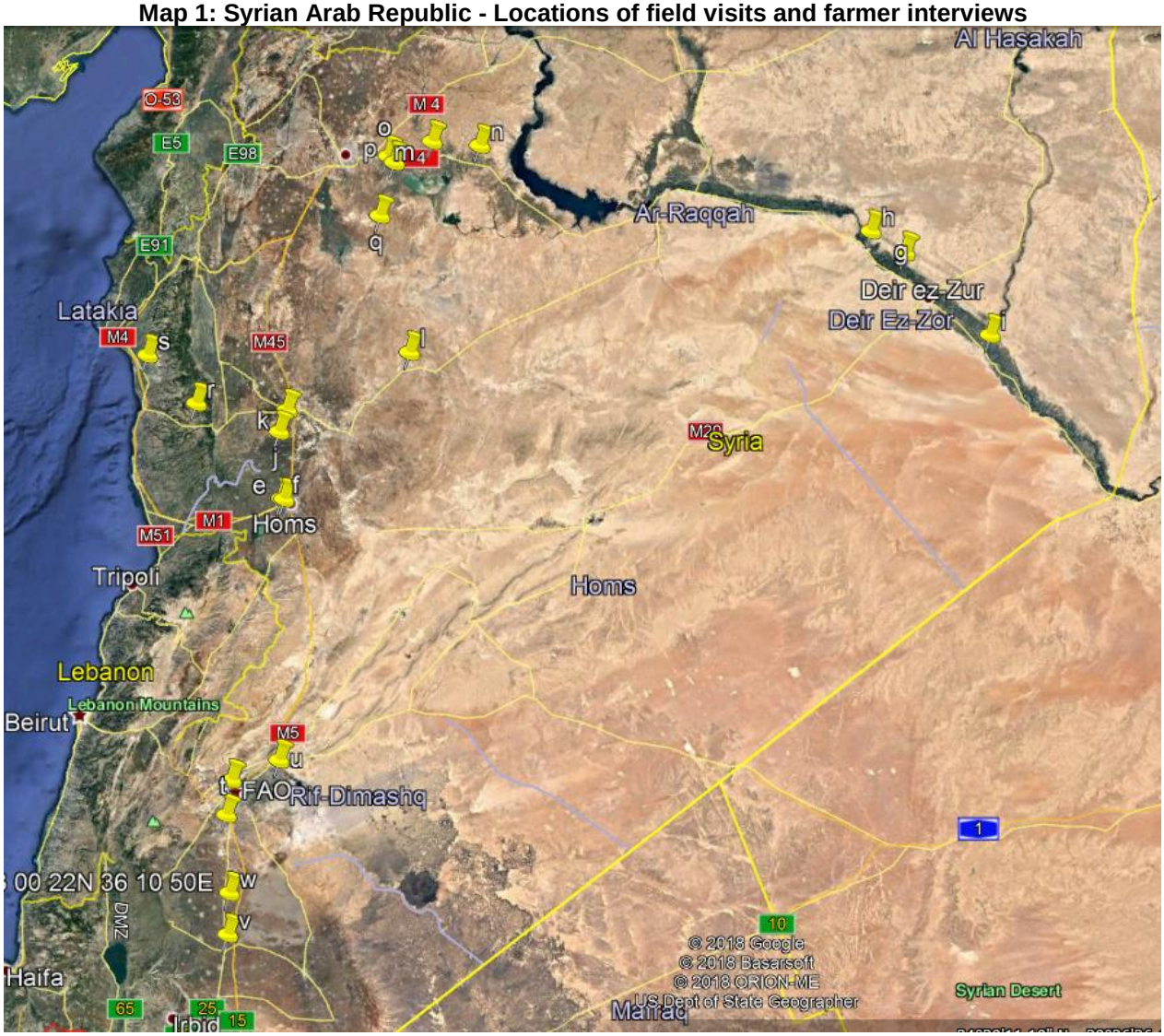
ASSESSMENT METHODOLOGY

Prior to going to the field, the Mission held meetings in Damascus with a number of line Ministries and agencies involved in aspects of agriculture, access to food, humanitarian and livelihood activities. These included MAAR, the Ministry of Water Resources (MWR), the General Establishment for Cereal Trade and Processing (Hoboob) - the State wheat-purchasing authority, the Ministry of the Environment and Local Administration, the Syrian Arab Red Crescent (SARC), the International Committee of the Red Cross (ICRC), the UN Office for the Coordination of Humanitarian Affairs (UN-OCHA), and the office of the UN High Commissioner for Refugees (UNHCR). On its return from the field the Mission had further meetings with the General Organization for Remote Sensing (GORS), the Agricultural Cooperative Bank (ACB) and the Ministry of Internal Trade and Consumer Protection (MITCP).

The Mission visited ten of the country's 14 governorates[1] - Aleppo, Hasakeh, Hama, Homs, Deir-ez-Zor, Lattakia, Tartous, Damascus, Rural Damascus and Dara'a. Raqqa and Idleb were considered too insecure to warrant a visit while Quneitra and Sweida were not covered for time reasons. Excluding Damascus which is largely urban and where the CFSAM team conducted meetings with WFP, FAO and MAAR, for the nine other governorates that it visited, the Mission members held meetings with technical staff of the agriculture directorates, farmers, livestock herders and breeders, traders, and households. They also inspected fields of standing crops, fields being harvested and cereals being threshed, and visited livestock markets and wholesale farm-produce markets to assess price trends as an indication of supply. Locations of field visits and farmer interviews are shown in Map 1.

[1] In addition to agricultural directorates in 14 governorates, Al Ghab plain, a fertile depression lying in both Hama and Idleb governorates, has its own agricultural authority. The Mission did not visit Al Ghab for security reasons but met with the agricultural director. Where possible, data for Al Ghab are presented separately.

Map 1: Syrian Arab Republic - Locations of field visits and farmer interviews



Source: CFSAM, 2019.

Figures for cereal areas planned, planted and harvested were provided by MAAR, and these figures were corroborated by the agricultural directorates in the governorates that the Mission visited. Yield estimates were also provided by MAAR and the technical staff of the agricultural directorates. These estimates were critically reviewed by the Mission in light of field observations, crop inspections and other available information. Much of this additional information emanated from interviews with farmers, and included, inter alia, planting time, seed rates, the availability and use of certified seed, fertilizers and other inputs, the use or otherwise of machinery for farm operations, and the availability and reliability of irrigation. Other information used included rainfall records and decadal satellite imagery showing rainfall patterns, rainfall anomalies from the long-term average, soil moisture stress and Agricultural Stress Index (ASI). Where deemed necessary, the yield estimates were modified by the Mission.

The Mission was assisted by a report estimating area, yield and total production of wheat and barley from the GORS using high-definition satellite imagery which is able to distinguish different crops with a reasonable level of accuracy on the basis of their spectral characteristics. Last year, the last image was taken on 15 April 2018, shortly before the arrival of unseasonably heavy and damaging rains which resulted in lower production than GORS had forecasted. This year the last satellite images were taken a month later between 6 and 12 May. These were more useful, but they missed some subsequent area losses resulting from fires which again reduced production. Nevertheless, the approach holds promise for the future as long as images can be obtained and analysed with greater frequency and right up to the time of harvest.

At the time of the Mission's visit most but not all of the barley had been harvested, as had much of the wheat. Nevertheless there was still sufficient standing crop in all governorates visited for the Mission to assess likely yields. In addition, harvested crops that had not yet been threshed were inspected. From these, the size of

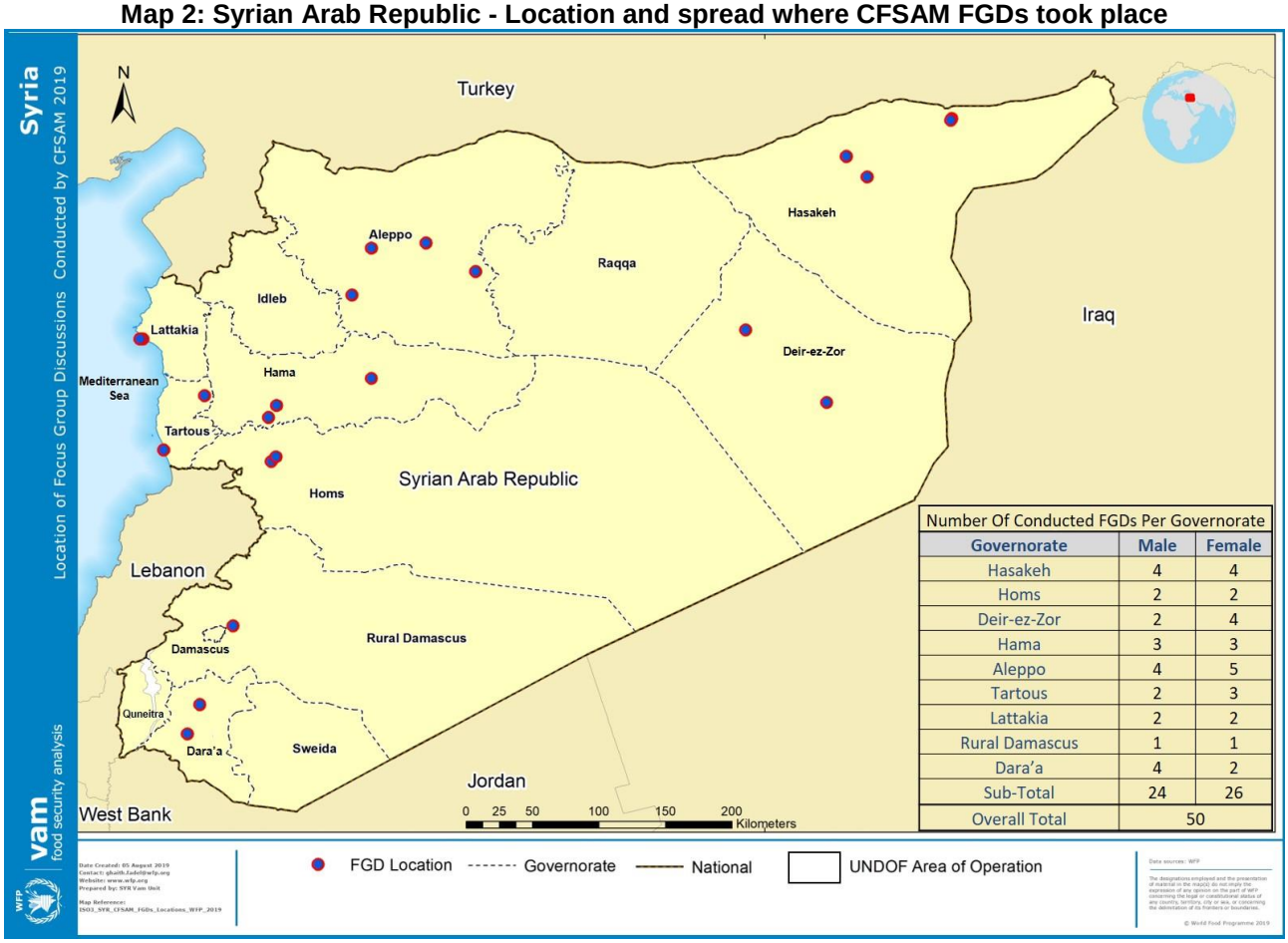
ear, the weight and number of grains per ear and the general condition of the grain provided further indications of yield levels which could then be cross-referenced with the farmers' yield estimates.

Hoboob provided an overview of the amount of grain that it had bought from the different governorates compared with previous years at the time of the Mission, while farmers and agricultural directorates were able to give an indication of the proportion of grain that had been rejected by Hoboob on the grounds of inadequate grain size, poor grain quality, or unacceptably high moisture content.

For the governorates that the Mission was unable to visit, their Agricultural Directors provided the Mission with details of their production and discussed the general crop and livestock situation in those governorates.

The Mission also conducted 50 Focus Group Discussion (FGDs) across the ten visited governorates. The 50 FGDs included 24 male FGDs and 26 female FGDs. The FGDs were conducted with randomly selected people residing in the areas the Mission visited. The FGDs were typically composed of ten people each and included residents, IDPs and returnees. Map 2 highlights the spread of the FGDs across the country.

Map 2: Syrian Arab Republic - Location and spread where CFSAM FGDs took place



Number Of Conducted FGDs Per Governorate

Governorate	Male	Female
Hasakeh	4	4
Homs	2	2
Deir-ez-Zor	2	4
Hama	3	3
Aleppo	4	5
Tartous	2	3
Lattakia	2	2
Rural Damascus	1	1
Dara'a	4	2
Sub-Total	24	26
Overall Total	50	

Source: WFP.

On its return from the field, the Mission discussed its findings, impressions and assessments with the technical staff of MAAR in order to fill information gaps and to arrive at credible yield and production estimates for each governorate.

BACKGROUND AND SOCIO-ECONOMIC CONTEXT

General

The Syrian Arab Republic is now in its ninth year of civil conflict, with estimates of the number of conflict-related casualties varying between 370 000 and 570 000. The UNHCR estimates that since 2011, some 12 million people (out of a pre-crisis population of about 22 million) were displaced from their homes. Of these, about 7 million moved from insecure to secure areas within the country as internally displaced persons (IDPs), and about 5 million left the country as refugees. According to UN-OCHA, Rural Damascus and Aleppo governorates currently host the highest number of IDPs. As of early July 2019, over 5.6 million Syrian refugees are registered in Egypt, Iraq, Jordan, Lebanon and Turkey. The number of registered refugees has been stable since early 2018. In addition, a large number of Syrians live abroad without seeking refugee registration. Amongst the refugee population, mostly in camps in neighbouring countries, UNHCR estimates that there have been about 1 million births since 2011, although many births have not been registered.

Control of different territories of the country has fluctuated since 2011. As of mid-2019, Syrian Government forces were in control of southern, central and western parts of the country, corresponding to about two-thirds of the country's area.

The country's economy has suffered hugely from the conflict. Roads and general infrastructure have been damaged or destroyed, businesses have closed down and the labour force has been depleted. In the first years of the conflict in 2012 and 2013, the economy contracted by over 20 percent, and the decline continued until 2017 when the GDP growth registered its first positive growth rate of 1.9 percent. A stronger GDP growth of 6.3 percent is forecast for 2019 (up from 5 percent in 2018) as lack of finances and depleted workforce continue to hamper still modest reconstruction efforts. Unemployment levels remain high at above 50 percent, and low salaries, particularly those of civil servants, erode purchasing power and are not deemed sufficient to cover the cost of living. With the Government's progress over the last two years in re-gaining control of areas that were previously out of its control there are signs that the economy is beginning to stabilize albeit at a low level, and in certain areas there are signs of economic recovery.

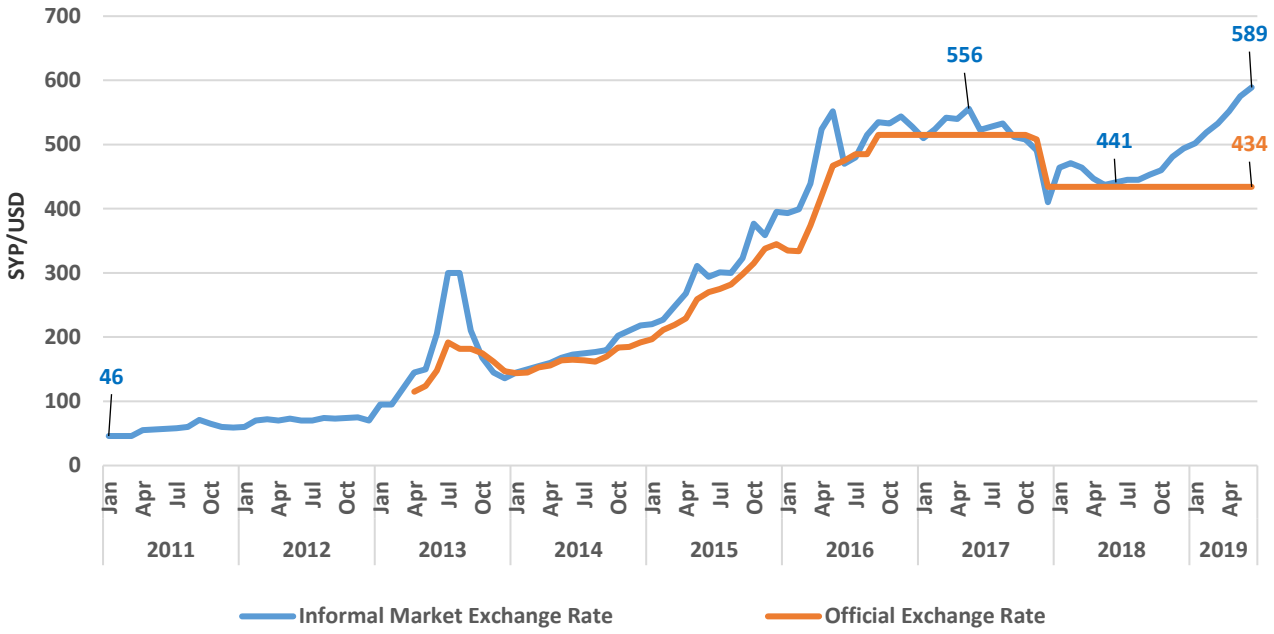
International sanctions imposed on the Syrian Arab Republic by a number of countries and regulatory entities include trade restrictions, travel bans, asset freezes of certain officials, as well as a ban on investments.[2] Trade restrictions in particular target dual-use items (e.g. fertilizers or chemical components used in the production of fertilizers), key equipment and technology for the oil and gas industry, as well as certain telecom equipment and luxury goods. While trade is sanctioned in only a limited number of goods, a ban on imports of crude oil and petroleum products from the Syrian Arab Republic has curtailed export earnings, resulting in shortages on the domestic market.

Syrian Pound depreciation on the informal market

The official exchange rate between the Syrian Pound (SYP) and the US Dollar (USD) has remained unchanged at SYP 434 since late 2017. Meanwhile, the national average informal market exchange rate has continued to increase over the past 12 months. The recent increase represents the tenth consecutive month of increases. In June 2019, the national average informal exchange rate was SYP 589 per USD, up 4 percent month-on-month, while since June 2018, the informal market exchange rate increased by 34 percent. In other words, the Syrian Pound on the informal market depreciated by a third over 12 months. This is the highest level recorded in the Syrian Arab Republic since the start of the crisis as the Syrian Pound has now depreciated by 1 180 percent compared to the USD (Figure 1). The increasing trend in the informal market exchange rate has been recorded across all governorates (Table 1).

[2] https://complyadvantage.com/knowledgebase/sanctions-2/sanctioned-countries/syria/
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02012R0036-20170321&from=EN

Figure 1: Syrian Arab Republic - Comparing official and informal exchange rates (USD 1 to SYP)



Source: WFP.

Table 1: Syrian Arab Republic - Informal market exchange rate, USD to SYP

Governorate	June 2019	Percent change since May 2019	Percent change since June 2018
Aleppo	581	2	32
Damascus	589	3	33
Dara'a	589	3	33
Deir-ez-Zor	580	2	n.a.
Hama	596	3	37
Hasakeh	587	3	34
Homs	595	3	37
Idleb	585	-7	32
Lattakia	600	5	36
Quneitra	588	2	33
Raqqa	576	1	30
Rural Damascus	590	3	34
Sweida	591	5	35
Tartous	598	4	35
National average	**589**	**2**	**34**
Official rate	**434**	**0**	**0**

Source: WFP.

Reasons behind the continued devaluation of the SYP vs. USD are multi-fold and primarily thought to relate to low USD reserves in-country and increased sanctions on the Syrian Arab Republic's key trading partners, thereby alimenting volatility and uncertainty on the country's financial market. Currently, there is uncertainty surrounding the country's fuel sources as the Syrian Arab Republic is having to limit its reliance on Iranian oil due to the tightening of sanctions. The Syrian Arab Republic is now resorting to importing fuel from the international market, at least in the short-term, while looking for new stable sources of fuel.

The weakening exchange rate has had a direct effect on the price of imported goods such as rice, cooking oil and imported wheat, as well as a knock-on effect on the price of local goods such as vegetables and pulses.

The Economist Intelligence Unit in June 2019 predicted that inflation would ease in 2020-2023 and that during that period there would be a gradual strengthening of the Syrian Pound.

Agriculture

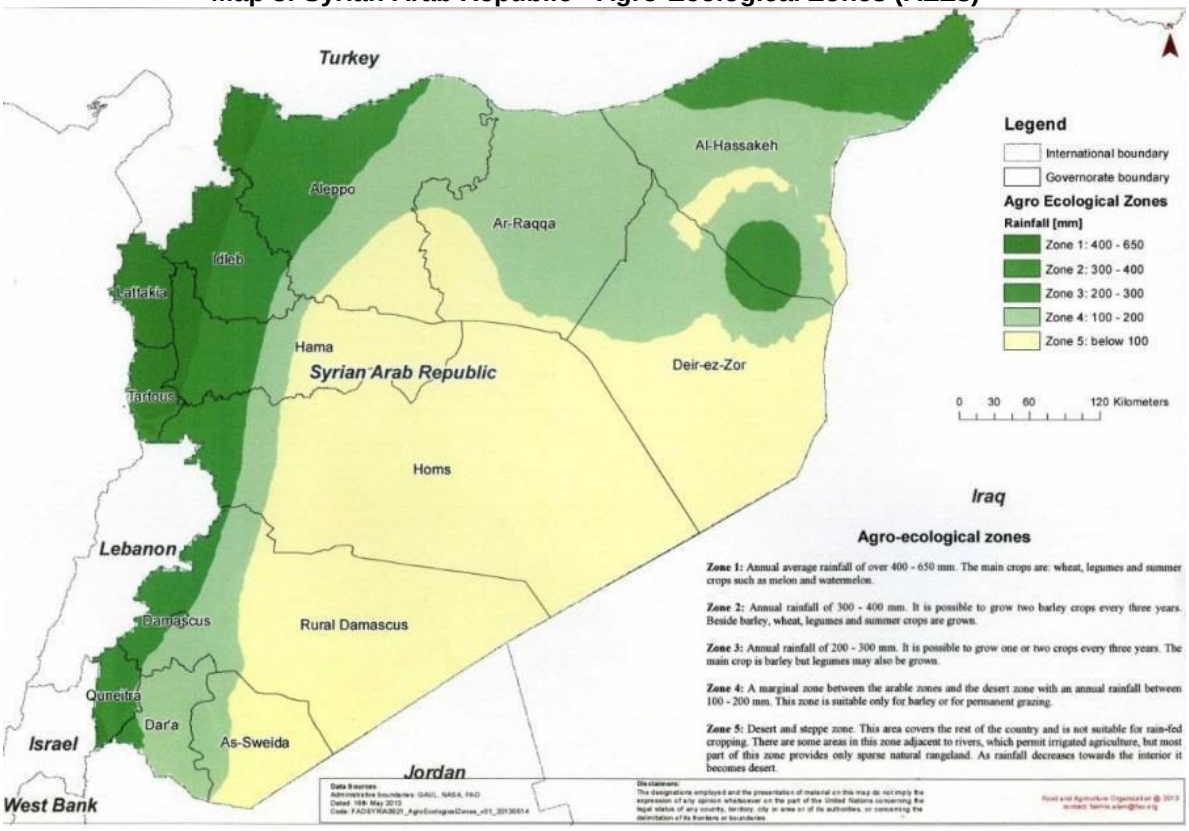
Like all sectors of the Syrian Arab Republic's economy, despite being one of the most resilient pillars of the economy, agriculture has suffered serious setbacks since the beginning of the current crisis in 2011. In 2010, agriculture accounted for 18 percent of the country's GDP and 23 percent of its exports, and it involved 17 percent of its labour force in production. Some 46 percent of Syrians (10 million, including children and others not actually working in agriculture) were rural dwellers and, of those, about 80 percent were sustained by income from agricultural work.

In 2011, the Syrian Arab Republic's population was about 23 million. From then until 2018 the population declined as a result of emigration and mortality, and the labour force participation rate is estimated to have fallen from 43 to 41 percent. Nevertheless, because of the even greater reductions in productivity in other sectors of the economy, MAAR estimated that by 2018 agriculture accounted for about 60 percent of the country's greatly reduced GDP, compared with 17 percent in 2010. On the other hand, the International Labour Organization (ILO) of the UN estimated that 23 percent of the country's population was engaged in agricultural production at the end of 2017. Clearly, these figures should be regarded not so much as informed approximations, but rather as indicative of the difficulty of collecting such data in a continuing conflict situation, However, with the gradual return, over the last two years, of IDPs to their land from secure areas where they were unable to farm, it seems reasonable to assume that the agriculturally productive population has begun to increase from its 2017/18 low.

The Syrian Arab Republic is divided into the following five Agro-Ecological Zones (AEZs) based on the level of annual precipitation received, as shown in Map 3:

- Zone I covers some 2.7 million hectares and has an average annual rainfall of 400-650 mm.
- Zone II covers about 2.5 million hectares and has an average annual rainfall of 300-400 mm.
- Zone III covers about 1.3 million hectares and has an average annual rainfall of approximately 200-300 mm.
- Zone IV is agriculturally marginal, with a total area of around 1.8 million hectares and an average annual rainfall of 100-200 mm.
- Zone V is the Badia or steppe; it has a total area of approximately 8.3 million hectares and an average annual rainfall of less than 100 mm.

Map 3: Syrian Arab Republic - Agro-Ecological Zones (AEZs)



Source: FAO.

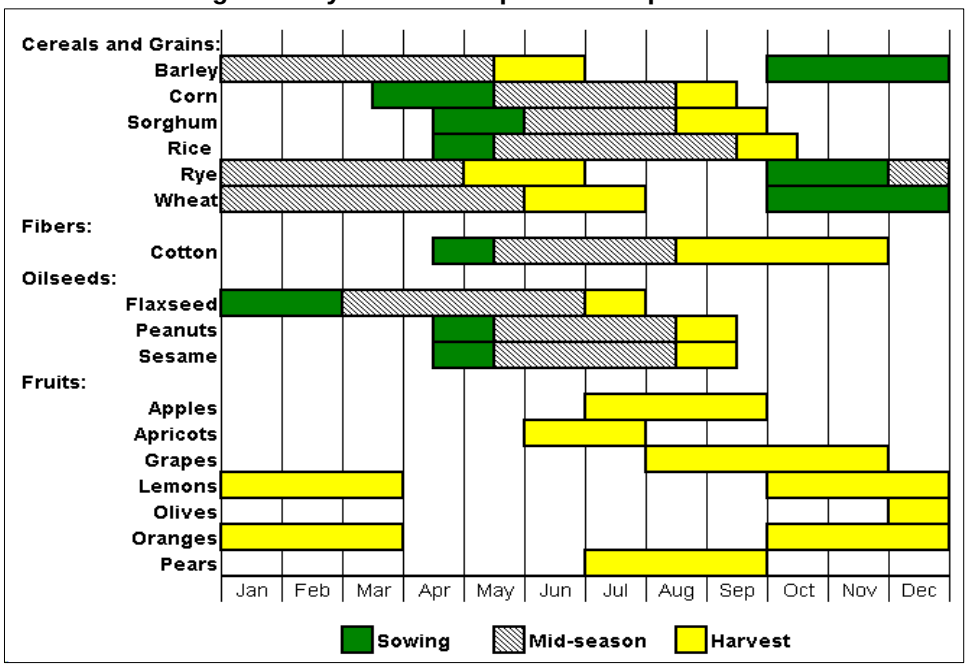
From the 1960s until the mid-2000s, the State also played a vital role in the production of strategic crops such as wheat, sugar beet, cotton and tobacco, and livestock products, including milk, meat, poultry and eggs, these being produced on a small number of large State-owned and State-run farms. Strategic crops were also produced by private farms according to the prevailing agricultural plan. Over the years, however, the State withdrew gradually from its productive role. By 2004/05, the State had relinquished its management of most of its farms and had allocated parcels of ex-State-farm land to the workers for their use according to a set of social and technical criteria. However, the legal title to the land of the ex-State farms remains with the State. The Government, in cooperation with agricultural departments in Governorates, continues to plan planted areas of strategic crops based on the perceived underground water availability.

Prior to 2011, the country was a significant exporter of agricultural produce, including cotton, sugar, tomatoes, potatoes, oranges, apples, olive oil, sheep, cattle, poultry meat and hens' eggs. In 2010, for instance, the Syrian Arab Republic exported 627 000 tonnes of tomatoes, more than 100 000 tonnes of potatoes, and more than 150 000 tonnes of refined sugar. Permanent crops (olives, fruit trees, etc.) accounted for about 5.7 percent of the country's agricultural land. Livestock is discussed separately below.

Although there are now clear indications of recovery following the return of many IDPs to their land, the continuing crisis or crisis aftermath has devastated the previously flourishing agricultural sector by the loss of cultivated land, the movement of farmers away from insecure areas, the destruction of farm machinery and irrigation structures, shortages and high costs of farm inputs and fuel, a severely damaged infrastructure and compromised power supplies. The situation has been further aggravated by international trade sanctions. The damage is difficult to quantify under the present circumstances, but already by 2013 MAAR estimated that the annual revenue lost as a result of the virtual extinction of agricultural exports due to the crisis was SYP 72 billion (about USD 0.73 billion at the exchange rate prevailing in June 2013). More recently, ESCWA (2016) estimated the loss of capital stock in agriculture between 2011 and 2015 at USD 6 billion, or 6.7 percent of the country's total capital stock losses over that period.

Figure 2 shows the calendar for the main crops. Wheat and barley are the most important winter grains.

Figure 2: Syrian Arab Republic - Crop calendar



Source: FAO in Emergencies:
http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/176035/

CEREAL PRODUCTION

Cereal area, 2018/19

Increased security allowing for the return of many IDPs to their land, coupled with the promising start to the 2018/19 season and the favourable rainfall thereafter, encouraged farmers to increase their areas planted to cereals. The areas planted to wheat and barley increased by 23 percent compared with 2017/18. However, the favourable rainfall of 2018/19 resulted in a much higher percentage of the planted area being harvested. In 2018 only 59 percent of the planted area of wheat was harvested while in 2019, with favourable rainfall, 93 percent was harvested. The harvested area of wheat in 2019 was consequently almost double that of 2018. Similarly with barley, only 65 percent of the planted area was harvested in 2018, compared with 92 percent in 2019; the result was a 73 percent increase in harvested area of barley in 2019. Cereal areas are shown in Tables 2 and 3.

Field fires

Fires in cereal crops are not uncommon in the country, and most are accidental. This year, however, with high temperatures and strong winds in May and early June, fires were much more frequent and extensive. The Government estimates that about 85 000 hectares of crops were burnt, mostly wheat and barley. Much of the loss was in the main cereal-producing areas in the north of the country. Hasakeh reported the loss to fire of 14 000 hectares of barley and 11 000 hectares of wheat, while Raqqa lost 9 000 hectares of barley and 2 000 hectares of wheat. Many of the fires were thought to have been started accidentally, but there was also evidence to suggest that some were started maliciously, particularly in the areas with still-active conflict. While the overall area burnt is not large from the national perspective, individual farmers whose crops were burnt lost most if not all their livelihoods and are likely to require assistance for the next season. There is an insurance scheme in place in the country, which can be triggered by natural disasters, but it does not cover field fires.

Table 2: Syrian Arab Republic - Wheat areas, 2017/18 and 2018/19 ('000 hectares)

Governorate	Irrigated				Rainfed				Total			
	Planted		Harvested		Planted		Harvested		Planted		Harvested	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
Rural Damascus	7	14	7	14	1	2	0.2	1	8	16	7	15
Dara'a	6	8	6	8	49	67	17	67	55	76	23	75
Sweida	0.2	0	0.2	0	27	32	11	32	27	32	11	32
Quneitra	0.2	1	0.2	1	1	6	0.5	3	1	7	0.7	3
Homs	8	8	8	8	26	28	20	28	34	36	28	35
Hama	14	17	7	14	10	10	3	8	23	27	11	22
Al Ghab	47	51	47	35	3	3	3	3	49	54	49	39
Tartous	4	4	4	4	8	7	8	7	11	11	11	11
Lattakia					3	2	3	2	3	2	3	2
Idleb	25	25	13	19	44	41	28	30	68	66	41	49
Aleppo	109	136	92	136	165	164	148	164	274	300	240	300
Raqqa	80	150	80	140	25	56	0	54	105	206	80	194
Hasakeh	92	130	92	126	321	337	20	315	413	467	112	440
Deir-ez-Zor	25	47	25	44					25	47	25	44
TOTAL	**416**	**590**	**381**	**548**	**681**	**755**	**261**	**712**	**1 097**	**1 345**	**642**	**1 260**

Source: MAAR and CFSAMs 2018 and 2019.

Table 3: Syrian Arab Republic - Barley areas, 2017/18 and 2018/19 ('000 hectares)

Governorate	Irrigated				Rainfed				Total			
	Planted		Harvested		Planted		Harvested		Planted		Harvested	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
Rural Damascus	1	1	1	1	8	9	5	4	9	11	6	6
Dara'a					21	25	4	25	21	25	3.8	25
Sweida					17	19	4	19	17	19	4	19
Quneitra					1	3	1	2	1	3	0.6	2
Homs	0.4	0.4	0.4	0.4	36	39	4	36	37	39	4	36
Hama	6	9	6	8	69	127	26	69	75	136	29	78
Al Ghab	5	3	5	3	0.8	0.3	1	0.2	5	3	5	3
Tartous	0.03	0.03	0.03	0.03	0.5	0.4	1	0.4	1	0.5	1	0.5
Lattakia					0.3	0.3		0.3		0.3		0.3
Idleb					68	65	28	55	68	65	28	55
Aleppo	10	4	10	4	313	384	202	380	322	388	211	384
Raqqa	25	17	25	17	150	300		290	175	317	25	307
Hasakeh	17	18	17	18	427	417	427	390	444	435	444	408
Deir-ez-Zor	10	14	10	14					10	14	10	14
TOTAL	**74**	**67**	**71**	**65**	**1 113**	**1 389**	**701**	**1 271**	**1 186**	**1 456**	**772**	**1 336**

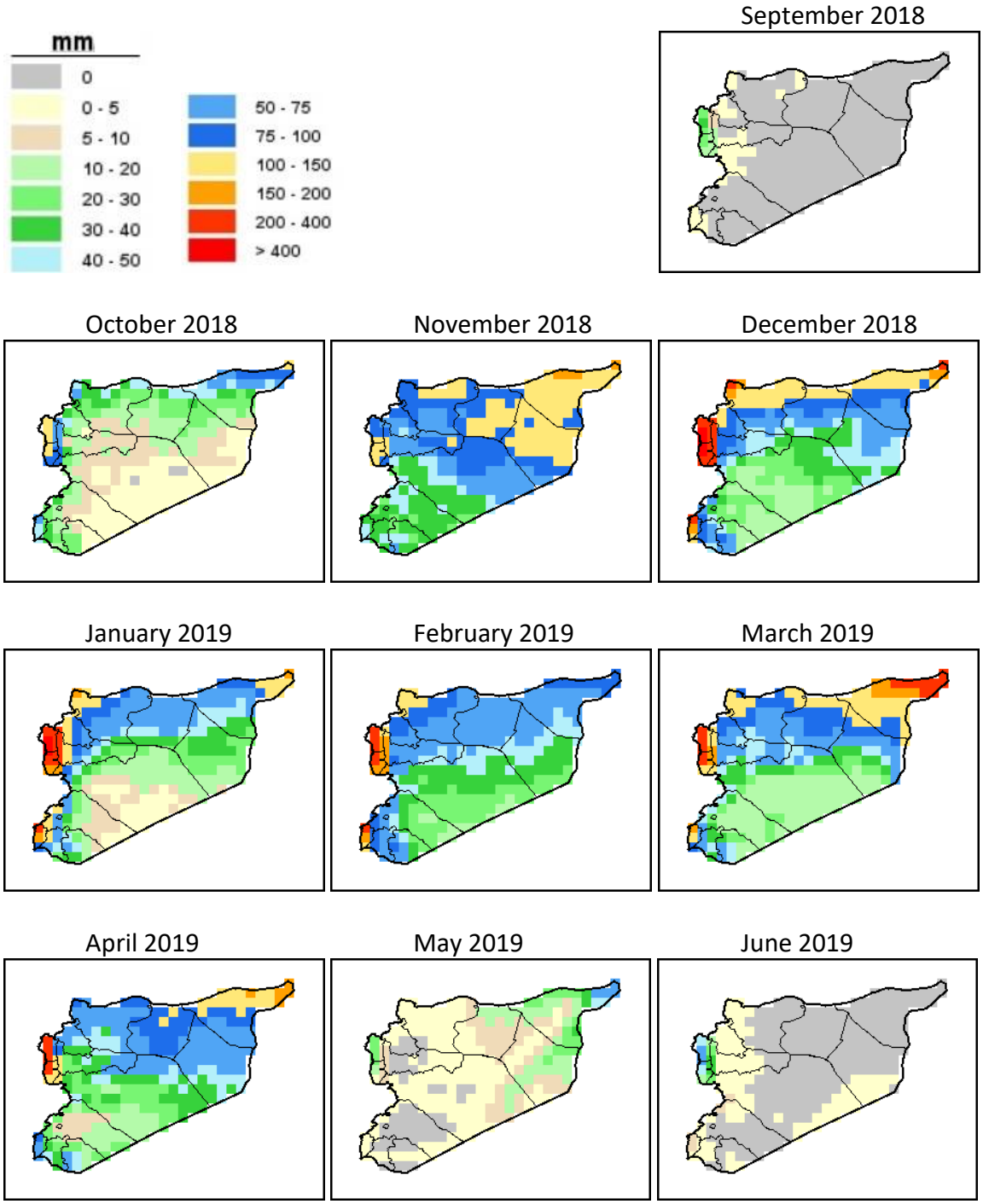
Source: MAAR and CFSAMs 2018 and 2019.

Factors affecting yields

Weather

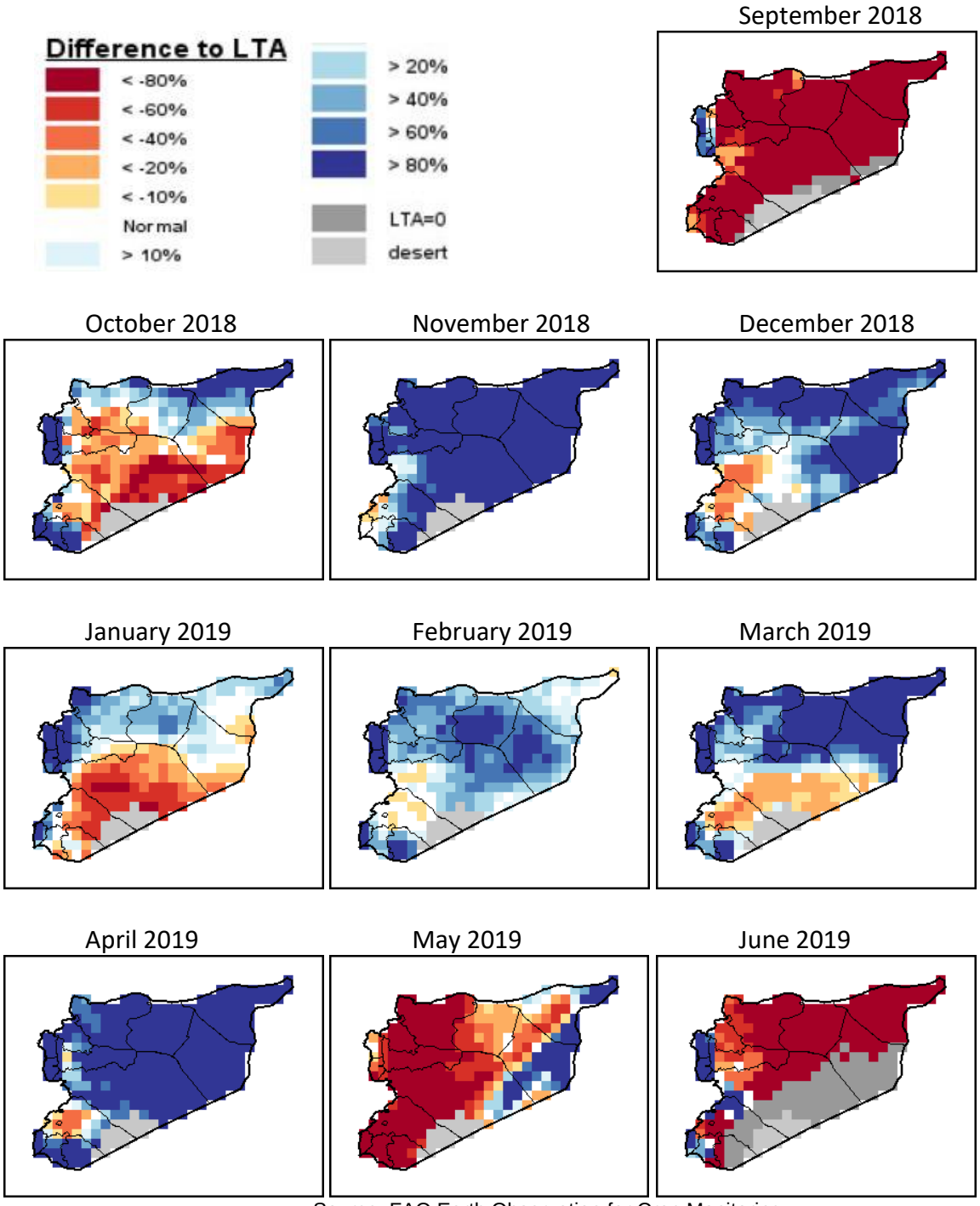
Rainfall during the 2018/19 cropping season was markedly better than in recent years in terms of both amount and distribution. For example, Tartous, a high-rainfall governorate with a yearly average of about 900 mm of rain, recorded 2 200 mm over the season. The rains started on time in most locations and continued in a generally favourable manner over most of the country. However, the plentiful rains caused some flooding in parts of Al Ghab where 2 400 hectares of wheat were completely flooded and 3 500 hectares partially flooded at the end of January. In Raqqa, wheat was flooded but it was estimated that the flooding affected less than 5 percent of the crop. In Quneitra flooding was reported on 150 ha of wheat. Idleb also reported flooding in the west of the governorate. In some parts of the country, the heavy rains prevented the timely sowing of cereals. For example, farmers in a village in Hasakeh located on heavy clay soils postponed their sowing of wheat and barley until February because of the difficulty of land preparation in wet conditions. Figures 3 to 5 illustrate the monthly rainfall, the monthly rainfall anomaly and the agricultural stress index across the country from September 2018 to June 2019.

Figure 3: Syrian Arab Republic - Indicative monthly rainfall, September 2018-June 2019



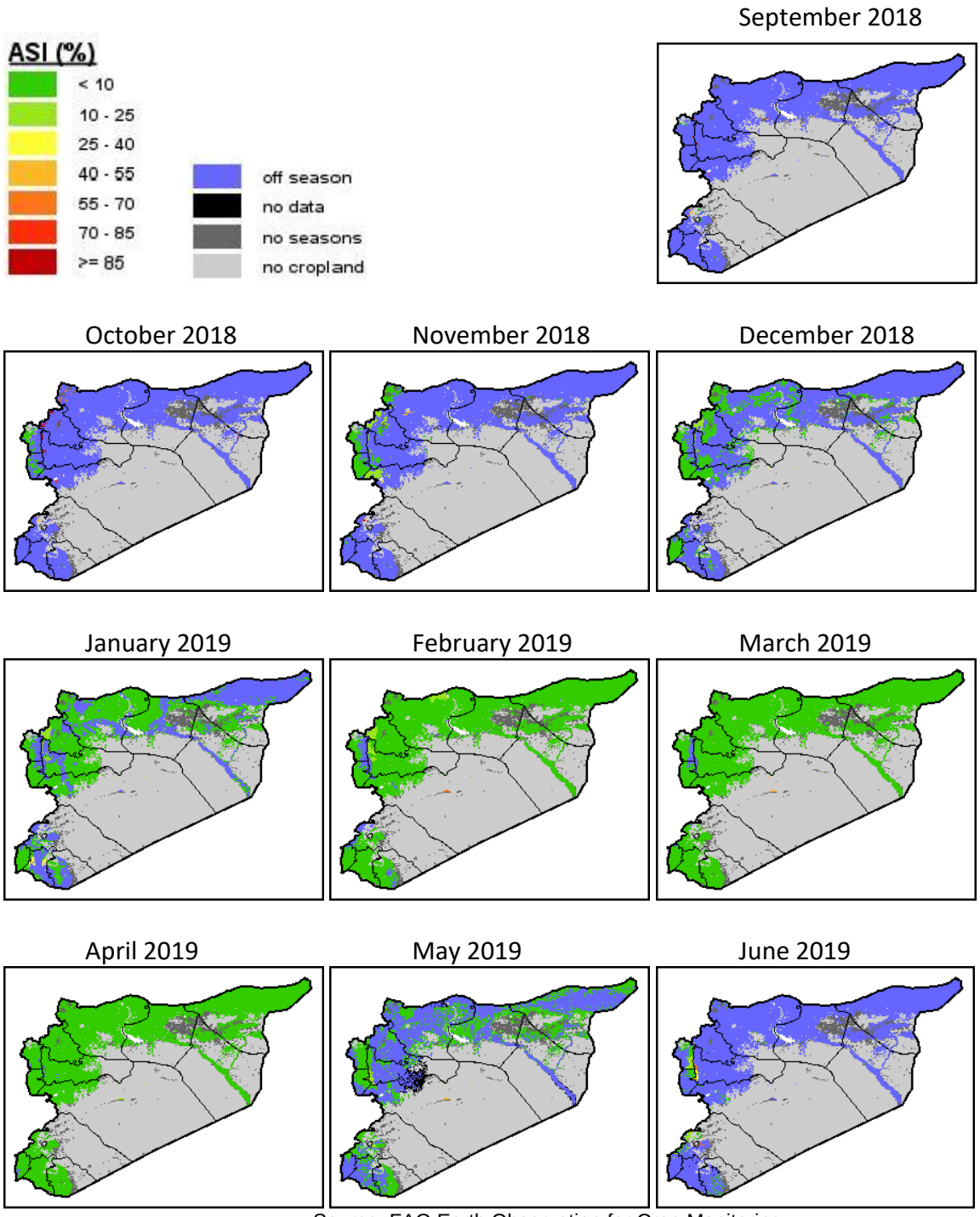
Source: FAO Earth Observation for Crop Monitoring:
http://www.fao.org/giews/earthobservation/index.jsp?lang=en

Figure 4: Syrian Arab Republic - Difference between 2018/19 monthly rainfall and Long-Term Average (LTA)



Source: FAO Earth Observation for Crop Monitoring:
http://www.fao.org/giews/earthobservation/index.jsp?lang=en

Figure 5: Syrian Arab Republic - Agricultural Stress Index (ASI) during middle decade of each month, September 2018-June 2019



Source: FAO Earth Observation for Crop Monitoring:
http://www.fao.org/giews/earthobservation/index.jsp?lang=en

High winds and hail were experienced in February and March, especially near the coast where significant damage was caused to vegetable polytunnels and to fruit trees.

In May, unusually high temperatures compromised cereal grain-filling and contributed to yield reduction. Wheat was more affected than barley as it is harvested later, and barley, by May, was already reaching maturity. The high temperatures, often accompanied by strong winds, also exacerbated the destruction of cereal areas by fire. Humid conditions prior to harvesting encouraged the spread of yellow rust in wheat, soft varieties being more affected than durum varieties. High humidity also had a damaging effect on cumin and certain fruits.

Irrigation

According to MWR, 1.6 million hectares of the country's 4.6 million hectares of farmland are irrigable. Of this, the State-administered public irrigation area amounts to 488 000 hectares, with the remainder accounted for by private farmers who, individually or in groups, pump water from lakes, reservoirs, rivers or wells. About 45 percent of the public irrigation network is located in the Euphrates valley, with the remaining 55 percent located in the Orontes valley, in Dara'a Governorate and along the coast.

Before 2011, approximately 1.5 million hectares of agricultural land were normally irrigated (more than 90 percent of the irrigable total). The main irrigated crops were wheat, cotton, potatoes, sugar beet, vegetables and citrus. Starting in 2011, civil conflict brought about the destruction of irrigation structures and pumping stations, frequent and unpredictable electricity outages and increased fuel prices, which in turn brought about a substantial reduction in the area under irrigation. The area under irrigated industrial crops such as cotton and sugar beet which require processing factories, many of which were damaged or destroyed, also declined drastically. The principal crops using irrigation water now are wheat and vegetables.

The MWR, estimates that the country's current annual water requirement, including agricultural, industrial and domestic use, is about 12.9 billion cubic metres (= 12.9 km^3), of which between 86 and 89 percent is used for agriculture. By contrast, it was estimated in 2003 (FAO Aquastat Country Profile) that the country used 16.7 billion cubic metres annually and that a similar proportion, 88 percent, was used for agricultural purposes. It may be that, with the decline in irrigated crop production since 2011, the proportion of water used for agriculture is now considerably less than the quoted 86-89 percent and that these figures continue to be assumed from pre-crisis estimates. Nevertheless, despite the reduction in irrigated area, the country's water deficit is thought to stand at about 10 percent. Reasons for this deficit include erratic weather patterns related to climate change, which has seen, until this year, the lowering of water levels in reservoirs and rivers, inefficient irrigation practices, and inequitable shares of water from international rivers, especially the Euphrates. The most notable river that flows entirely within the Syrian Arab Republic's territory is the Barada River, which flows through Damascus, but for many years, its level has mostly been low. Other major rivers are shared with neighbouring countries - the Euphrates with Turkey and Iraq, the Tigris with Turkey, the Orontes with Lebanon and Turkey, and the Yarmouk with Jordan. According to a 1989 agreement between Iraq and the Syrian Arab Republic, the Syrian Arab Republic was granted 42 percent of the Euphrates inflow from Turkey, which at that time averaged about 500 cubic metres per second. Since then, Turkey has constructed several dams upstream with the result that in recent years the inflow to the Syrian Arab Republic has averaged less than 300 cubic metres per second and is often reduced to a mere trickle. The average figure of less than 300 cubic metres per second masks some much lower flows in dry years, considering that in 2017 the flow was almost 400 cubic metres per second. This year, however, the good rains and snow-melt from Anatolia resulted in a fairly normal flow through the Syrian Arab Republic. Unfortunately, because the pumping stations in Deir-ez-Zor governorates are no longer operational, full advantage could not be taken of the flow.

Private irrigation depends largely on groundwater from wells, about half of which are authorized and half unauthorized. The rate of unauthorized drilling of wells accelerated in the first two or three years of the crisis in response to the destruction of, or damage to, much of the public irrigation network. Pumping groundwater from so many wells is thought to be lowering the water table in many governorates (though few measurements appear to have been taken). The Mission visited a village in Rural Damascus where there were approximately 500 wells, each farmer having his own well. By the end of October 2018, the water table in the village had dropped to a depth of 80 metres. With the plentiful rains of the 2018/19 winter cropping season the water table rose to a depth of only 20 metres, but by the end of June 2019 it had already dropped back to 40 metres. Increasing salinity of well water has been reported in Deir-ez-Zor, Hasakeh and parts of the coastal governorates as a result of over-exploitation of the groundwater resource. The Ministry of the Environment also suspects that irrigation water may have been polluted by oil and noxious chemicals in areas such as Deir-ez-Zor and Raqqa where IS refined oil using crude and environmentally destructive methods.

This year's good rainfall not only replenished dams and wells; it also allowed farmers to irrigate their crops less frequently. For farmers pumping water from their own wells this meant a significant saving in fuel and a consequent reduction in the cost of production. In many parts of the principal wheat-producing governorates it was common for a farmer, who would normally irrigate his crop four or five times, to apply a single irrigation, mostly in April, and some farmers applied none.

Technically, farmers are obliged to pay for irrigation from the public networks. In Aleppo the fee, levied by the General Organization for Land Reclamation, is SYP 10 000 per hectare per year. The Mission met one farmer (and undoubtedly there are many others similarly affected) who farms 3 hectares on nominally irrigated land which has not received any irrigation for nine years. He was presented with a bill for SYP 270 000 which he refused to pay. As a result he was blacklisted by the Director of Financial Affairs, and the Agricultural

Cooperative Bank insisted that he pay before he would be allowed to submit his barley to General Organisation for Feed (GOF). On his continued refusal to pay for a service that he had not received, the ban on submitting his barley to GOF was waived, but only for one year.

Inputs

Seed

Despite the very poor cereal harvest in 2018 and the consequent serious concerns about a possible shortage of seed for the following season, farmers were able to access enough seed to plant an expanded area of wheat and barley in 2018/19 (see Cereal area 2018/19 above). The various sources of seed included a very limited supply directly from General Organization for Seed Multiplication (GOSM), grain purchased by GOSM from Hoboob to be used as seed, farmers' own seed retained from the 2018 harvest, seed borrowed or purchased from neighbours, and seed purchased on the open market.

In light of the poor 2017/18 harvest, FAO and WFP in coordination with MAAR provided wheat seed in the fourth quarter of 2018 to 14 450 of the worst affected smallholder famers in the country. This initiative aimed to minimise the effects of a bad harvest on some of the poorest farmers in the Syrian Arab Republic as well as enabling them to cultivate wheat in the 2018/19 agricultural season. The intervention is an example of a successful MAAR-FAO-WFP collaboration in the Syrian Arab Republic. MAAR and FAO provided a total of 2 890 tonnes of high-yielding wheat seed (200 kg per farmer) and trained trainers on good cultivation practices. WFP ensured the seeds were transported to the required destinations. WFP also provided conditional in-kind food security assistance for six months consisting of a total of 4 912 tonnes of food to the farmers who received the seeds. WFP's food assistance acted as seed protection insurance protecting the crop until the harvest period. The selected farmers for the assistance were located in five of the most affected seed-producing governorates in the Syrian Arab Republic (Hasakeh, Raqqa, Deir-ez-Zor, Aleppo and Hama – Al Ghab Region). In order to be eligible farmers had to fulfil the following criteria:

- Be affected by the drought and/or heavy rains during the 2017/18 cropping season.
- Be categorised a poor/destitute resident in the area targeted by the intervention.
- Be a smallholder farmer i.e. have access to up to 1 hectare of arable land.
- Have no other source of income for their livelihood.
- At least 30 percent of the targeted beneficiaries to be from the 20-35 age group, thereby ensuring empowerment of young people and providing them with skills to strengthen their involvement in farming.
- Women-headed households to be prioritized for the assistance.
- Returnees and IDPs to be prioritized for the assistance.

The country requires about 400 000 tonnes of wheat seed and 300 000 tonnes of barley seed annually to satisfy its planned cereal area at seeding rates of 220 kg/hectare for wheat and 170 kg/hectare for barley. In the past, GOSM used to be able to provide a substantial proportion of this requirement produced by contracted out-growers, but its activities were seriously curtailed during the crisis. GOSM's capacity was affected by the loss of physical facilities and skilled staff: only 2 of 13 seed-processing centres currently operate, while professional staff are down by 50 percent, and experienced out-growers are down by 70 percent from pre-crisis levels. Its headquarters in Aleppo were occupied by armed anti-Government forces, its seed-cleaning and screening facilities were damaged or destroyed, and it lost most of its warehouses. Consequently, for the 2018/19 season, GOSM was able to distribute only 41 000 tonnes of wheat seed and 6 500 tonnes of barley seed that had been produced by its out-growers. To supplement this limited supply, GOSM resorted to purchasing wheat grain from Hoboob and distributing it as seed to farmers. Several farmers complained that the seed they received from GOSM was contaminated by barley seed and sometimes by wild oats, but GOSM maintains that the seed it provided was free of contamination and that farmers' complaints were based on finding in their wheat crop volunteer barley from their previous year's harvest. Whatever the cause of the reported contamination, GOSM has substantially increased its capacity over the last two years. In 2017 it had 1 500 out-growers producing wheat seed for the 2018/19 cropping season, but by 2018 it had doubled that number to 3 000 with an expected production of 75 000 tonnes of seed for the coming 2019/20 season. Similarly, the number of barley-seed out-growers increased from 300 in 2017 to 700 in 2018, with the expectation of 10 000 tonnes of seed. By late June 2019, GOSM had already received 8 000 tonnes of barley seed. GOSM's seed-screening capacity has also improved with the acquisition of four mobile screening facilities, each with a capacity of 5 tonnes per hour. Obviously much more improvement is required in terms of numbers of out-growers and seed-screening capacity. Seventy-five thousand tonnes of wheat seed, while a huge improvement on the previous year's 41 000 tonnes, still represents less than 20 percent of the country's annual requirement; and a screening capacity of 20 tonnes per hour can only be regarded as a welcome start to full recovery.

In order to compensate for the perceived unreliability of seed from GOSM or purchased in the market and of harvested grain used as seed, farmers tend to use very high seed rates. GOSM recommends a seed rate of 250 kg/hectare for the popular variety 'Sham 3' under irrigation, but many farmers report using seed rates of between 400 and 500 kg/hectare.

Fertilizers

The use of fertilizers has declined significantly since 2011 because of the low availability and high prices occasioned by conflict. Agricultural Directorates in most governorates estimate that only between 40 and 50 percent of their farmers apply fertilizers to their wheat crop (but based on the interviews with the farmers that figure may be an over-estimation), and that those who do use fertilizers apply them at low rates. Barley crops rarely receive fertilizer. In Homs, where farmers used to apply 300 kg urea per hectare to their wheat in two applications, a single application of 120-200 kg/hectare in February or March is now usual. In Deir-ez-Zor, those farmers who use fertilizers for their wheat generally apply urea and superphosphate at a rate of 150 kg/hectare.

Nitrogenous fertilizers are not allowed to be imported privately into the country under the dual-use provision in international sanctions in case they are used to make explosives. The main source of urea has therefore been the fertilizer factory in Homs. However, during the second half of 2016, the factory was attacked and damaged by anti-Government forces, to the extent that it ceased operations. Repairs to the factory were carried out in 2017 allowing it to start once again to produce urea and superphosphate. In late 2018, the factory closed again for further rehabilitation with the support from the Russian Fedration, but it is due to re-open by the end of July 2019 to enable production for the 2019/20 agricultural season. Table 4 shows that production of both urea and superphosphate in 2018, prior to the factory's closure for rehabilitation, was considerably lower than in 2017. It is anticipated however that, after rehabilitation, annual production will exceed that of 2017, thus providing an improved supply for the 2019/20 season.

Table 4: Syrian Arab Republic - Amounts of fertilizers produced by the fertilizer factory in Homs, 2017 and 2018 (tonnes)

	2017	2018
Urea	44 118	16 739
Superphosphate	31 821	20 084

Source: MAAR.

There is another privately owned fertilizer factory in Adra in Rural Damascus. It uses nitrogen from the Homs factory to make NPK, but no further information regarding production was available to the Mission. ICRC purchases NPK from the factory for distribution to beneficiary farmers as part of a package.

Prior to 2011, the Agricultural Cooperative Bank used to import about 600 000 tonnes of urea annually. Last year it imported 60 000 tonnes of urea and this year it expects to import 63 000 tonnes as well as 35 000 tonnes of superphosphate. Distribution of urea is said to be strictly confined to areas known to be loyal to the Government, which rules out, among others, Hasakeh and Deir-ez-Zor governorates and East Aleppo. Superphosphate, not being a potential explosive-making material, is distributed more widely.

In the 2018/19 agricultural season, Government prices for fertilizer, which is sold to farmers through the Agricultural Credit Bank, are SYP 9 200 and 8 200 per 50 kg for urea and superphosphate respectively. Virtually no farmers use potash, which sells for SYP 23 000 per 50 kg.

Many farmers buy their fertilizer from traders instead of from the Agricultural Credit Bank although the price from traders is higher; in Aleppo, for example, traders sell urea and superphosphate for SYP 11 500 and 10 000 respectively. Farmers may choose to buy from traders as the Agricultural Credit Bank requires immediate payment, which farmers may not be able to afford pre-harvest, while traders usually extend a credit facility. Some farmers also complain that fertilizers from the Agricultural Credit Bank are of poor quality, but this should be regarded as purely anecdotal since similar complaints are made about fertilizers bought in the market. Farmers' judgements of the poor quality are generally based on low crop yield, but this could be attributed to a number of other causes such as inferior seed, adverse weather conditions or poor husbandry practices.

Fuel

Fuel prices in SYP terms have risen over the past 12 months in line with the SYP/USD exchange rate and international prices. Registered farmers with tractors are entitled to 150 litres of diesel per month through the Agricultural Cooperatives at the subsidized price of SYP 185 or 200 per litre, but since a tractor can consume 100 litres per day most have to resort to purchasing from traders at about SYP 600 per litre for at least part of their requirement. The good rains this year reduced the need for fuel for pumping irrigation water. The fuel market is discussed separately on page 42 of the Report, under the Local Food Market Conditions section.

Crop-protection materials

Crop-protection materials such as herbicides and pesticides are available but remain expensive for farmers, with the result that they are often used at below the recommended rates or not at all. Nevertheless, there appears to have been an increase in the use of herbicides this year, and this was often evident in cleaner crop stands and fewer weeds. Some herbicides are produced in the country, but imported products are considered to be more effective. For instance, in Homs Governorate, imported herbicides were used on 45 000 hectares. A non-selective Chinese product, Atlantis, appears to be the preferred herbicide of most farmers.

The Mission did, however, hear complaints that many crop-protection materials were ineffective. To the extent possible, the Government tests imported agro-chemicals for their safety and efficacy and applies an official stamps to those that it approves. Unavoidably however, unapproved chemicals find their way onto the market. It is possible that such chemicals are ineffective, but it is also possible that farmers or contractors apply the chemicals at the incorrect concentration or at the wrong time. The latter possibility would seem to be supported by the fact that many farmers complained of inefficacy even when they used Government-approved products.

Mechanization

Although there is still a serious shortage of functioning farm machinery following several years of conflict, the situation has improved slightly this year as a result of Government intervention and the increased importation of machinery and spare parts by private individuals and businesses. The Government recently issued licences for the importation of 380 combine harvesters, and 3 000 tractors have been imported from India for assembly in the Syrian Arab Republic. In addition, many mechanical workshops have re-opened, facilitating the rehabilitation of combine harvesters, most of which are about 30 years old.

Reflecting the higher price of diesel this year, the cost of mechanized farm operations has increased. Most cereal farmers prepare their seedbeds mechanically but not all use machinery for subsequent operations. In Deir-ez-Zor, for instance, many farmers sow their cereal crop manually. Few farmers harvest completely manually. Those farmers in locations where they are available, employ combine harvesters, but others reap and thresh separately, which is more time-consuming, more wasteful of grain and more expensive than the single operation of combine-harvesting. The timing of harvesting is often seriously compromised by the scarcity of mechanized harvesting equipment. Mature crops standing for long periods in the field awaiting harvest are susceptible to lodging, shattering and bird damage. This year the additional risk of fire added to farmers' anxiety to get their crops harvested as soon as possible.

In Homs, the cost of seedbed preparation and sowing in 2018/19 was between SYP 5 000 and 8 000 per dunum (1 000 square meters or one-tenth of an hectare), whereas it was SYP 5 000 to SYP 6 000 in 2017/18. Reaping this year cost SYP 3 000 to SYP 4 000, and combine harvesting cost SYP 8 000. In Deir-ez-Zor, threshing costs SYP 2 000 per 50-kg bag. In Hama, the cost of harvesting was initially the same as last year, but when the size of the harvest was realized the price rose. In Hasakeh, at the beginning of the harvest this year, farm-machinery contractors charged 5-6 percent of the harvest for wheat and 6-7 percent of the harvest for barley. As the harvest progressed and the satisfactory size of the harvest became apparent, most contractors, preferring to be paid financially rather than in kind, started charging between SYP 22 000 and SYP 25 000 per hectare.

Labour

Farm labour availability remains similar to last year, though there has been a slight increase in those areas to which IDPs have returned. Labour costs vary considerably in different parts of the country. In some, the cost of labour has increased since last year, but in others the cost remains unchanged. Many small farms depend entirely on family labour.

In Hasakeh, weeding costs SYP 400/dunum, approximately the same as last year in one location but an increase of SYP 100 in another location. In Homs weeding costs SYP 500/dunum, an increase of SYP 200 on

last year's SYP 300/dunum. In Aleppo, farm labourers may be paid SYP 1 000 for a five-hour day, while in Al Ghab the usual rate is SYP 1 300 for a three-hour day, up from SYP 900 last year. In Tartous, the cost of general labour in the polytunnels has increased from SYP 300/hour to SYP 400/hour. Skilled labourers in the polytunnels can earn between SYP 5 000 and SYP 7 000 for an eight-hour day

Pests and diseases

Sunn pest (*Eurygaster integriceps*) was present in several locations but at low levels.

The humid conditions towards the end of the season favoured the spread of yellow rust (*Puccinia striiformis*) on wheat. Soft wheat varieties were more susceptible than the durum varieties. In most instances, the infection was below the economic threshold, but the Agricultural Directorate in Hasakeh estimated that yield reduction in the more affected stands of wheat may have been between 10 and 25 percent.

Wild eggplant (*Solanum* sp) is becoming more troublesome as a weed. Farmers complain that it is difficult to eliminate using the herbicides that are available in the country.

Farm access and movement of farmers and produce

With increased security across much of the country, there has been a significant improvement in the accessibility of farmland. However, the possible existence of unexploded landmines is still a disincentive to cultivate or graze land in some parts of the country, especially in those parts that were occupied by IS. The Government is now carrying out de-mining operations in parts of the Badia.

Cereal production, 2018/19

Yields

At an average of 2.08 tonnes/hectare, wheat yields on normally irrigated land were lower than those of 2017/18. This may have been because farmers irrigated less, or not at all, because of the favourable rains. On the other hand average rainfed wheat yields, at 1.46 tonnes/hectare, were almost double those of last year at 0.75 tonnes/hectare. Irrigated barley yields reflected the pattern seen in wheat. This year's average of 1.53 tonnes/hectare was only 75 percent of last year's 2.04 tonnes/hectare. However, average rainfed barley yields, at 1.49 tonnes/hectare, showed a more-than-fourfold increase on last year's 0.35 tonnes/hectare. Yields by governorate are shown in Table 5.

Table 5. Wheat and barley yields by governorate, 2017/18 and 2018/19 (tonnes/hectare)

Governorate	Wheat				Barley			
	Irrigated		Rainfed		Irrigated		Rainfed	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
Rural Damascus	2.9	2.5	0.6	1.7	1.1	2.0	0.6	1.7
Dara'a	2.5	2.3	0.6	1.6			0.7	1.7
Sweida	1.6	1.0	0.5	1.1			0.4	1.1
Quneitra	1.6	1.3	1.0	0.7			1.5	0.9
Homs	2.0	1.4	0.6	1.4	1.8	1.8	0.6	1.4
Hama	1.8	1.6	0.7	1.5	2.5	1.8	0.7	1.5
Al Ghab	2.0	1.6	0.9	1.4	1.5	1.6	0.9	1.4
Tartous	2.8	1.0	1.0	0.9	1.5	1.3	0.9	0.9
Lattakia			1.9	1.2			1.2	1.2
Idleb	2.7	2.2	0.8	1.4			0.5	1.5
Aleppo	2.7	2.5	0.8	1.5	2.0	2.0	1.0	1.5
Raqqa	2.8	2.4		1.3	2.0	2.0		1.5
Hasakeh	3.0	1.4	0.5	1.5	2.4	2.0		1.5
Deir-ez-Zor	2.0	2.2			1.8			
TOTAL	**2.63**	**2.08**	**0.75**	**1.46**	**2.04**	**1.53**	**0.35**	**1.49**

Source: CFSAM 2018 and 2019.

Production

At 2.176 million tonnes, wheat production this year has shown a 21-percent improvement on the harvest of 2018 (Table 6). Much of this improvement was attributable to the increase in harvested area. Had the yields on normally irrigated land been up to last year's level, the increase in production would have been even greater. As it is, this year's wheat production, while much better than last year's is still well below the levels of production that were usually achieved before the crisis, as can be seen in Table 8 and Figure 6.

Barley, being more drought-tolerant than wheat, is mostly grown as a rainfed crop; this year less than 5 percent of the crop was irrigated or grown on normally irrigated land. The crop therefore benefited hugely from the good rains with an enlarged area and much better yields than last year. The estimated production this year, 2 million tonnes, is more than five times that of 2018 (Table 7) and significantly exceeds the average production levels achieved prior to the crisis (Table 9 and Figure 7).

Farmers who sell their wheat to Hoboob (which is technically obligatory) must purchase 100 kg hessian sacks at SYP 1 200, and clean and deliver the grain themselves to their Hoboob depot. For first-grade wheat Hoboob pays SYP 185/kg, of which SYP 10 is meant to cover the cost of delivery. The largest percentage of delivered grain falls into the second-grade category, for which payment is slightly less. By 1 June 2019, Hoboob had received 54 000 tonnes of wheat, in contrast to last year's 49 000 tonnes by the same date.

There has generally been a higher rate of acceptance of grain by Hoboob this year compared with last year, with most governorates reporting rejection levels of less than 5 percent. Last year, when Deir-ez-Zor had only recently been liberated from IS occupation; Hoboob rejected about 25 percent of the grain submitted from there. Rejection levels this year are significantly lower. Grain that is rejected by Hoboob can often be sold to traders. Further details are discussed in the part on Post Harvest and Other Losses. Barley is sold to the GOF which pays SYP 130/kg.

Table 6: Syrian Arab Republic - Wheat production by governorate, 2017/18 and 2018/19 ('000 tonnes)

Governorate	Irrigated		Rainfed		Total	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
Rural Damascus	20	34	0.1	1.7	20	36
Dara'a	16	19	10	107	26	126
Sweida	0.3	0.3	5	35	6	35
Quneitra	0.4	0.8	0.5	2	1	3
Homs	16	11	12	39	28	49
Hama	13	23	2	12	15	35
Al Ghab	93	57	3	4	96	61
Tartous	11	4	8	6	18	10
Lattakia		0	6	2	6	2
Idleb	34	41	22	42	56	83
Aleppo	250	340	118	246	368	586
Raqqa	224	336	0	70	224	406
Hasakeh	276	176	10	472	286	648
Deir-ez-Zor	50	97			50	97
TOTAL	**1 002**	**1 137**	**197**	**1 039**	**1 199**	**2 176**

Source: 2018 CFSAM, MAAR and 2019 CFSAM.
Note: Totals computed from unrounded data.

Table 7: Syrian Arab Republic - Barley production by governorate, 2017/18 and 2018/19 ('000 tonnes)

Governorate	Irrigated		Rainfed		Total	
	2017/18	2018/19	2017/18	2018/19	2017/18	2018/19
Rural Damascus	1	2	3	8	4	10
Dara'a		0	3	42	3	42
Sweida		0	2	21	2	21
Quneitra		0	0.8	1.5	0.8	2
Homs	0.6	0.7	2	50	3	51
Hama	8	15	18	104	26	119
Al Ghab	7	4	0.7	0	8	4
Tartous	0.04	0.04	0.5	0.4	0.5	0.5
Lattakia		0	0	0	0	0.3
Idleb		0	14	83	14	83
Aleppo	19	8	202	570	221	578
Raqqa	50	33	0	435	50	468
Hasakeh	41	36	0	585	41	621
Deir-ez-Zor	18	0		0	18	0
TOTAL	**144**	**99**	**245**	**1 900**	**390**	**1 999**

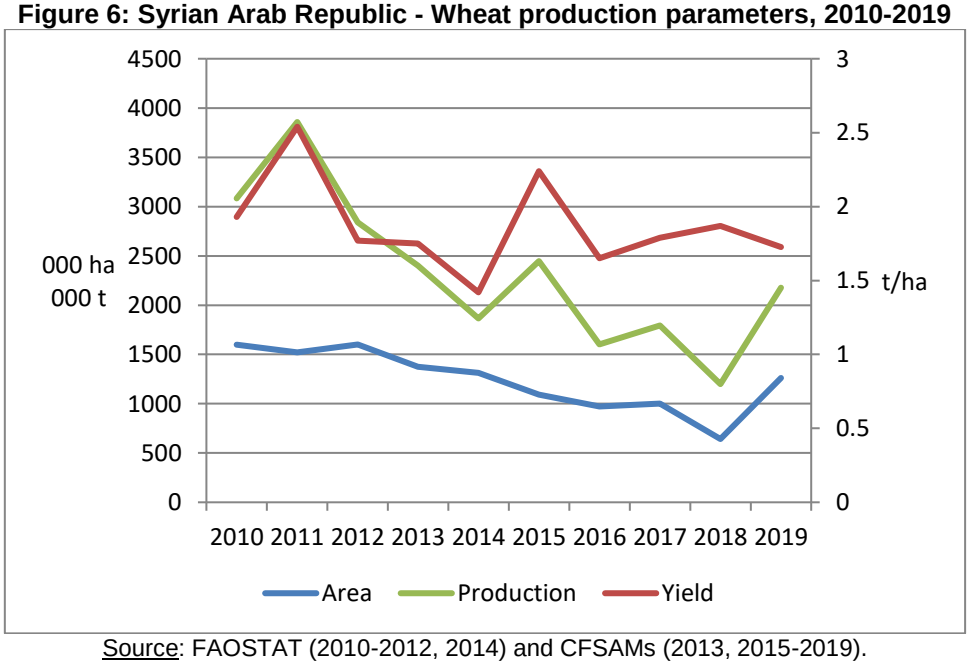
Source: 2018 CFSAM, MAAR and 2019 CFSAM.
Note: Totals computed from unrounded data.

Table 8: Syrian Arab Republic - Wheat production parameters, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
'000 ha	1 599	1 521	1 601	1 374	1 313	1 092	973	1 001	642	1 260
t/ha	1.93	2.54	1.77	1.75	1.42	2.24	1.65	1.79	1.87	1.73
'000 t	3 083	3 858	2 840	2 400	1 865	2 445	1 601	1 793	1 199	2 176

Source: FAOSTAT (2010-2012, 2014) and CFSAMs (2013, 2015-2019).

Figure 6: Syrian Arab Republic - Wheat production parameters, 2010-2019



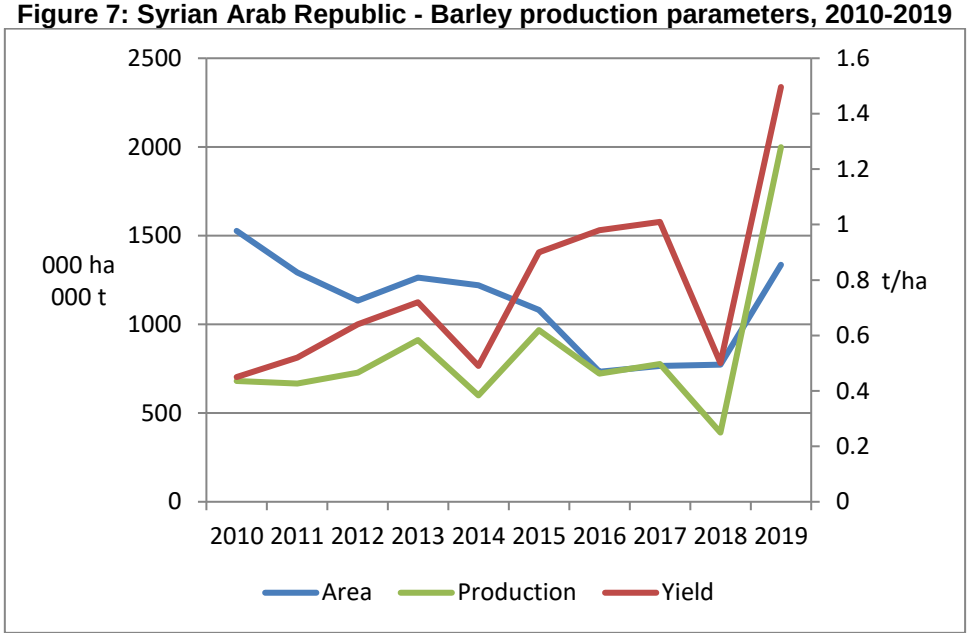
Source: FAOSTAT (2010-2012, 2014) and CFSAMs (2013, 2015-2019).

Table 9. Barley production parameters, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
'000 ha	1 527	1 293	1 133	1 263	1 221	1 081	733	766	772	1 336
t/ha	0.45	0.52	0.64	0.72	0.49	0.9	0.98	1.01	0.5	1.50
'000 t	680	667	728	911	600	968	722	777	390	1 999

Source: FAOSTAT (2010-2012, 2014) and CFSAMs (2013, 2015-2019).

Figure 7: Syrian Arab Republic - Barley production parameters, 2010-2019



Source: FAOSTAT (2010-2012, 2014) and CFSAMs (2013, 2015-2019).

OTHER CROPS

Food legumes

While larger than in 2017/18, the area planted to food legumes in 2018/19 was not substantially different to the average of recent years (Table 10). The area planted to peas is still quite small but it has increased over the last five years. Yields this year are generally satisfactory (Table 11).

Table 10: Syrian Arab Republic - Food legume areas, 2011-2019 ('000 hectares)

Crop	2011	2012	2013	2014	2015	2016	2017	2018	2019
Lentils	140	130	114	111	114	98	123	122	114
Chickpeas	74	84	76	45	45	69	56	35	65
Broad beans	17	15	15	20	12	12	19	21	16
Peas	4	4	3	4	3	3	5	4	6
Total	**235**	**233**	**208**	**180**	**175**	**182**	**203**	**183**	**201**

Source: FAOSTAT for 2011-2014; MAAR for 2015-2019.
Note: Totals computed from unrounded data.

Table 11: Syrian Arab Republic - Food legume production, 2019/20

Crop	Area (hectares)	Yield (kg/hectare)	Production (tonnes)
Lentils	113 633	0.75	852 300
Chickpeas	64 720	0.80	51 777
Broad beans	16 400	1.95	32 000
Peas	5 990	1.60	9 600

Source: MAAR.

Potatoes

MAAR estimates that the area planted to potatoes in 2018/19 is 30 000 hectares. Along the coast, potatoes are planted in December, while further inland they may be planted as late as March. According to GOSM the demand for potatoes is increasing, and such an increase is supported by the Government through its Programme for Potato Seed Multiplication which was reactivated four years ago. However, the assertion of increased demand surprised the Mission in Tartous where the area planted to potatoes this year was considerably less than that of last year because of the relatively high cost of production. Last year, Tartous produced 62 000 tonnes of potatoes from 2 610 hectares, whereas this year only 200 hectares have been planted.

Recently GOSM has imported about 1 400 tonnes of seed potato annually from the Netherlands, but this year it plans to import 6 000 tonnes. Although the purchase and importation of seed potato costs approximately SYP 1 million/tonne, GOSM, with financial support from the Agricultural Support Fund, sells it to farmers at cost price. There are also a number of private importers of seed potato which, GOSM estimates, brings the total amount of seed potato in the country up to about 15 000 tonnes annually.

In order to eliminate the cost of importing seed from the Netherlands, GOSM has started a programme of tissue culture and micro-tuber production at its headquarters in Aleppo. Virus-free meristematic material is imported from the Netherlands and then multiplied up in test-tubes. Last year 150 000 micro-tubers were produced. Full implementation of the programme, to the point where it will no longer be necessary to import seed potato, is expected to take another four or five years.

Vegetables

2018/19 was a good year for winter vegetable production. Most vegetables are produced in the coastal governorates of Tartous and Lattakia, but many governorates in which vegetables are not the primary agricultural product, such as Aleppo, Hasakeh and Deir-ez-Zor, reported an increase this year in the area under vegetables.

At present, vegetable seed is imported from the Netherlands, GOSM, which used to produce vegetable seed, is now planning, in the medium term, to revive its production of tomato, eggplant and cucumber seed.

Tartous has 133 862 operational polytunnels producing vegetables, out of a total of 136 562, and Lattakia has 13 400. Producer households usually have three or four polytunnels (average size 400 square meters); for instance Lattakia's 13 400 polytunnels are owned by 4 200 households. Many polytunnels were damaged by the strong winds and hail early in the year; Tartous reported 4 400 damaged, most of which required new plastic sheeting. In previous years farmers reported difficulties accessing plastic sheeting. Since last year it appears that plastic beads have been imported for the fabrication of sheeting in the country.

Marketing of vegetables poses a serious and continuing problem. In the main production areas of Tartous and Lattakia producers face the problem of low purchasing power amongst consumers. This has resulted in a lowering of prices, compared with last year, for many commodities such as tomatoes, onions, carrots, cucumbers and zucchinis. With increasing costs of production, many growers claim that they are producing at a financial loss. However, in Dara'a, where farmers estimate the cost of production of open-field tomatoes to be SYP 30 000-SYP 35 000/tonne, the market price is SYP 100/kg or SYP 100 000/tonne, which indicates some profitability, even after the retailer's margin has been deducted. Perhaps more importantly, low purchasing power leads to a very significant amount of waste of unbought material at the end of the marketing day. Much of the unbought material in the wholesale fruit and vegetable markets is used as livestock fodder.

The improved security situation across much of the country has seen the dismantling of many military checkpoints, which has contributed to faster transport of perishable vegetables from the point of production to distant markets within the country. However, delivery problems still persist on many routes. Drivers transporting vegetables from Tartous to Hasakeh in refrigerated lorries pass through Kurdish-held Raqqa where they may be required to unload their cargo and re-load it into a different lorry for onward transport. This causes delays and exposes the vegetables to bruising and potentially damaging temperature differences. According to an official at the wholesale market in Qamishli, the result is a loss of about 4 tonnes of vegetables per day. On the other hand, Qamishli wholesale market receives large volumes of vegetables from locations other than coastal Syrian Arab Republic. Up to twenty 16 m containers arrive daily, each containing about 24 tonnes of produce. As the area is Kurdish-held, produce arrives from Iraq and Turkey as well as from Aleppo, the coastal governorates, Hasakeh itself and, until recently, Idleb.

Vegetable growers used to export much of their produce to neighbouring countries, especially to Iraq and Lebanon. Such exports both benefited the growers financially and greatly reduced waste. Unfortunately, except for Kurdish-held areas, the borders now appear to be closed bilaterally for the movement of fruits and vegetables. Jordan, for example, cites "traces of residual pesticides and local competition" when banning Syrian Arab Republic's produce from entering Jordanian markets[3].
The Syrian Arab Republic used to have some reasonably-sized commercial processing factories for fruits and vegetables, which provided another waste-saving outlet for surplus production. Now only a few small processors remain, and the price they offer the producer is usually unattractive.

Fruit trees

After several years of damage, destruction, neglect and natural deterioration of trees, fruit production appears to be starting to recover. With increased security, many fruit trees that were inaccessible can now be reached and tended. MAAR estimates that there are now 45 000 hectares under productive citrus trees and 690 000 hectares under productive olive trees. Olives and citrus provide the livelihood of many thousands of households. For instance, in Lattakia, 57 000 households are sustained by 45 900 hectares of olives, and 44 700 households benefit from 42 500 hectares of citrus.

Fruit production is expected to be good this year, but marketing problems, especially for citrus fruits and apples, are similar to those encountered by vegetable growers; prices are low, and wastage can be substantial. Lattakia used to produce about 150 000 tonnes of olives every year. Last year's production was down to 25 000 tonnes, but the agricultural directorate expects a much better harvest this year. By contrast, Lattakia's citrus production last year was good at 860 000 tonnes (26.5 tonnes/hectare), and similar production is expected this year. Walnut and pomegranate production in Tartous is expected to be up on last year while apple and almond production is expected to be down because of the unseasonably high temperatures and strong winds at flowering time.

The health of fruit trees was generally good this year and most benefited from the good rainfall. However, the rainfall may have contributed to the observed increase in the incidence in olives of peacock eye (*Spilocaea oleaginea*), a fungal disease that can be spread from tree to tree by rainsplash. Olives in the west of Homs Governorate were attacked last year by olive fruit fly (*Bactrocera oleae*) when the weather was very mild. This year the early high temperatures appear to have protected the crop from the fruit fly but may have had some adverse effect on fruit development. Many almond trees in Homs now suffer from almond stem-borer, probably as a result of years of unavoidable neglect. In eastern Homs, grape vines were adversely affected by the early high temperatures, but, according to the Agricultural Directorate, growers were compensated for their losses.

Lattakia's apple producers in the northeast of the governorate are still affected by the continuing conflict in and around Idleb Governorate. With burning and cutting of trees and danger of access, the area under productive apple orchards is currently 2 800 hectares, down from 4 200 hectares in 2011.

Herbs

Shortly after 2011, and especially in years of poor rainfall, cereal farmers saw cumin and coriander as suitable drought-tolerant, easily managed and lucrative cash crops to grow instead of wheat. Returns were often good in relatively dry years, but when rainfall was unseasonably late, as in 2018, or when humidity was high during the weeks immediately preceding harvest time, as in 2019, yields were particularly low and many farmers lost their entire crop. The area under cumin and coriander has consequently contracted considerably in recent years, as is shown in Hasakeh in Table 12. This year the Agricultural Directorate in Hasakeh estimated that between 80 and 90 percent of the cumin crop had succumbed to fungal infection. In Raqqa, 6 500 hectares were planted this year to cumin, but almost complete crop failure is expected because of the high humidity.

Table 12: Syrian Arab Republic - Hasakeh areas under cumin and coriander, 2016/17-2018/19 (hectares)

	2016/17	2017/18	2018/19
Cumin and coriander	76 000	25 000	14 000

Source: MAAR.

[3] http://www.jordantimes.com/news/local/even-produce-ban-sectors-relationship-syria-rocky

Industrial crops

Sugar beet

In 2011 the Syrian Arab Republic produced 1.8 million tonnes of sugar beet from 26 000 hectares (FAOSTAT). By 2015 the country's production had fallen to 29 000 tonnes produced from 860 hectares (MAAR), all in Al Ghab, Hama Governorate. This represented just eight days of work for the only remaining functioning sugar beet factory, which has a capacity of 3 600 tonnes per day. Rebel factions destroyed other sugar beet factories in Aleppo, Deir-ez-Zor and Raqqa, but there are plans for the restoration of the Aleppo factory. In 2016, there was a further reduction in area down to 252 hectares on land where contracts had already been drawn up between MAAR and producers. Since the production from such a small area would not justify operating the factory, the produce was used as fodder. By 2018, only 144 hectares were sown to sugar beet, again solely for fodder. This year, however, the area, according to MAAR, has more than doubled to 350 hectares, the produce again destined for fodder. GOSM still has a large stock of sugar beet seed that it would like to offload.

Up to the 1980s farmers used to grow sugar beet under a simple contract with the Government. Subsequently, production was allocated to MAAR and processing to the Ministry of Industry, and farmers were obliged to obtain credit from the Agricultural Cooperative Bank. In addition to the other consequences of the ongoing crisis, such as shortages of fuel and farm machinery, the Agricultural Cooperative Bank stopped providing credit to sugar-beet farmers soon after 2011, thus reducing even further the attractiveness of growing the crop.

Cotton

The Syrian Arab Republic's traditional cotton-producing governorates are Raqqa, Hasakeh, Deir-ez-Zor and Aleppo, with small amounts also coming from Hama and Homs. Cotton is planted in late April or early May and harvested in October. At its height in the early 1960s, the area under cotton covered more than 250 000 hectares, but largely due to shortages of irrigation water and increasing labour costs the area had fallen to 125 000 hectares by 2011. With the present crisis and the resulting shortages of seed, crop-protection materials and credit, and damage to irrigation systems and ginneries, the area under cotton experienced further dramatic reductions. In 2016, 16 000 hectares were harvested, but the bulk of this (12 000 hectares) was in IS-controlled Raqqa Governorate. Since 2018, cotton production appears to be experiencing the hesitant beginnings of a revival. MAAR estimates that 33 000 hectares were planted to cotton this year. In an average year with adequate irrigation and suitable varieties, The Syrian Arab Republic's cotton yields are between 3.5 and 4.5 tonnes/hectare.

In Deir-ez-Zor, 14 300 hectares of cotton were planned this year, of which 11 000 hectares have been planted. Last year the crop was attacked by bollworm (*Heliothis armigera*) which persuaded many farmers not to grow it again this year. In Raqqa too, where 30 000 ha of cotton were grown last year, the crop suffered a bollworm attack that brought the average yield down to 1-1.5 tonnes/hectare and dissuaded many farmers from planting again. The area this year in Raqqa was only 17 500 hectares. However, the area under cotton in As-Safeera in Aleppo Governorate is now said to be back to about 25 percent of its pre-crisis level; famers there expect a yield of 3.25 tonnes/hectare this year in contrast to last year's 2.5 tonnes/hectare.

The reduced area under cotton this year in Deir-ez-Zor was not exclusively the result of last year's bollworm attack. The seed provided by GOSM (variety 'Aleppo') to growers in Government-controlled areas was not suitable for Deir-ez-Zor's soils and climatic conditions. GOSM was unable to provide 'Deir 22' which is suited to Deir-ez-Zor conditions. In rebel-controlled areas of Deir-ez-Zor, on the left bank of the Euphrates, where growers can get seed of appropriate varieties from Turkey, the area under cotton increased this year.

In Hasakeh, where cotton used to be an important crop, yields are expected to be between 3.5 and 4.5 tonnes/hectare. Seed is obtained from Turkey and the harvested seed cotton is sold to the Kurdish authority which gins it and then sells it to the Government of the Syrian Arab Republic for SYP 364/kg, the same price as that used by the Government.

There are three operational ginneries in Government-controlled areas and all of them are in Hama governorate. Ginneries in Deir-ez-Zor, Raqqa and Qamishli were damaged and are not currently operational, but an operational one survives in Hasakeh under Kurdish control. Producers in Deir-ez-Zor, where yields this year are expected to be good, transport their seed cotton to Hama for ginning.

Tobacco

Tobacco is mainly produced in the coastal governorates of Tartous and Lattakia. Production appears to be increasing as the area under tobacco in Lattakia, 2 000 hectares, exceeds the 1 775 hectares normally

cultivated there prior to 2011. In Tartous the tobacco area is 4 589 hectares. The General Organization of Tobacco (GOT) grants licences to producers based on the suitability of land for tobacco rather than for food crops. The GOT also provides farmers with tobacco seedlings and purchases the produce. Growers are not allowed to sell to private traders. There are three operational cigarette factories, one in each of Lattakia, Hama and Damascus.

The GOT has recently been reducing the number of licences granted to growers of local or 'beladi' (local) varieties which are air-dried and which generally yield between 500 kg and 2 tonnes of leaf per hectare. It now requires growers to produce 'Katerini' which needs more water and is flue-cured. This affects many small producers in Tartous (less than 0.2 hectares each) and presumably elsewhere, who currently depend partly on tobacco for their household income but who do not have access to the extra irrigation water required for 'Katerini', or cannot afford, the sheds required for flue-curing. Consequently, some farmers in Tartous are considering growing tomatoes instead of tobacco.

POST-HARVEST AND OTHER PROBLEMS

The transport of farm produce remains problematic but less so than last year. Many main roads that were insecure last year, or that had road blocks where exorbitant levies were imposed by armed groups, are now secure and open to passage. However, the cost of transport remains high and has changed little since last year. For instance, transport of farm produce from Homs to Damascus or to Government-held areas in Aleppo costs between SYP 10 000 and 15 000/tonne. For transport from Homs to rebel-held areas in Aleppo the cost is between SYP 40 000 and 50 000/tonne. Transport of apples for 60 km from Rural Damascus to Damascus city costs SYP 5 000/tonne. The cost to transport small amounts of produce (about 1 tonne) from Qamishli to Aleppo or Damascus is SYP 40 000/tonne. Larger consignments transported in refrigerated trucks are much cheaper at SYP 10 000/tonne.

Prior to the crisis, the country had 144 grain-collection centres where the Government purchased grain from farmers at controlled prices. Many of these were damaged, destroyed or occupied by opposition forces, so that by 2017 only 29 remained operational and under Government control. By 2018 that number had increased to 35. Some of these are open-air, but with careful stacking (150 tonnes in 1 350 bags per pile), protection from rain, regular fumigation and good management, Hoboob reckons that grain losses at the collection points are less than 1 percent.

During the crisis, warehouses and siloes were frequently targeted by opposition groups. According to Hoboob, the Government had between 36 large siloes of concrete construction in 2010, with a grain-storage capacity of 7 million tonnes.[4] Precise number of currently operational silos is not available. Informal figures place the number of damaged concrete silos (averaging 100 000 tonnes capacity each) at 26 and 94 metal silos (averaging from 10 000 to 30 000 tonnes capacity) damaged out of 99 previously available metal silos. As a result, wheat storage capacity, which was around 3.5 million tonnes before the conflict, is currently estimated at no more than 450 000 tonnes and around 80 percent of wheat stocks are currently stored in open spaces affected by weather vagaries. The Syrian Arab Republic's milling capacity has also been affected. The Syrian Arab Republic's milling capacity was around 3.8 million tonnes per year before the crisis and it was estimated at 2.8 million tonnes per year in 2015 and with limited investment it remains unchanged.

Hoboob claims that farmers are paid for their wheat within a maximum of 72 hours of delivery, usually even within two days. This may have been the case pre-2011, and still is in some areas, but many farmers complain that they can be left waiting for payment for several weeks. On the other hand, traders pay immediately on receipt of the produce, which is appreciated by farmers. The price offered by traders, varying from SYP 120 to SYP 160/kg, is always lower than that offered by Hoboob, but traders collect from the farm and do not insist on the farmer bagging his grain in new hessian sacks, both of which represent a saving for the farmer. Farmers who sell to Hoboob must deliver their grain themselves in new sacks which they must purchase, both of which add to the farmer's costs. There is also the chance that Hoboob will downgrade the delivered grain because of high moisture content or contamination with barley or oats and thus pay the farmer less; or Hoboob may reject a consignment completely. It appears that traders are usually less discriminating. Many farmers in Hasakeh and Raqqa sell their wheat to the Kurdish authorities for SYP 160/kg.

High transport costs and low consumer purchasing power can lead to bottlenecks in the marketing of fruits and vegetables, which can result in wastage, especially at peak harvest time for perishable items such as tomatoes. The problem is further exacerbated by the current ban on the export of fruits and vegetables. The number of operational cold stores for the collection of perishable fruits and vegetables available to the Government has been reduced to only 10 percent of its pre-crisis level. Rent of private cold storage facilities has increased

[4] Some sources give the number of concrete silos at 32.

substantially compared to the pre-crisis levels, reflecting the shortage of cold storage facilities as well as difficulties in ensuring they run properly given the possibility of electricity outages and high fuel prices.

LIVESTOCK

Livestock activities have been an essential part of the Syrian Arab Republic's farming system and an important source of household income. Prior to the crisis, livestock accounted for between 35 and 40 percent of the country's total agricultural production, and occupied about 20 percent of the labour force in rural areas. In addition, 35 percent of rural households raised livestock, which is considered their main source of food and income. Mutton exports alone generated foreign currency estimated at approximately USD 450 million per year, and in 2010 the country exported 871 000 sheep (FAOSTAT). The poultry sector, which employed, directly and indirectly, more than 1 million workers, was also an important foreign exchange earner with significant exports of meat, eggs and day-old chicks. In 2010, 76 000 tonnes of hens' eggs were exported (FAOSTAT). Poultry production was mainly a private-sector activity, with a public-sector share of less than 10 percent. The General Poultry Association (GPA) estimates that 80 to 90 percent of poultry farmers have left production operations due to a reduction in aid and State subsidies and a lack of operator confidence in the recovery of the sector. Cattle and goat populations, though smaller than sheep and poultry populations, were also an important source of rural employment. Households that owned cattle as part of a mixed-farming operation would typically have had fewer than ten animals. In addition, there were 11 State dairy farms.

Before the crisis, MAAR supported services to the livestock sector such as extension, fodder rations, cultivation of pasture seeds and seedlings, digging of wells in Badia (Syrian Steppe) to provide water for the population and livestock, grading and improving activities and artificial insemination to enhance the productivity of local breeds, vaccination, various livestock treatments, veterinary drugs, improved breeds, and research services.[5] Some of those services are still currently active.

Fisheries, although a source of livelihood for many poor people in coastal and lacustrine areas, contributed an estimated 0.38 percent to agricultural GDP. Information on the current contribution is not available.

Beekeeping used to be a traditional industry in the country. Just before the crisis, there were about 700 000 beehives, a large number of which were neglected or destroyed with significant implications for pollination.

Like the rest of the agricultural sector, and despite the protracted crisis, the various livestock sectors still remain a key part of the economy and contribute substantially to the food security and nutrition of the rural population.

Livestock numbers

The country used to carry out reliable livestock statistical censuses. The last one, performed in 2010, put the main livestock species at 18 million sheep, 2.3 million goats, 1.1 million cattle, 7 000 buffalos and 26.2 million poultry.[6] In the first years of the crisis with the increased movement of people, at times accompanied by their animals, but often fleeing their original locations without their belongings, it was evident that the livestock population had shrunk considerably. MAAR estimated that during the first three years of the crisis sheep numbers fell by 45 percent, goat numbers by 30 percent, cattle numbers by 40 percent, and poultry numbers by 55 percent.

Livestock numbers are difficult to monitor under normal circumstances, but under conditions of crisis the task becomes even more difficult. To a certain extent an approximate estimate can be made by extrapolating from:

- The number of vaccines administered and routine drugs provided.
- The volume of trade at livestock markets.
- Abattoir records.
- The number of animals registered for feed from the GOF.
- Anecdotal evidence and expert opinions.

The current Mission considered that the current livestock situation in the country is characterized by gradual stabilization following the relative improvement in the overall security situation. After a very significant decline during the first years of the crisis, overall numbers of animals appeared to increase slightly or stabilize during 2016 and 2017. However, in 2018 there seemed to be a slight reduction in sheep and goat numbers and a

[5] Dairy Value Chain Study – unpublished.

[6] The Mission strived to present the livestock situation on the governorate level. There appears to be a slight discrepancy between the 2010 figures presented in Tables 13-15 and figures cited for the entire country. However, the purpose of the Mission was not to reconcile national and governorate levels for the past.

significant reduction in cattle numbers compared to 2017. This somehow went against the Mission's overall assumption that after a very significant reduction soon after 2011, livestock numbers should have stabilized albeit at a low level in 2017 which was considered as the threshold year.

Given that the veterinary services continue operating below their pre-conflict capacity, estimates of the livestock heads depend on very limited sources of information. For instance, from focus group discussions it emerged that not all farmers, especially those that own only a few heads, registered their animals with the veterinary extension units in the governorates. Lack of registrations, in addition to IDP movements between governorates and the under-estimation of numbers in recently liberated areas, is likely to be a source of anomalies between years and governorates and might explain the lower numbers reported by some governorates.

During the active conflict, several areas that were rich in livestock were under the control of rebel groups, the IS and the al-Qaeda-linked Nusra Front. Hence, the numbers observed may reflect the security conditions at the moment of the estimates. Another possible explanation of fluctuations might be the exaggeration of numbers by breeders in order to benefit from more feed from GOF given the lack of efficient controls of the veterinary services. The amount of feed that registered livestock breeders can purchase from GOF at subsidized prices depends on the number of animals they own. It is likely that during drought years, breeders may give higher figures to increase their share from GOF. Also, selling of animals as a negative coping strategy, as well as smuggling and premature slaughtering under pressure by the armed groups may have contributed to the fluctuations in reported numbers. The International Fund for Agricultural Development (IFAD) and Government-supported project are currently under way to carry out livestock numbering. Several Governorates have already been covered, including Lattakia, Tartous and Rural Damascus.

The numbers of the main livestock species per governorate before the start of the crisis (2010) and their estimates from 2017 to 2018 are given in Tables 13, 14, and 15, Figures 8, 9, and 10, and described below.

Sheep and goats

Traditionally, sheep production is concentrated in the more arid areas in the eastern and south-eastern parts of the country with limited crop production but vast availability of rangeland pastures using a pastoralist approach. Sheep would move seasonally from the rangelands in the east and southeast to cropping areas in the west to graze on crop residues. With an improved availability of feed concentrates, reports indicate that towards the end of the last century, a large share of nutritional requirements were provided by feed concentrates, and less by grazing. Before the crisis, sheep provided 20 percent of the milk on the market. A particularly prized breed is Awassi which provides both milk and meat. Before the crisis, it was estimated that some 20 percent of the sheep milk supplied to the market was consumed fresh, while the rest was processed.[7]

[7] Dairy Value Chain Study – unpublished.

Table 13: Syrian Arab Republic - Sheep population

Governorate	2010	2017 estimates	2018 Estimates	2010-2017 percent change	2010-2018 percent change	2017-2018 percent change
Hasakeh	1 832 912	1 452 024	1 400 696	-21	-24	-4
Homs	2 400 000	875 000	1 400 000	-64	-42	60
Deir-ez-Zor	1 700 000	170 000	270 000	-90	-84	59
Hama	3 200 000	1 003 000	1 004 000	-67	-69	0
Al Ghab	285 000	223 942	210 000	-21	-26	-6
Idleb	726 479	568 351	568 351	-22	-22	0
Raqqa	2 064 392	1 445 037	1 263 189	-30	-39	-13
Aleppo	2 000 000	1 978 650	1 200 000	-1	-40	-39
Tartous	77 958	103 177	103 233	+32	+32	0
Lattakia	140 500	107 519	90 000	-23	-36	-16
Rural Damascus	1 800 000	1 700 000	1 700 000	-6	-6	0
Sweida	280 160	428 296	384 400	53	+37	-10
Quneitra	111 073	96 691	152 020	-13	+37	+57
Dara'a	635 000	593 000	653 000	-7	+3	+10
TOTAL	**17 253 474**	**10 744 687**	**10 398 889**	**-38**	**-40**	**-3**

Source: MAAR estimates.

Figure 8: Syrian Arab Republic – Estimates of sheep population per Governorate, 2010, 2017 and 2018

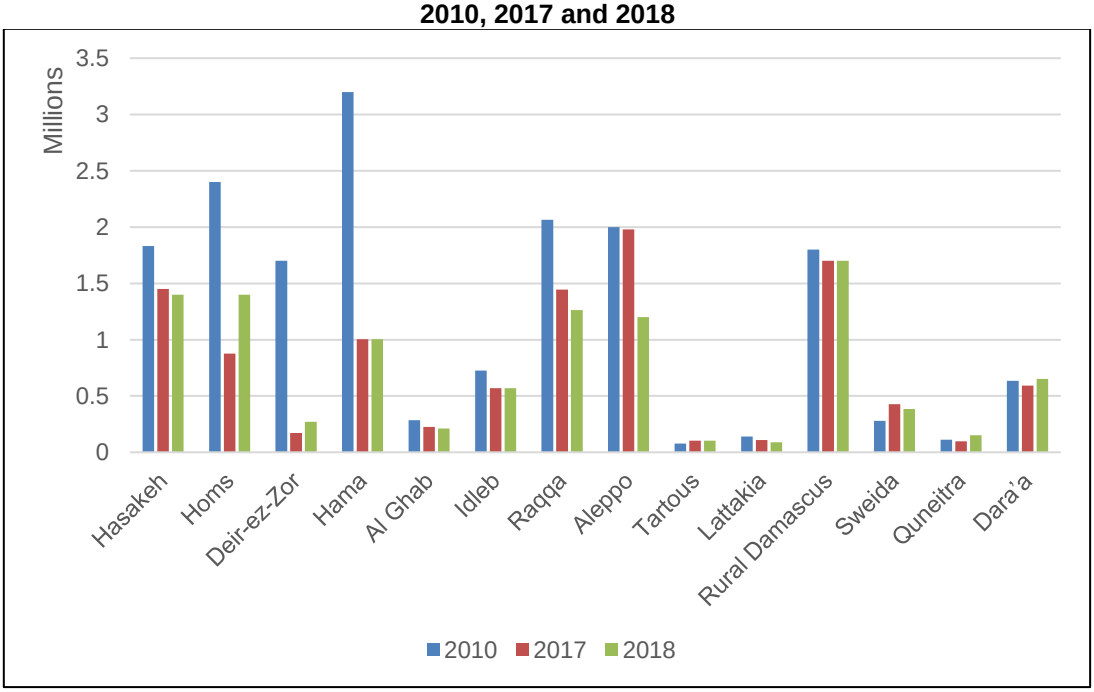
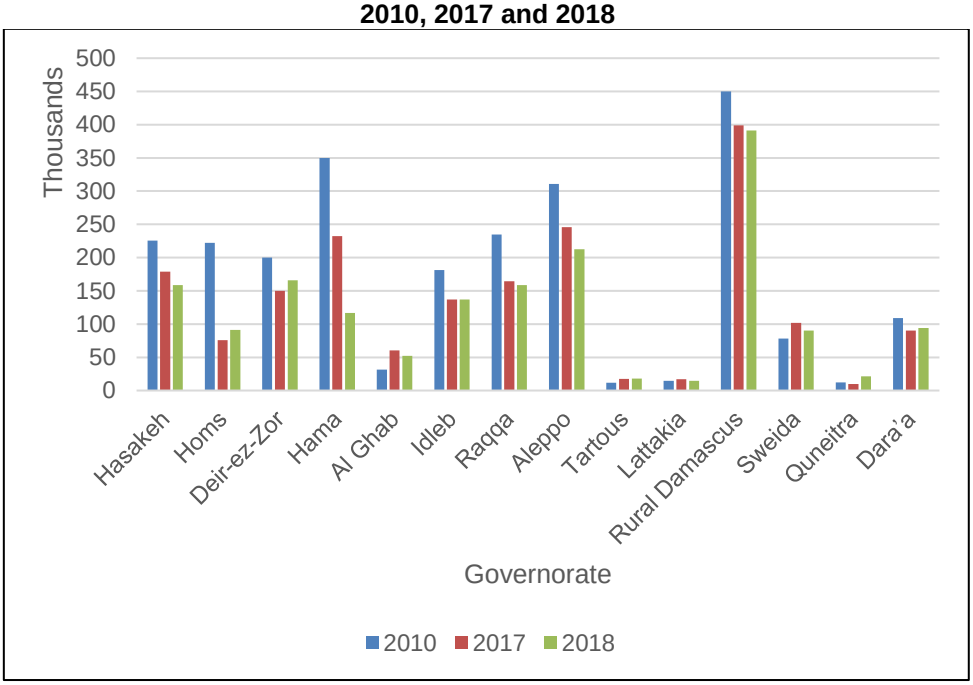


Table 14: Syrian Arab Republic - Goat population

Governorate	2010	2017 estimates	2018 estimates	2010-2017 percent change	2010-2018 percent change	2017-2018 percent change
Hasakeh	225 799	178 962	158 744	-21	-30	-11
Homs	222 000	76 000	91 000	-66	-59	+20
Deir-ez-Zor	200 000	150 000	166 000	-25	-17	+11
Hama	350 000	232 275	116 666	-34	-67	-50
Al Ghab	31 702	60 338	52 000	90	+64	-14
Idleb	181 294	137 089	137 089	-24	-24	0
Raqqa	234 524	164 167	158 600	-30	-32	-3
Aleppo	311 017	245 620	212 729	-21	-32	-13
Tartous	11 779	17 741	17 796	+51	+51	0
Lattakia	14 800	16 912	14 800	+14	0	-12
Rural Damascus	450 000	399 000	391 276	-11	-13	-2
Sweida	78 394	101 767	90 160	+30	+15	-11
Quneitra	12 173	9 557	21 518	-21	+77	+125
Dara'a	109 000	90 000	94 000	-17	-14	+4
TOTAL	**2 432 482**	**1 879 428**	**1 722 378**	**-23**	**-29**	**-8**

Source: MAAR and CFSAM estimates.

Figure 9: Syrian Arab Republic – Estimates of goat population per Governorate, 2010, 2017 and 2018



The provisional estimate for the total number of sheep for 2018 is about 10.4 million heads. This represents a decrease of 40 percent compared to the last pre-crisis census and a 3 percent decline compared to 2017. The total number of goats is estimated at about 1.722 million heads which decreased by almost 30 percent compared to pre-crisis year (2010) and by 8 percent compared to 2017.

There have been noticeable fluctuations between governorates. Compared to 2017, six out of the 13 rural governorates and Al Ghab experienced a decrease in numbers of sheep with the largest decline in Aleppo (39 percent) and in Lattakia (16 percent). For goats, reduction in numbers were seen in seven governorates and in Al Ghab with the largest decline in Hama (50 percent), Al Ghab (14 percent), Aleppo (13 percent) and Lattakia (12 percent). Conversely, the increase in the numbers of sheep was reported in four governorates with the largest in Homs (60 percent), in Deir-ez-Zor (59 percent) and in Quneitra (57 percent). Regarding goats, the increase was also observed in four governorates, with the largest being in Quneitra (125 percent –

although starting from a low base) and Homs (20 percent). Increases in the numbers are likely to be related to previous underestimation of livestock numbers in areas out of Government control.

Cattle

Before the onset of the crisis, cattle farms were based on imported and local dairy breeds with beef production as a by-product of dairy farms. Cattle are mostly raised in AEZs 1-3 (Figure 3), and on irrigated lands around cities where green fodder is available. Traditionally, cattle did not graze but were stall-fed. Reports seem to indicate that before the crisis some 40 percent of milk was consumed fresh, while the rest was processed in a range of processing facilities, including large-scale firms, smaller traditional processing plants, and in homes.[8]

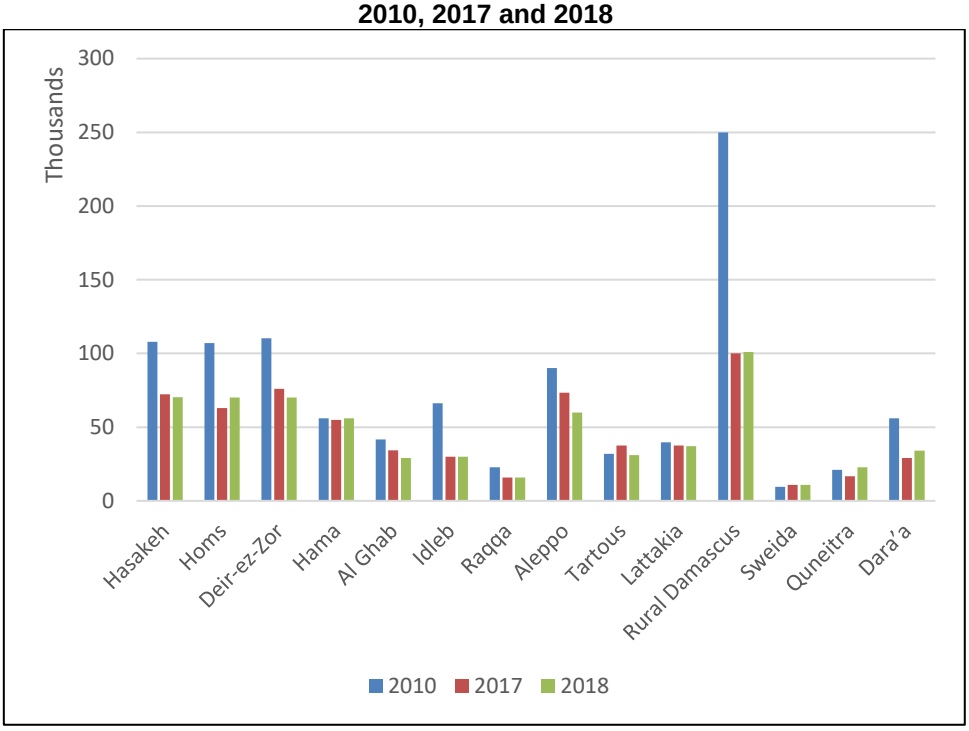
Table 15: Syrian Arab Republic - Cattle population

Governorate	2010	2017 estimates	2018 estimates	2010-217 percent change	2010-2018 percent change	2017-2018 percent change
Hasakeh	107 875	72 207	70 243	-33	-35	-3
Homs	107 000	63 000	70 000	-41	-35	+11
Deir-ez-Zor	110 208	76 000	70 000	-31	-36	-8
Hama	56 000	55 000	56 000	-2	0	+2
Al Ghab	41 763	34 257	28 994	-18	-31	-15
Idleb	66 217	30 000	30 000	-55	-55	0
Raqqa	22 668	15 868	15 860	-30	-30	0
Aleppo	90 000	73 400	60 000	-18	-33	-18
Tartous	31 896	37 634	31 070	+18	-3	-17
Lattakia	39 800	37 494	37 000	-6	-7	-1
Rural Damascus	250 000	100 073	100 870	-60	-60	+1
Sweida	9 541	10 806	10 833	+13	+14	0
Quneitra	21 032	16 750	22 792	-20	+8	+36
Dara'a	56 000	29 000	34 000	-48	-39	+17
TOTAL	**1 010 000**	**651 489**	**603 662**	**-35**	**-40**	**-7**

Source: MAAR and CFSAM estimates.

[8] Dairy Value Chain Study – unpublished.

Figure 10: Syrian Arab Republic – Estimates of cattle population per Governorate, 2010, 2017 and 2018



The total number of cattle in 2018 is estimated at 604 000 heads, a decrease of about 40 percent compared to 2010 and by 7 percent compared to 2017. Compared to 2017, just like small ruminants, the situation fluctuated largely between governorates. Five governorates and Al Ghab experienced a decline in numbers. The largest decreases were observed in Aleppo (18 percent) and Tartous (17 percent). On the other hand, five governorates showed an increase in numbers with the largest seen in Quneitra (36 percent) and Dara'a (17 percent).

Poultry

The poultry sector, usually the source of cheapest protein, was the hardest hit by the crisis. A large number of poultry units were destroyed or abandoned, resulting in a decreased supply of poultry meat and eggs. It is estimated that the country's poultry population, mostly raised in intensive production systems and numbering about 26.2 million birds before the crisis, decreased by 50 percent by 2015. In addition, many smaller poultry farms and hatcheries were damaged. Disruptions in energy supply further threatened the production of small chicks.

In 2017, the poultry population was estimated to stabilise at around in 11.5 million birds. In 2018 the number of birds increased slightly owing to a variety of back-yard chicken distribution programmes but did not increase dramatically compared to the previous year. In 2018, out of 9 610 poultry units 6 094 were operational. Currently a number of initiatives are under way to distribute chicken, feed, and vaccinations as part of livelihood support programmes.

Other species

Although the Mission did not strive to estimate numbers of other, less economically important livestock species, such as buffaloes and camels, it appears they have suffered reductions similar to other types of livestock during the crisis.

Animal nutrition

Natural pastures and rangelands, cultivated green and conserved fodder, as well as crop residues and processed by-products and residues constitute the main sources of livestock feed in the country. Barley is the major and preferred fodder crop for livestock but, although more drought-tolerant than wheat, its production varies year-on-year depending on weather conditions. In years of lower rainfall or other weather events rendering the crop not worth harvesting, other crops become an important source of fodder for ruminants.

Pastures

The total area of grassland and natural pastures in the country is about 8.22 million hectares, out of which some 86 percent, known as the Badia, is situated in the fifth agro-ecological zone (see Figure 3) with an annual precipitation of less than 100 mm. In an average rainfall year, the Badia provides an estimated 15 percent of the national sheep flock's grazing resources assuming grazing for six to seven months in a year.[9]

In the last few decades, before the crisis, the Government of the Syrian Arab Republic made large investments to regenerate and manage the rangelands for long-term productivity. Wells were dug to tap underground water at the request of the cooperatives/herders according to a Government plan to provide a network of wells across Al Badia. At the same time many hectares of rangelands were rehabilitated. Despite these efforts, the impact of the crisis, compounded by the recent dry years, has profoundly affected the Badia rangelands. Since the crisis, in addition to limiting access due to insecurity and threats of landmines, many wells have been destroyed and veterinary support eroded. Reports indicate that during the crisis, almost 90 percent of the Badia area was out of the control of the Government, forcing about 80 percent of breeders to move out to areas deemed more secure. Following the relative improvement in the overall security situation in the country, nearly 40 percent of the herders moved back. Traditionally, there were three categories of household breeders in the Badia: large-scale (20 percent of the total, each with >1 000 heads of sheep); medium-scale (40 percent, with100 to 500 heads of sheep); and small scale (40 percent, with <100 heads of sheep). This trend has now changed to 2 percent of large-scale, 30 percent of medium-scale and 40 percent of small-scale. The remaining 28 percent lost completely their herds and are currently not involved with livestock breeding.

Pasture conditions in the Badia, but also elsewhere, have been very good this year as a result of the favourable rains. However, access to the Badia remains constrained by security concerns, especially the continuing threat of landmines and unexploded ordinances. Notwithstanding the security threats, the abundance of pastures seen across the visited localities should last for several months to come and ease demand for purchased feed.

The current body condition of animals, mostly sheep and goats, seen by the Mission in the markets or along the roads during travelling, as well as cattle observed in the visited farms, was deemed to be very good, except in Homs where some malnourished cattle were seen in a localized household, possibly due to poor management practices.

On the positive side, years of under-grazing and resting allowed recuperation and re-establishment of varieties and species in the Badia, thus providing nutritious forage for the herds that should last for several years to come.

Feed and fodder[10]

The main agricultural stubbles are wheat, barley and cotton. Cotton seed cake provides the major source of supplementary protein for grazing animals. Wheat bran and straw are the most important crop by-products for feed production. Barley and wheat bran are the most commonly used feed and ingredients for livestock concentrates. Despite good rainfall resulting in an abundance of natural pastures and grazing rangelands, as well as increased production of cereals in the 2018/19 season compared to the previous years, the high cost of feedstuff ingredients has been persistently mentioned all across the governorates.

However, except in a few locations (e.g. Tartous and Deir-ez-Zor), the average prices of barley and wheat bran on the open market in 2018/19 did not increase compared to the average of 2017/18, and field interviews revealed that prices of barley, wheat bran, straw and cotton seed were actually lower this year than last year, reflecting improved availabilities. At the time of the Mission, the GOF was selling barley for SYP 75/kg compared with SYP 130/kg in 2017. On average on the open market, barley price decreased from SYP 140/kg in 2017 to SYP 130/kg in 2018), wheat bran eased from SYP 100/kg in 2017 to SYP 80/kg in 2018, cotton seed from SYP 170/kg in 2017 to SYP 140/kg in 2018) and straw from SYP 180/kg in 2017 to SYP 80/kg in 2018.

However, the Mission understood that these prices might increase over the year as the crop residues and the pastures become exhausted. High feed prices are particularly noticeable in winter time when livestock,

[9] www.fao.org/tempref/docrep/fao/009/ag860e/ag860e00.pdf

[10] Feed usually refers to concentrates made from crop products/grains or by products of food industries or blended fodders. Fodder refers to crops/pastures on which animal can graze: forage (hay), crop residues, crop products/grains for feed production (barley, bran…).

particularly cattle, are fed with expensive concentrates (barley) and to a smaller extent remaining crop residues.

Fodder is a key factor of livestock growth. In this respect, the GOF was established to provide the farmers with concentrate fodder in order to increase livestock productivity. GOF, a profit-oriented public establishment, buys and stores a significant portion of fodder to be distributed to public, private, and corporate sectors through its branches across the country. It purchases grain and farm by-products from farmers and imports fodder additives to produce fodder concentrates. The role of GOF in fodder supply has been declining with increasing privatization process and increasing number of private fodder firms competing with the GOF.

In the pre-crisis period, the GOF factories used to produce about 250 000 tonnes of cattle feed concentrates annually. As a result of damage to two factories in Damascus and one in Aleppo, this amount has now decreased to 100 000 tonnes. At the moment, one factory in Damascus and the one in Aleppo are being rehabilitated, thus increasing the availability of feed concentrates in the future. In addition, GOF had 121 feed distribution centres of which 80 were damaged, but 15 have already been rehabilitated and three are in the process of being rehabilitated.

So far this year, owing to increased production, the quantity of barley received by the GOF by the time of the Mission (when most of the barley crop had already been harvested) was about 331 000 tonnes against 4 549 tonnes received in the previous year. In 2018, the GOF reports it imported 5 000 tonnes of barley to fill the gap. Additional amounts might have been imported privately.

Water

Regarding livestock watering, the Mission noticed that in some areas watering is insufficient or comes at a high cost. Indeed, in some visited sites, the Mission observed that water for the animals is often supplied by water tankers, possibly resulting in insufficient water intake by animals. This, compounded by insecurity and high transportation costs, adds further to the farmers' overall cost of production.

In addition, limited water intake reduces animal performance as water constitutes approximately 60 to 70 percent of an animal's live weight. Water requirement is more important than consuming food as it regulates body temperature and is vital for organ functions such as digestion, waste removal and the absorption of nutrients. Hence animals should be given all the water they can drink because animals that do not drink enough water may suffer stress or dehydration leading to reduced performance.

Animal production

Livestock yields and outputs

As mentioned above, before the crisis animal production contributed over one-third to the total agricultural production and about one-third of agricultural exports. Striving to increase production and improve self-sufficiency ratios in animal protein, the Government established several centres for Artificial Insemination (AI), encouraged the formation of dairy cooperatives, and expanded veterinary as well as extension services. Veterinarian field clinics providing free animal vaccinations were also established. Dairy farmers produced annually about 1.1 million tonnes of cow milk, mainly from small herds in the peri-urban areas to supply urban centres, although even before the crisis, milk productivity per cow was low compared to other countries. The difference was attributed mostly to animal husbandry practices, inconsistent feed quality, and lack of genetic improvement. Some 500 000 tonnes of sheep milk were produced annually, accounting for about 30 percent of the total milk production in the Syrian Arab Republic.

The crisis has considerably disrupted the performance of the livestock sector. The reduction in the number of animals, general insecurity, the difficulty in marketing, increased feed cost and, to a lesser extent, insufficient veterinary coverage were frequently cited among the most limiting constraints. Similar opinions were voiced by traders and butchers who found live animals to be expensive because of a number of factors including the high prices of animal feed and uncontrolled exports (or smuggling) of livestock.

As a general rule in livestock economics, in years of good rainfall farmers, not faced with feed constraints, try to keep their animals for reproduction to increase their returns in the future[11], Consequently, prices of animal products (milk and dairy products) generally decrease as they are highly available, but prices of meat increase because fewer animals are sold. For example, at the time of the Mission, reports indicated that the average

[11] On the contrary, in 2018, following a poor cerealharvest, farmers faced with high feed costs were trying to sell their animals, but buyers were few, putting a downward pressure on prices of live animals.

price of sheep milk decreased from SYP 200/kg in 2017/18 to SYP 185/kg this year; and cows' milk from SYP 160/kg to SYP 120/kg.[12] Most milk not sold fresh appears to be processed using traditional methods as large-scale industrial processing factories are not operational. On the contrary, the average price of meat increased; for instance, the price of sheep meat rose from SYP 3 000/kg in 2017/18 to SYP 4 500/kg this year.

For decades, most of the country's poultry was raised in intensive production units, but with the conflict-related closure of more than half of the country's units, there has been an increase in the number of backyard poultry for household consumption and for sale locally. At the same time, FAO and other organizations are assisting with the re-establishment of poultry units. However, the high cost of poultry feed, most of which must be imported, acts as a disincentive for producers. Electricity, most of which is generated from expensive diesel, also adds to the cost of production. Chickens imported (or smuggled) from neighbouring countries, where the cost of production is lower, are often cheaper than the locally produced ones.

Livestock credit

The ACB supports short- and medium-term loans to build feedlots and feed stores in addition to marketing and buying subsidized feedstuffs and other production inputs. However, difficulties in accessing loans are frequently cited by farmers as a particular concern as the required guarantees and collateral, as well as procedures for compliance, licensing and administration, limit the ability of many small livestock producers to access credit.

Reports also indicate that in most cases average farmers find the ACB credit to be expensive. This has hampered some small-scale producers from restarting their businesses. For those unable to access the ACB credit facility, a significant informal credit system runs in parallel to the official ACB credit system. The informal credit system ranges from seasonal advances to sheep producers for sheep cheese production to provision of capital funds for agro-processing investments.

Artificial insemination

Artificial insemination (AI) practice in the Syrian Arab Republic has been common since the 1980s. Before the crisis, there were several projects for genetic improvement fulfilling all necessary conditions including semen production centres, improved registered bulls, liquid nitrogen storage facilities and trained veterinary technicians. In 2010, MAAR produced 1.2 million doses of semen from 74 Friesian bulls with high specifications, and provided AI services free of charge for farmers.

Since the onset of the crisis, the practice has decreased considerably due to difficulties of producing semen and the shortage of qualified technicians to administer AI. The main AI centres were destroyed and apparently there are now only about 26 qualified technicians. Consequently, the number of artificial inseminations fell last year to 1 400 cases; but has considerably increased this year (2018/19) to about 43 000 cases. Reports also indicated that about 640 000 straws of semen were produced this year from 60 elite registered bulls maintained in one of the rehabilitated AI centres where liquid nitrogen production was restarted with 300 litres. Overall, in an effort to restart the practice of AI, in these past years, half a million semen doses were distributed to breeders throughout the country. This included a programme of artificial insemination of highly priced Awassi sheep.

Despite the interest among farmers for AI, there are complaints that AI is often unsuccessful, possibly due to poor identification of oestrus under field conditions as well as due to poor management and general shortage of feed resources which impact fertility. Another possibility, although not proven, relates to possible professional misconduct by technicians who try to maximize profit based on the number of AI procedures they carry out. Indeed, given the large number of animals to be inseminated in a short period of time, it is quite possible that the technicians do not respect the required practices and administer AI to cattle whether they are on heat or not. Success rates differ greatly by governorates. In any case, in all the visited governorates the number of AI application before success reported by the farmers is high and varied from two to four times.

In addition, the programme of importing in-calf Holstein-Friesian heifers from Europe to restock the country's dairy herd, started in 2017 with 5 011 heads. It is understood that in 2018, 4 465 cows were shipped from Germany, of which 404 were rejected for non-conformity and 25 died in transit. Of the remainder, 2 126 were sold to breeders in Quneitra, Homs, Lattakia, Aleppo and Sweida at a 30 percent discount with favourable loan-repayment terms using a credit facility from ACB. The remaining 1 910 went to the General Organization

[12] The annual Syrian total domestic supply of milk per capita decreased from 134 kg in 2006 to 107 kg in 2015. The annual Syrian total domestic supply of cattle and sheep milk per capita decreased from 129 kg in 2006 to 100 kg in 2015. (Dairy Value Chain Study - unpublished).

for Cattle for multiplication. Further imports are anticipated from Austria in the near future. Live births are reported with a 90-percent success rate.

Livestock markets

More than 90 percent of the national livestock production is marketed through the private sector. The major sheep and cattle domestic markets are in Aleppo and Hama. The domestic market price for live animals is not regulated by the Government.

Prior to the crisis, with a well-developed road and communication infrastructure as well as relatively short distances between markets, traders were able to compete in markets nationally. But now, as a result of the crisis, there are fewer livestock markets and access to them is often difficult. This has had an impact on the livelihoods of livestock producers and livestock traders as well as on consumers' access to livestock products.

The major limiting factors reported during the Mission visits in some places included insecurity of trade routes, market closures or destruction, lack of demand, the departure of traders from some conflict-affected governorates and increased smuggling of live animals to neighbouring countries. Also, high Government taxes were cited among the most limiting constrains.

As discussed earlier, in years of good rainfall resulting in improved pasture conditions and increased cereal production, breeders strive to keep their animals for reproduction as they are not faced with feed constraints. Consequently, livestock markets are not well supplied to satisfy the demand of the clients. For instance, in the livestock market in Hasakeh, the typical prices per kg live weight this year are SYP 1 900 for sheep and SYP 1 300 for goat. Last year at the same period, these prices were down about 50 percent for both species. In Hama, the indicated prices are SYP 2 200 for sheep, SYP 1 600 for goats and SYP 1 800 for cattle. Last year, these prices were down to SYP 1 650, SYP 1 100 and SYP 1 200, respectively. In Aleppo, for sheep they are SYP 2 100 against SYP 1 500 last year.

It is also a general rule that sheep prices usually rise during the period of Eid al-Adha. Reports indicate that last year prices of sheep generally started from SYP 2 000/kg of live weight and more than SYP 3 900/kg slaughtered. As for cows, prices started at SYP 2 300/kg and closed at SYP 4 200/kg slaughtered.

Slaughterhouses

Most slaughterhouses are owned and operated by the governorates. The lack of conventional slaughterhouses was frequently cited as being of particular concern. This is an important issue as it may render meat unfit for human consumption; thus impairing food security and public health. Also, butchers have argued that abattoir fees are high. A new slaughterhouse, which opened in Qamishli (in a Kurdish-controlled area) in April 2018, has the capacity to slaughter 70-80 sheep and 40-50 cattle per day. It employs three inspectors and two support staff. Current slaughter costs are SYP 500 for a sheep and SYP 2 000 for a cow.

Fisheries

Due to the low natural productivity of inland fisheries combined with low consumer preference for fish, the fishery and aquaculture sector plays a minor role in the Syrian Arab Republic's economy. The area covered by water, including marshes, consists of only 1 610 km^2 which represents approximately 0.9 percent of the total area of the country. Marine fisheries are dominated by small-scale fishermen, and includes some 1 200 licensed coastal fishing vessels. Artisanal fishery is the only capture fishery in inland waters with 1 283 small fishing boats, of which only 436 are motored. The actual number of working fishing vessels and boats is not available.

Although the sector represents a small portion of the Syrian Arab Republic's economy accounting for only 0.38 percent of the country's agricultural GDP prior to the crisis, it used to be the major income-earning and employment opportunity of the population in coastal and lacustrine areas and remains a major source of livelihood for the poorest segments of the population in the coastal areas.

While a clear picture of the impact of the crisis on the fisheries sector is lacking, information available indicates that the sector has suffered similar problems as the livestock sector during the crisis. The number of fishing vessels and catches from both marine and fresh waters decreased. In Hama Governorate, out of 187 licensed and 312 unlicensed fish farms producing an average of 7 100 tonnes of fish annually pre-crisis, only 40 remain operational, with an annual production of 250 tonnes. In Aleppo Governorate, fishing is now confined to Lake Assad. Another factor leading to the decrease in fish stocks is the use of unapproved fishing methods including dynamite fishing. For the past years following the collapse of Government control, reports indicate that this

mode of fishing has been used increasingly (e.g., in Raqqa) in Euphrates River resulting in great damage to fish. Industrial waste and residues from environmentally harmful oil extraction are further complicating the situation.

The Fisheries Commission programme is making efforts to increase inland fish production, but the national fish-consumption patterns and general preferences for other sources of protein remain a major challenge. Yearly seafood and freshwater fish consumption of the country prior to the crisis was estimated to be 0.9 kg per person, which is low compared to neighbouring countries.

Beekeeping

Beekeeping used to be a traditional industry in the country before the crisis, producing honey, royal jelly, natural wax and propolis. The beekeeper could live off his production if he owned at least 100 hives. Transhumant hives could produce an average of 20 to 25 kg of honey per annum per hive. Compared to the international market prices, the local honey selling price is very high, up to an average of SYP 8 000/kg in 2018 and is reported to have been above international prices also in the past.

Prior to the crisis, there were 700 000 beehives in the country producing on average 3 200 tonnes of honey. Some 20 percent of the hives were traditional and 80 percent modern. The reports indicate that during the crisis bee colonies were destroyed or neglected, with a decrease of 86 percent in many places from Rural Damascus to Lattakia. Bombs have contaminated the environment and polluted the air, and many beekeepers have fled their land. Current annual honey production is estimated to be between 1.5 and 2 000 tonnes. However, the figure was not verified by the Mission.

Notwithstanding these difficulties, efforts are being made by the Government and international organizations such as FAO to restore the sector; but there are concerns about mortality resulting from pesticide misuse and the prevalence of external parasitic mites (*Varroa mite*) that attack and feed on the honey bee colonies. Given the lack of marketing channels, beekeeping at this point does not have the potential to serve as a main livelihood option for beekeepers. Rather, it could be seen as a supplement to other livelihoods and the importance of beekeeping should be seen through an environmental lens as contributing to pollination.

Animal health

One of the main impacts of the crisis on the livestock sector has been shrinking numbers of technically skilled staff which has resulted in a breakdown in veterinary services. Before the crisis, the veterinary sector performed well in terms of veterinary supplies and services, but since the crisis it has nearly collapsed. The veterinary vaccine production department in Shabaa near Damascus that used to produce vaccines has also been damaged. This negatively impacted on the access to veterinary services as well as on the availability of good-quality veterinary drugs and animal vaccines. However, despite the crisis, the Government has been able to implement a free vaccination programme using both locally produced and imported vaccines, mostly from the Russian Federation. For the first months of 2019, 26 million free vaccines were administered by the Government, among which 7 million doses were for Foot-and-Mouth Disease (FMD) and the remainder for the other major diseases.

Across all governorates visited, the most common epizootic livestock diseases mentioned include sheep enterotoxemia, pasteurellosis, FMD, Lumpy Skin Disease (LSD), sheep pox, brucellosis and Newcastle disease. However, most were reported to be under control thanks to regular Government vaccination campaigns free of charge. Some localized cases of brucellosis in sheep were reported in Rural Damascus and Deir-ez-Zor, as were cases of LSD in cattle in Rural Damascus, Deir-ez-Zor and Tartous, and cases of mastitis in cows in Dara'a. High incidence of pox in sheep was mentioned in several governorates (e.g., Deir-ez-Zor) despite vaccination against the disease. Additionally, the lack of timely vaccination against common livestock diseases has been frequently mentioned. For instance, farmers reported high incidence of LSD cases in some governorates (e.g., Deir-ez-Zor) and related it to poor timing of the vaccination schedule. While this is possible, considering the large numbers of claims, it is also possible that the situation was related to good rainfall, high temperatures and high humidity that are conducive to the proliferation of insect vectors. It should be noted that, being in the same epidemiological unit and considering the frequent movements of animals between countries (due to cross-border family links), even under normal circumstances, the risk of diseases spreading across the region is high. This risk is, of course, heightened when a country's vaccination capability has been impacted by the crisis, as is the case in the Syrian Arab Republic. In the poultry sector, cases of *Gumboro* (infectious bursal disease) and infectious bronchitis were reported in Dara'a.

However, it is understood that the incidence levels of all these mentioned pathologies were not unusually high and they were fully controlled. Also, apart from the cases of brucellosis in sheep in Deir-ez-Zor, where a ram exhibited an orchitis which might be a clinical sign of brucellosis, no clinical signs of the mentioned diseases were observed in any visited herds or flocks.

Major constraints

With the crisis now in its ninth year, the livestock situation has changed drastically due to the cumulative impacts of a large array of factors. Overall, similar to past reports, the main constrains facing the livestock sector identified by the Mission remain practically unchanged and include among others:

- High prices of feed have been the most common cited challenges.
- The presence of landmines as a limiting factor to the access to Badia rangelands.
- Limited supply chains and cold chain disruptions due to power shortages and insecurity affecting both inputs and outputs, including transportation bottlenecks.
- Limited access of livestock owners to animal health services. For instance, the lack of timely vaccination against common livestock diseases has been frequently mentioned.
- Reports of low quality of drugs and animal semen persist, though this may be the result of incorrect application or administration. For instance, complaints that artificial insemination is often unsuccessful have frequently been reported.
- Lack of functioning veterinary diagnostic and food analysis laboratories and a shortage of well-managed slaughterhouses is frequently cited as being of particular concern. This is an important issue as it may render poor animal disease identification and food quality unfit for human consumption; thus, impairing not only the control of animal diseases but also food security and public health.
- Weak livestock support services and low numbers of well-trained field veterinarians and animal husbandry specialists, which lowers livestock productivity.
- Lack of hatcheries to restart poultry activities.
- Problem of national fish-consumption patterns.
- Difficulty in accessing credit for fodder, agricultural inputs, and improved technologies from abroad.

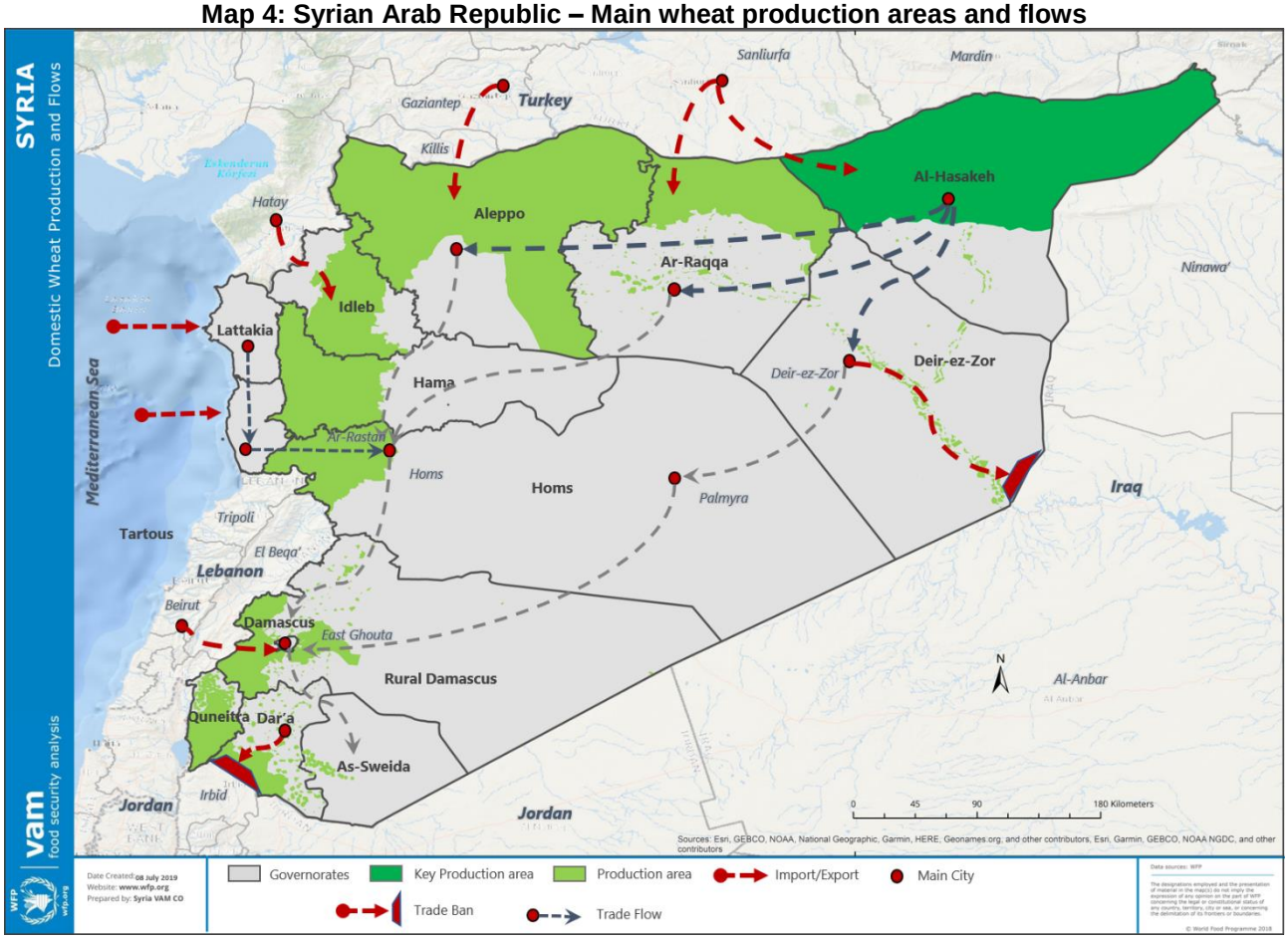
There does not seem to be a fully functioning supply value chain and lack from cold supply chain is preventing transportation of meat and dairy products over longer distances. Lack of supply chain is preventing movement of goods, and creating regional differences in prices and availability. Dairy products are processed traditionally, and are often sold only in the area of production for fresh consumption.

LOCAL FOOD MARKET CONDITIONS

The Syrian Arab Republic has historically been a strong agrarian economy. Much of the country's crop land lies in the north east, north and central parts of the country, including notably the governorates of Hasakeh, Raqqa, Aleppo, Hama, Homs, and Rural Damascus. Agriculture in the western governorates of Lattakia, Tartous and Idleb is known to largely centre on citrus fruits, apples, olives and vegetable cultivation. While the Badia region, a stretch of semi-arid land covering around 55 percent of the country, is primarily used for livestock grazing.

While the Syrian Arab Republic cultivates a number of crops, namely barley, cotton, tobacco, sugar beet, lentils, chickpeas, fava beans, peas, vegetables, citrus fruits, olives and herbs, its main staple is wheat. Up to 40 percent of wheat grain is cultivated in Hasakeh, with Raqqa, Aleppo, Hama and Homs contributing much of the remaining 60 percent. Some wheat is also cultivated in Rural Damascus and in the southern governorates of Dara'a and Quneitra and in the irrigated land of Deir-ez-Zor. As a result, much of the wheat trade flow goes from north-east and northern parts of the country towards west and southern Syrian Arab Republic (Map 4).

Map 4: Syrian Arab Republic – Main wheat production areas and flows



Source: WFP.

The Syrian Arab Republic is currently a wheat deficit country, meaning it does not produce enough to meet its needs. Wheat is being imported into the Syrian Arab Republic mainly through its sea ports in Lattakia and Tartous as well as via the Beirut-Damascus road axis. In 2017, the Russian Federation agreed to supply the Syrian Arab Republic with 1 million tonnes of wheat grain per year over three years (2017-2019). Wheat flour is also being imported into the country through private traders and through international humanitarian agencies who are importing around 100 000 tonnes of wheat flour per year for their food assistance programs. Wheat is also being traded into northern Syrian Arab Republic, namely Idleb, northern Aleppo and Raqqa from Turkey. Some of this wheat is smuggled through the borders and finds its way onto the Syrian market (Map 4).

The Syrian Arab Republic heavily depends on its markets for its food security. Already in 2010 over 50 percent of Syrians were reported to be living in urban areas making markets essential in providing Syrians with their food needs. The conflict, the resulting international bans and the more frequent erratic weather patterns experienced by the Syrian Arab Republic in recent years, have meant that ever more Syrians are depending on markets to meet their food needs. A national food security assessment conducted in 2017 by the Syrian Arab Republic's Central Bureau of Statistics and WFP (FSA 2017) found that 80 percent of Syrians reported to be depending on markets for their main source of food.

Over the past two years accessibility has greatly improved across much of the Syrian Arab Republic. By November 2017, IS was pushed-out of Raqqa and most of Deir-ez-Zor, opening-up important trade routes across the country which had been disrupted since 2013. Government advances in East Ghouta (Rural Damascus), Ar-Rastan (Homs), Dara'a and Quneitra by August 2018 further improved trade routes consolidating an important north-south trade corridor within the Syrian Arab Republic. IS' removal from the Syrian Arab Republic's territory by March 2019 has brought increased stability across the country thereby facilitating trade from surplus to deficit areas across the country.

While some food processing factories remain (such as olive oil processing in Tartous, lentils and split peas processing plants in Hasakeh and tomato paste in Rural Damascus) most factories merely repackage imported food and liquids such as cooking oil, rice, pasta, sugar, lentils and chick peas for the local market. The remaining processing and repackaging factories are located in and around Damascus, Homs, Dara'a, Tartous and Lattakia. Previously industrially strong areas of the Syrian Arab Republic such as Aleppo have seen heavy

destruction and looting of factories and processing plants with estimates reporting that the governorate is currently operating at ten percent of its pre-crisis industrial output capacity with projections putting output at 20-30 percent by 2020 due to an increase in the number of returning people and traders to the governorate.

Marketing of food commodities in the Syrian Arab Republic is affected by numerous constraints. Strategic national commodities such as wheat, tobacco, sugar beet and cotton are heavily protected and regulated through input and purchase subsidies and are therefore transported across the country by public services. All other food commodities are left to the market and its private actors/traders to store, process and transport the goods.

Farmers in the Syrian Arab Republic tend to have limited knowledge on post-production management practices (such as storage, packaging and processing) which have typically been taken care of by wholesalers and traders. Wholesalers and traders also tended to take care of food transportation across the country. The conflict though has crippled many traders' financial ability to purchase goods as well as limiting consumers' purchasing power and liquidity. This has meant that traders are not finding an adequate buyer's market for their commodities thereby influencing traders to buy and store fewer goods as a risk-mitigation measure to avoid loss as well as pushing traders to expand further their market coverage in an attempt to find a buyer's market for their commodities.

With traders buying less, farmers are faced with high levels of food waste, an issue further affected by the reduced number and scale of food-processing plants still operational in the country. Weak consumer demand is also forcing high levels of food waste at wholesaler/trader level. Food waste has been made even more pronounced with the 2018/19 good agricultural season which saw above-average rainfall across the country leading to an increase in the supply of fruit and vegetables across the country. An increase in fuel prices and the depreciation of the Syrian Pound have meant that food prices have increased in 2018 and 2019, hereby further limiting consumers' purchasing power at a time when food supply on local markets increased. This, in turn, has resulted in increased levels of food waste. An interviewed wholesaler in Tartous' central market, a key fruit and vegetable market for the Syrian Arab Republic, reported that this year was so bad for business that he was having to operate at a loss selling at below break-even prices in an attempt to recoup some of his initial investment. He reported food waste of 25 percent of his purchases in 2019, up from around 10 percent in 2018. Other interviewed wholesalers reported similar food waste levels.

Last year and 2019 have surely been positive in terms of greater stability across the Syrian Arab Republic thereby providing greater trust and knowledge by traders to transport and sell their commodities in previously difficult-to-reach areas of the country. Nevertheless, trade outside the Syrian Arab Republic remains prohibitive with Turkey blocking trade since the start of the conflict and Jordan blocking its recently opened Jaber/Nasib border to the importation of 196 Syrian products (namely agricultural produce), possibly as a measure to protect their own farmers and agricultural sector. The Syrian Arab Republic though is managing to sell some of its produce to Iraq, Lebanon and Gulf countries; however, this sale is marginal in comparison to the scale of possible sale to its neighbouring countries due to the distance of many Gulf countries leading to increased transportation and storage costs, rendering Syrian produce less competitive. Trade with Iraq is limited since the Abu Kamal – Iraq land border remains closed and trade with Lebanon fluctuates.

Food prices

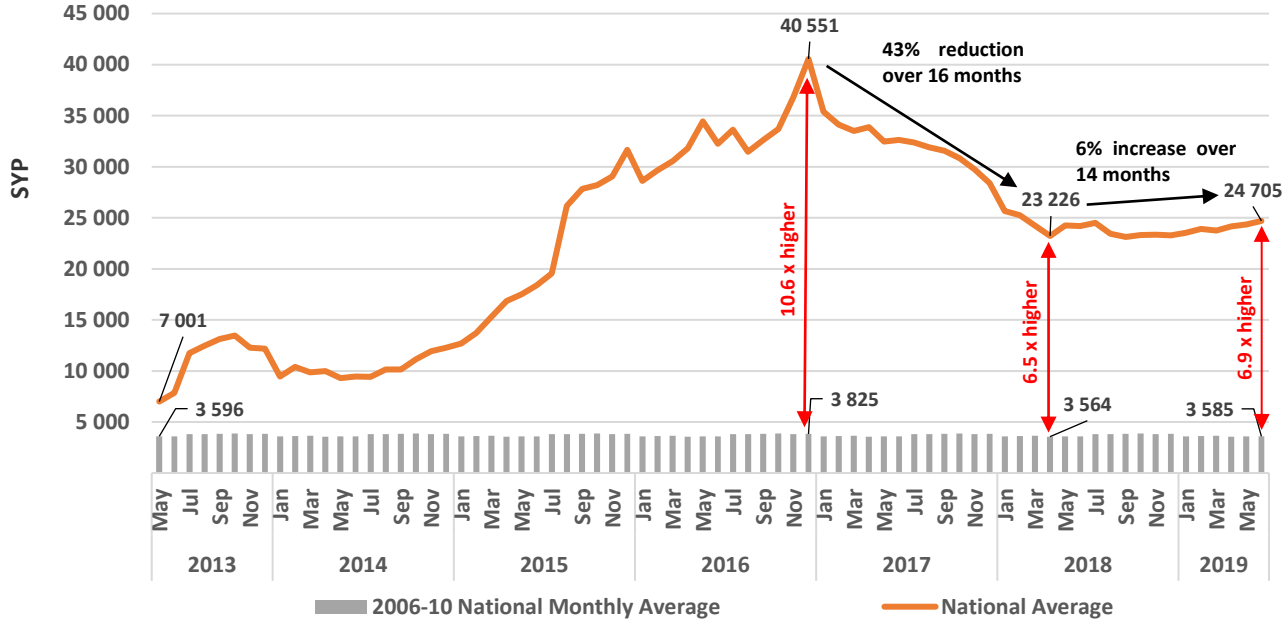
Food prices have drastically increased in the Syrian Arab Republic as a result of the conflict. The main causes of the price increase have been limited access to land and inputs, reduced local production and the devaluation of the national currency. While prices had initially decreased since their peak in December 2016, they have been gradually increasing again over the past 12 to 14 months.

Figure 11 clearly illustrates the undulating trend. The chart uses WFP's referential food basket[13] for a five-member household to monitor food prices over time. The national average covers 42 different markets located in both urban and rural areas of each of the Syrian Arab Republic's 14 governorates.

The chart shows the initial rapid increase in the national average price of a WFP reference food basket in 2013 followed by a slight decrease in food prices in early 2014 and by a much steeper increase in 2015 and 2016, peaking in December 2016 with the heavy fighting in East Aleppo. Since December 2016, national average prices of the reference food basket fell steadily till around mid-2018 after which the price levelled-off at just above SYP 23 000 (equivalent to USD 54 using the official exchange rate) and has been gradually increasing since.

[13] The cost of WFP's reference food basket of dry goods providing 1 930 kcal a day for a family of five during a month. The basket includes 37 kg of bread, 19 kg rice, 19 kg lentils, 5 kg of sugar, and 7 kg of vegetable oil.

Figure 11: Syrian Arab Republic - National food basket monthly average prices compared to pre-crisis period national monthly average prices, 2006-2010



Source: WFP.

The bar chart in Figure 11 illustrates the five-year (2006-2010) pre-crisis national average price of WFP's reference food basket supporting a five-member household for one month. In December 2016, when the national average food basket price peaked at SYP 40 551, the average reference food basket price was 10.6 times higher than the pre-crisis average for December. By April 2018 the national average food basket price averaged SYP 23 266 representing a 43 percent reduction over 16 months, however, remaining 6.5 times higher than pre-crisis levels. Since then the price of WFP's reference food basket has gradually increased to SYP 24 705 (equivalent to USD 57 using the official exchange rate) by June 2019, increasing by 6 percent over 14 months.

Figure 11 clearly shows that even though food prices have fallen since peak crisis times of 2016, prices nevertheless remain extremely high compared to pre-crisis levels. In June 2019, the national average food basket price was nearly seven times higher than the five-year pre-crisis national average for June. Food prices have also been steadily increasing since mid-2018 highlighting a worsening trend in financial access to food.

Reasons for the dramatic increase in prices between 2013 and 2016 are widely regarded to be related to disrupted trade routes, reduced number of traders, high rates of inflation and a volatile and heavily devalued national currency, which affected the price and volume of imports. Improved security within the country, greater political stability and the re-opening of supply routes are largely thought to have led to the recent recovery of trade flows across the country and to the reduction in food prices between 2017 and mid-2018. The recent gradual but steadily increasing prices seen since mid-2018 are largely thought to be a result of the weakening Syrian Pound versus international currencies, especially the US Dollar and the increase in fuel prices affecting food production costs and the transportation of food.

Food basket prices vary considerably by governorate in the Syrian Arab Republic. Table 16 shows how WFP's reference food basket prices are much lower in Sweida, Rural Damascus and Damascus than in Deir-ez-Zor and Raqqa which show the highest cost for a reference food basket. The red bars in the graph show the recent general increasing trend in prices across all governorates in the Syrian Arab Republic when compared to May 2019, December 2018 and June 2018 prices. A few exceptions to the constantly increasing prices do exist but these have been relatively rare over the past 12 months. This recent increasing food price highlights the worsening purchasing power of Syrian households compared to 2018 levels.

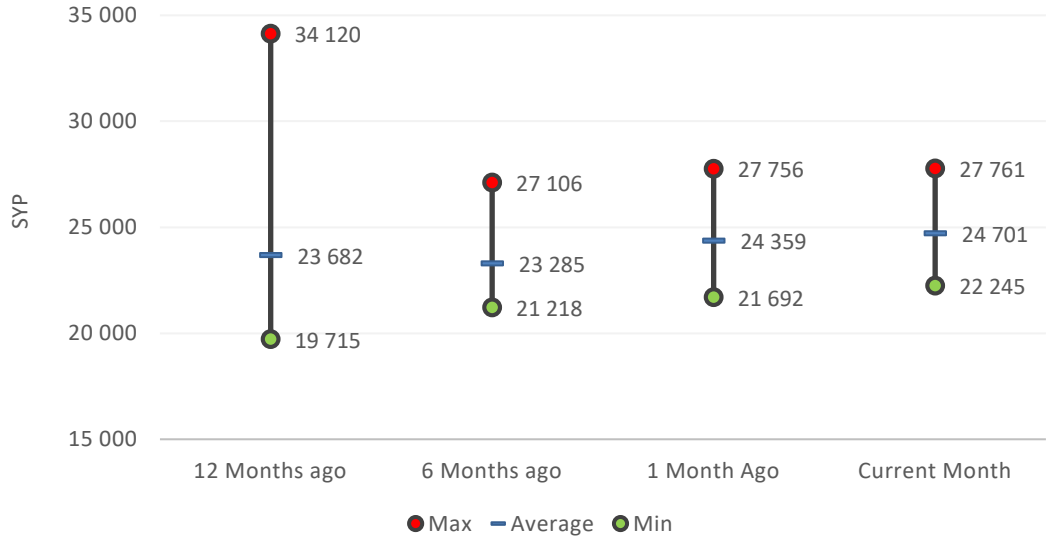
Table 16: Syrian Arab Republic - Reference food basket prices (SYP), June 2018-June 2019

Governorate	Price (SYP) June 2019	1 month change	6 months changes	12 months changes
Aleppo	23 735	2%	6%	-2%
Damascus	22 730	1%	4%	-1%
Dara'a	26 485	4%	12%	7%
Deir-ez-Zor	27 765	0%	2%	-19%
Hama	24 475	-1%	2%	12%
Hasakeh	25 710	4%	21%	30%
Homs	24 730	0%	3%	10%
Idleb	23 840	0%	5%	5%
Lattakia	25 465	-1%	10%	13%
Raqqa	26 135	2%	11%	12%
Rural Damascus	22 250	-1%	-4%	-4%
Sweida	22 885	5%	3%	1%
Tartous	25 240	3%	8%	10%
Quneitra	24 405	1%	4%	0%
National Average	24 705	1%	6%	4%

Source: WFP.

The mean average food basket price by governorate can be seen to be increasing over the past 12 months in Figure 12. However, Figure 12 is also showing that extremes in average food basket prices between governorates in the Syrian Arab Republic continue to reduce notwithstanding the increase in mean price. The highest average food basket price per governorate per month (Deir-ez-Zor) has fallen by 19 percent over the last 12 months and the gap between highest and lowest average food basket price has fallen by 62 percent. This highlights price convergence over time and is likely proof of how improved security in the country is providing greater access by traders across the Syrian Arab Republic and helping to harmonize prices.

Figure 12: Syrian Arab Republic - Minimum vs. maximum average cost of WFP's reference food basket, June 2018 and June 2019



Source: WFP.

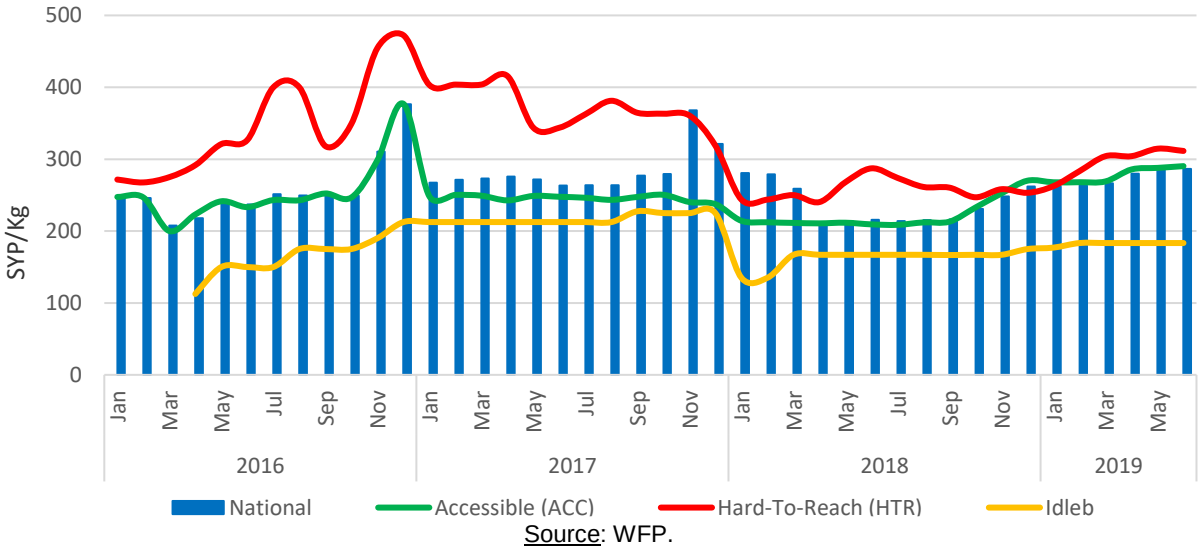
Prices of cereals and agricultural commodities

In line with the general price increase experienced across the Syrian Arab Republic during the conflict, the national average price of cereals has also seen dramatic increases of over 1 000 percent. Wheat flour was reported to cost SYP 35/kg in March 2011, by December 2016 it was at SYP 376/kg, an increase of 10.8 times when compared to March 2011. Rice also saw an increase from SYP 45/kg in March 2011 to SYP 627 in November 2017, 13.9 times higher than the March 2011 price.

However, since their 2016 peaks the price of the Syrian Arab Republic's main cereals, wheat flour, rice and bulgur all fell in line with other commodity price decreases experienced in the Syrian Arab Republic between December 2016 and mid-2018. Since mid-2018 wheat flour, rice and bulgur prices have been increasing also in-line with the general trend seen in the Syrian Arab Republic. The national average nominal price of wheat flour per kg increased by 33 percent between June 2018 and June 2019, rice increased by 9 percent and bulgur increased by 15 percent.

Even though prices have been increasing across the Syrian Arab Republic over the last 12 months these differences are better understood when reviewing the price level by area's ease of access[14] (Figures 13, 14 and 15). Cereal prices in Hard-To-Reach (HTR) areas typically tended to be higher than the rest of the country earlier on in the conflict. However, since 2017, cereal prices in HTR areas have been falling and are closer to cereal prices reported in accessible areas. This illustrates how improved security and stability across the country is helping traders move goods around the country bringing down prices, including in more difficult to reach areas. Idleb has tended to maintain lower than national average cereal prices due to its proximity with Turkey where a large part of its supply in cereals is sourced from.

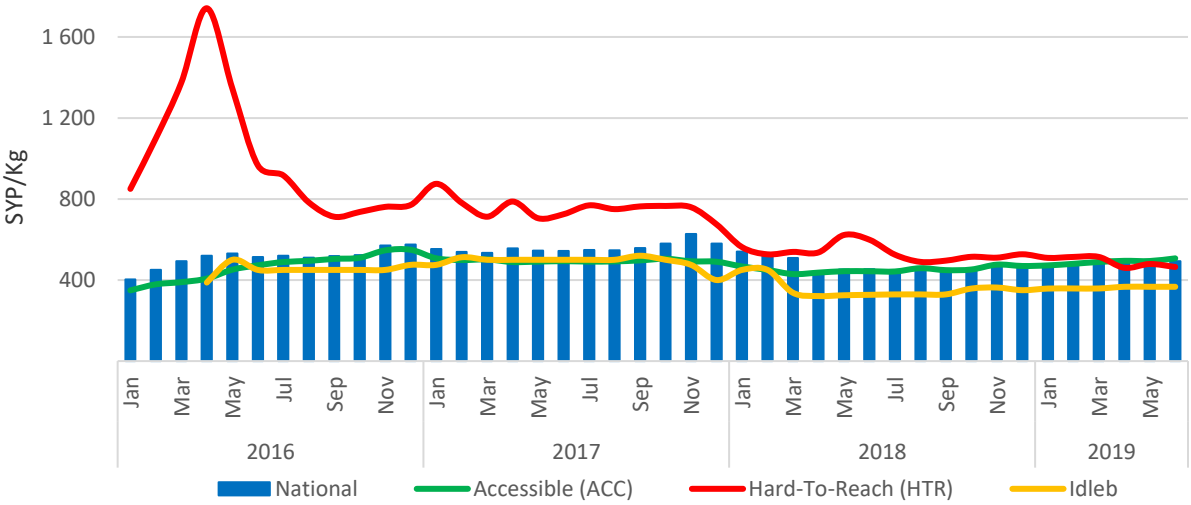
Figure 13: Syrian Arab Republic - Retail prices of wheat flour, SYP/kg



Source: WFP.

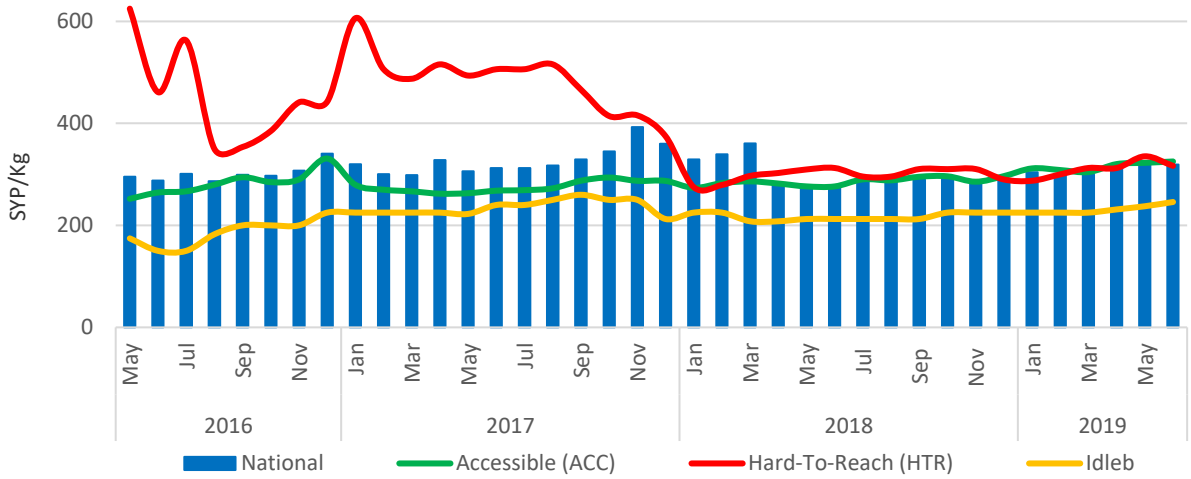
[14] Since May 2018, the accessible areas are Aleppo, Sweida, Hasakeh, Damascus, Dara'a, Hama, Homs, Rural Damascus, Quneitra, Lattakia and Tartous. Hard-to-reach (HTR) areas are Aleppo HTR, Dara'a HTR, Deir-ez-Zor, Homs and Hama HTR, Raqqa and Rural Damascus HTR. Idleb kept as a separate group.

Figure 14: Syrian Arab Republic - Retail prices of rice, SYP/kg



Source: WFP.

Figure 15: Syrian Arab Republic - Retail prices of bulgur, SYP/kg



Source: WFP.

Cereal prices remain very high for many Syrians to access. As a result, limited household purchasing power remains a key driver of food insecurity. For example, the wholesale wheat grain prices on the local markets averaged USD 480/tonne in June 2019. In comparison, the wholesale price of wheat on the international markets was USD 194/tonne in June 2019, 60 percent lower than in the Syrian Arab Republic.

Bread

Bread is a strategic commodity in the Syrian Arab Republic which the Government subsidises through the sale of subsidised wheat flour to selected bakeries. Bakeries have to sell the bread at a Government-regulated fixed price, currently set at SYP 50 per bundle (1.3 kg). This is known as public bread. Commercial bread instead is produced by private bakeries and is sold in shops. Commercial bread tends to be of higher quality and its price is not fixed. Figures 16 and 17 show the national average retail price of public and commercial bread over time. Similar to other commodities, the price of bread has increased throughout the conflict years peaking in December 2016 coinciding with the peak fighting in East Aleppo.

Figure 16: Syrian Arab Republic - Public bread retail price by accessibility

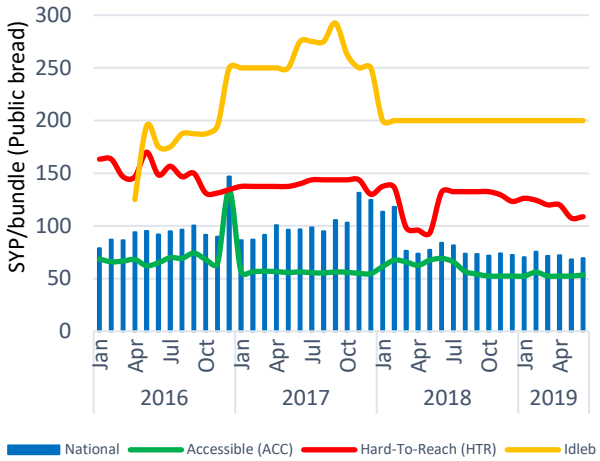
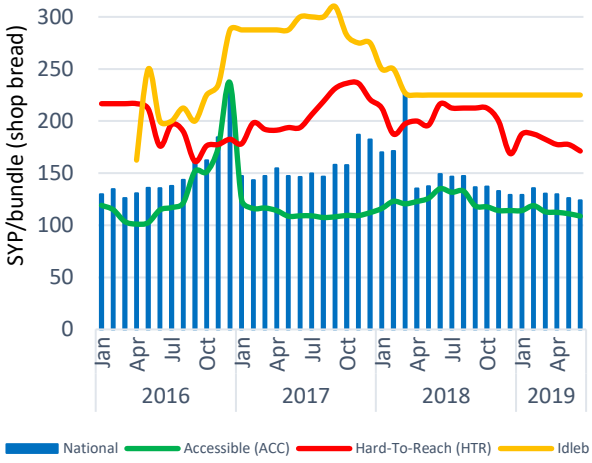


Figure 17: Syrian Arab Republic - Commercial bread retail price by accessibility



Source: WFP.

The price of public bread, like for other commodities, varies by the area's level of accessibility. With accessible areas having the cheapest prices followed by hard-to-reach areas and the most expensive public bread prices are reported in opposition held cross-border (XB) areas such as Idleb. On average, public bread was found to be cheapest in accessible areas (SYP 53/bundle), followed by hard-to-reach areas (SYP 109/bundle) while Idleb faced the highest average price (SYP 200/bundle), see Figure 16.

Even though higher than public bread prices, commercial bread prices also vary by accessibility with accessible areas showing the lowest prices followed by hard-to-reach-areas and highest prices are found in XB areas (Figure 17). This indicates better food networks and more competition in more accessible areas of the Syrian Arab Republic.

Ten governorates reported a public bread price of 50 SYP/bundle (1.3 kg) in June 2018: Damascus, Deir-ez-Zor, Hama, Hasakeh, Homs, Lattakia, Quneitra, Rural Damascus, Sweida and Tartous. Only Aleppo, Dara'a, Raqqa and Idleb reported not having access to public bread at official Government subsidised price levels. Public subsidised bread is the lowest price for bread in the Syrian Arab Republic. The price is fixed by the Government which provides fuel and wheat flour to the bakeries to produce the bread and the bread bundles are then sold at Government regulated subsidized prices. However, not all areas of the country are accessible and not all areas have functional public bakeries since many were targeted during the conflict.

Table 17 shows the number of operational public bakeries by governorate in 2010, 2016 and 2019. As can be seen, the number of functional public bakeries decreased drastically (by 49 percent) during the conflict but has since been increasing. Often when the Government of the Syrian Arab Republic regains control of an area, bakery rehabilitation is among their top priorities to reconnect an area with the rest of the country and support the area's bread needs.

Table 17: Syrian Arab Republic - State of functioning bakeries across governorates, 2010-2019

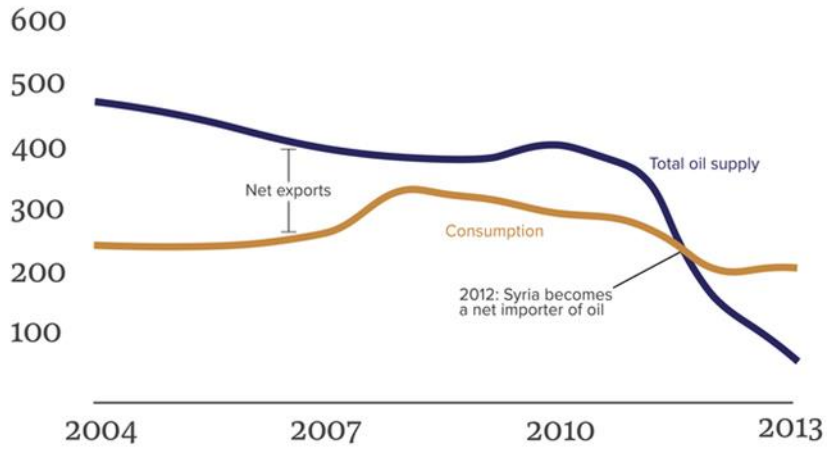
Governorate	Number of operational public bakeries			Increase in 2019 compared to 2016 (percent)
	2010	2016	2019	
Hasakeh	11	n.a.	15	n.a.
Aleppo	22	5	22	340
Sweida	4	4	8	100
Raqqa	3	n.a.	0	0
Damascus	6	6	27	350
Rural Damascus	15	11	29	164
Dara'a	9	3	15	400
Deir-ez-Zor	4	n.a.	5	n.a.
Hama	12	11	11	0
Homs	10	9	18	100
Idleb	16	0	0	0
Lattakia	7	8	16	100
Tartous	8	8	12	50
Quneitra	n.a.	n.a.	n.a.	n.a.
TOTAL	**127**	**65**	**178**	**174**

Source: Syrian Ministry of Internal Trade and Consumer Protection.

Fuel prices – petrol

The crisis has hit the Syrian Arab Republic's oil sector hard. Prior to the conflict, the Syrian Arab Republic used to produce 385 000 barrels of crude oil per day. This has now dropped to around 25 000 barrels per day (bbl/d), while national consumption remains at 225 000 bbl/d (Figure 18). Government-held areas of the country require an estimated 125 000 bbl/d, meaning that there is a national shortfall in the Syrian Arab Republic of around 100 000 bbl/d as the Syrian Arab Republic can only produce around 25 000 bbl/d from its own-held reserves. The shortfall was largely covered by Iranian imports. Iran also provided the Syrian Arab Republic with financial credit however since the re-imposition of international sanctions on Iranian energy and shipping assets in November 2018, Iranian oil tankers have no longer been able to buy insurance on the international market, hereby disrupting the Syrian Arab Republic's oil supply from one day to the next.

Figure 18: Syrian Arab Republic - Flows of petroleum and other liquids, '000 barrels/day



Source: US Energy Information Administration.

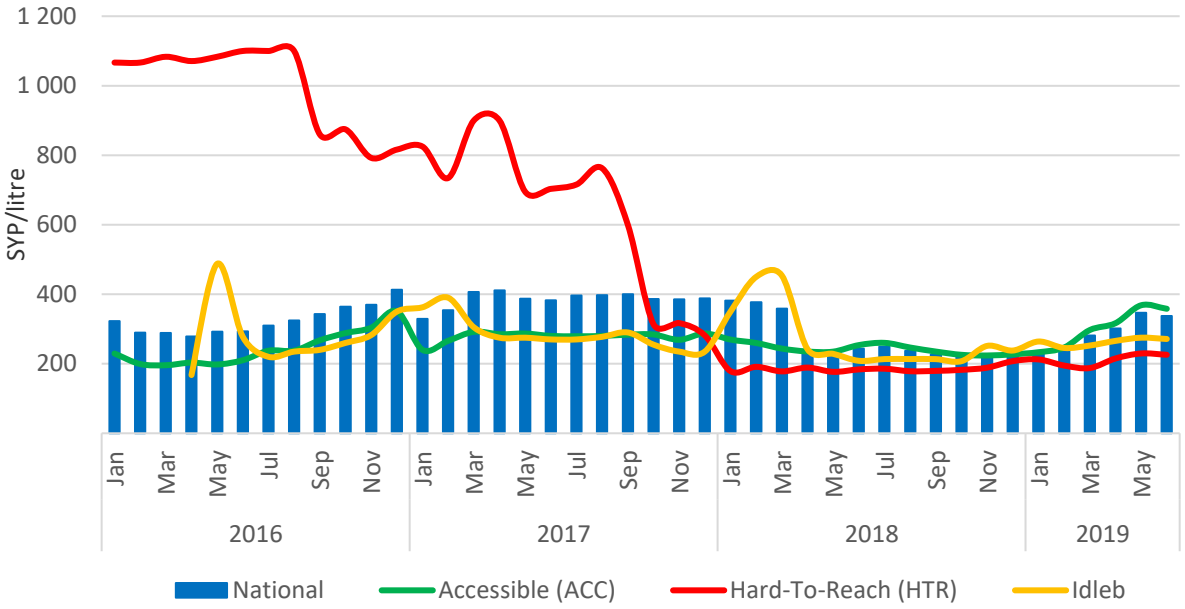
The Government of the Syrian Arab Republic, which regulates fuel at SYP 225/litre to ensure its accessibility across the country, proceeded to ration petrol as an adaptation measure, limiting access to 20 litres per vehicle every five days. While rationing helped slow down fuel consumption, it led to huge queues across the country in March and April 2019. The rationing alimented the informal market for petrol where prices in some parts of the Syrian Arab Republic reached SYP 1 200/litre compared to the lower grade subsidized petrol at SYP 225/litre and of the higher-grade subsidized Octane 90 petrol sold at SYP 375/litre.

As a long-term solution to the need for petrol, the Syrian Arab Republic leased out the port of Tartous to the Russian Federation in April 2019 for the next 49 years. It is hoped that through this new partnership agreement, the Russian Federation will be able to supply the Syrian Arab Republic with much needed oil in the near future.

As it stands though the Government of the Syrian Arab Republic is limiting the provision of subsidized petrol to 100 litres per vehicle per month at SYP 225/litre. Any extra petrol requirement is to be bought from the Octane 90 (SYP 375/litre) or the Octane 95 petrol (SYP 600/litre), the latter is imported from Lebanon. As a result subsidized petrol is now being sold on the informal market at around SYP 625/litre pushing up commodity prices through higher transportation costs and further reducing people's purchasing power.

Diesel in the Syrian Arab Republic is primarily used for powering irrigation pumps, generators, tractors as well as some cars. Figure 19 highlights fuel's rising cost by area's accessibility[15]. While prices have converged across the country between 2016 and 2019 as a result of greater stability and hence greater access for trade across the country, prices of diesel have started to increase again since October 2018. This increase is in-line with the wider cost of increasing fuel prices in the country.

Figure 19: Syrian Arab Republic – Diesel price SYP/litre by accessibility



Source: WFP.

All areas in the Syrian Arab Republic saw an increase in the price of diesel in 2018/19 with the national average price increasing from SYP 243/litre in June 2018 to SYP 337/litre in June 2019, representing an increase of 39 percent year-on-year (Table 18).

Table 18: Price Changes, diesel SYP/litre by accessibility

Diesel (SYP/litre)	June 2018 (SYP)	June 2019 (SYP)	Percent change y-o-y
National	243	337	39
Accessible (ACC)	254	358	41
Hard-To-Reach (HTR)	184	226	23
Idleb	209	271	30

Fuel prices – butane gas

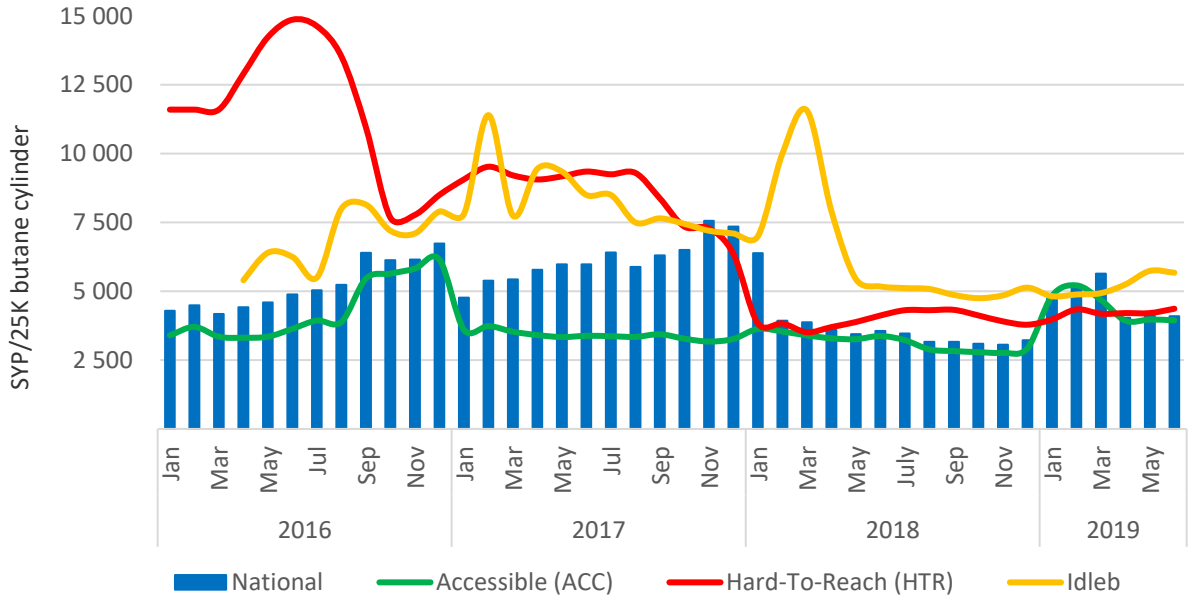
The Syrian Arab Republic has a typical Mediterranean climate with cold winters and hot summers. The conflict has heavily disrupted the country's ability to produce electricity with numerous power plants destroyed and/or looted. As a result, during the cold winter months (November-March) demand for butane gas has typically been increasing during the crisis. Butane gas is used both for cooking and for heating.

Important gas fields remain inaccessible in the Syrian Arab Republic as they are outside the Government-controlled areas. Consequently, only 30 percent of gas is currently produced domestically while 70 percent is being imported and imports are limited by international sanctions. As butane gas is not readily available in the

[15] Districts are combined into 19 stratas based on their accessibility. Since January 2019, the accessible areas are Aleppo, Sweida, Hasakeh, Damascus, Dara'a, Hama, Homs, Rural Damascus, Quneitra, Deir-ez-Zor and Raqqa, Lattakia and Tartous. Hard-to-reach (HTR) areas are Aleppo HTR, Dara'a HTR, Quneitra HTR, Idleb HTR, Deir-ez-Zor and Raqqa HTR, Homs and Hama HTR, and Rural Damascus HTR.

country its price tends to increase over the winter months (Figure 20). The winter in 2018/19 was colder than previous years with heavy snowfall in east and north of the Syrian Arab Republic and heavy rain across much of the country. As a result, the price of butane gas increased.

Figure 20: Syrian Arab Republic – Butane gas price SYP/25 000 litre cylinder by accessibility



Source: WFP.

Normally, the daily demand for butane gas is 110 000 cylinder refills, however, this number increased drastically during December 2018 to around 180 000 cylinder refills due to the cold winter months, the lack of electricity and the increase in petrol prices. Since the increased demand for gas could not be met at the official market, prices at the informal market spiked up to SYP 10 000 per refill in Homs and Hama compared with the official market price of SYP 2 700. Likewise, Lattakia experienced spikes of up to SYP 6 000 per refill against the official price level of SYP 2 900.

As most households were unable to afford informal market prices, they were forced to wait in long queues at official gas distribution centres. In Rural Damascus, complete absence of butane gas cylinders was reported in the districts of Daryya, Douma and Zabadani and the sub-district of Madaya, while only 25 percent of the demand could be met in Al-Tall, Kisweh, Sehnaya, Sidnaya and Qatana. Other governorates across the country experienced similar levels of disruption as in Rural Damascus.

Table 19: Syrian Arab Republic - Price changes, SYP/25 000 litre butane cylinder

Butane gas (25 000 litre refill)	June 2018	June 2019	Percent change y-o-y
National	3 558	4 096	15
Accessible (ACC)	3 375	3 945	17
Hard-To Reach (HTR)	4 121	4 367	6
Idleb	5 175	5 675	10

Source: WFP.

While the price of butane gas has reduced over much of the Syrian Arab Republic after the winter month spike, butane gas prices are seen to be picking up again in Idleb, likely as a result of the recent intensification of fighting in the governorate (Table 19). The national average price of butane gas remains 15 percent above its price in June 2018.

The increasing fuel and gas prices are an indication of low market availability, limited distribution and weak consumer purchasing power, especially as much of the fuel is imported and prices, as a result, are being affected by the continued depreciation of the SYP on the informal market. This highlights food accessibility constraints causing an increase in households' expenditure, further limiting their purchasing power and as a result undermining their ability to be food secure.

Livestock prices

The livestock sector is a strong contributor to the country's economy. In pre-crises times it contributed over 30 percent to the total value of agriculture production in the Syrian Arab Republic. The livestock sector was known to employ around 11 percent of the country's labour force including many low-income families in rural parts of the country. Livestock rearing mostly takes place in the rural more arid parts of the country such as in southern parts Hasakeh, south Raqqa, Deir-ez-Zor, east Homs, east Rural Damascus, Dara'a and Sweida.

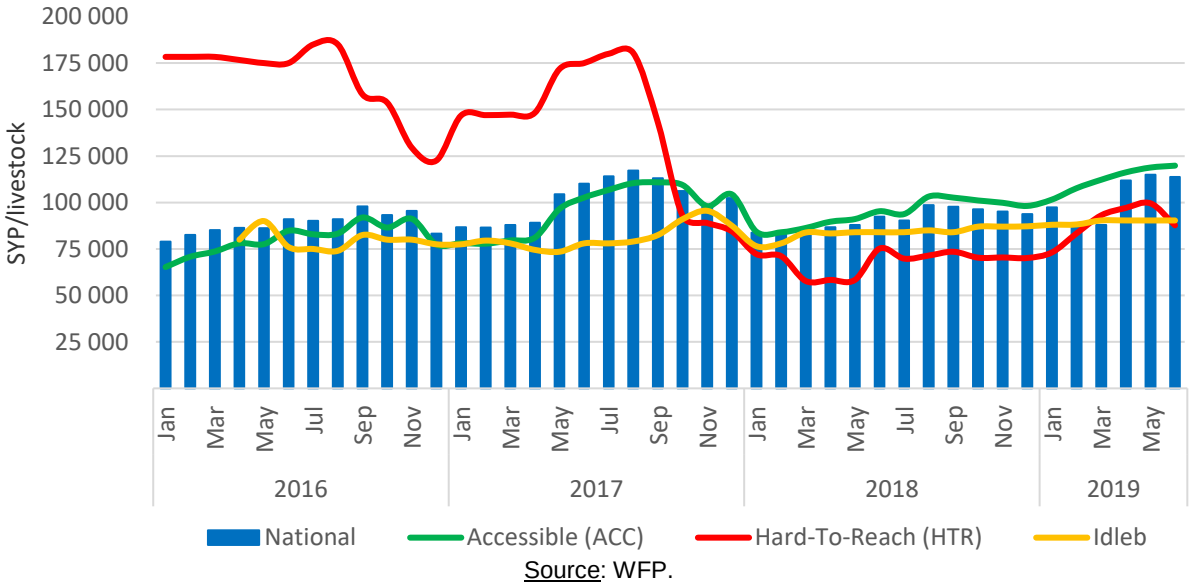
Among the more than 8 million people who were rural dwellers in pre-crisis times, 2.5 million were low income earners of which more than 35 percent were known to own livestock and derive 15 to 100 percent of their total family income from it.

Livestock numbers fell sharply in the early years of the conflict, however ever since 2016 numbers have stabilized and are starting to increase again even though they remain below pre-crisis levels.

The national average retail price for an alive two-year old male sheep, a proxy for livestock prices, rose by 372 percent between October 2014 and August 2017. After which national average prices fell by 21 percent (between August 2017 and June 2018). Since June 2018 the national average price for an alive two-year old male sheep rose by 23 percent cancelling out price reductions from the previous year. The increase has been experienced across all accessibility areas of the country: accessible areas saw a 26 percent increase in average prices y-o-y (year-on-year), hard-to-reach areas experienced a 17 percent increase y-o-y and Idleb experienced an 8-percent increase y-o-y (Figure 21).

Increased transportation costs and the depreciation of the Syrian Pound were prime reasons for the increase in livestock prices especially from mid-2018 to early 2019, the latter causing imported livestock feed to increase and as a result pushing-up the price. However, since the second quarter of 2019 the increase in livestock prices was also affected by the plentiful rains throughout the country in 2018-19. The good rains improved pastures and have induced herders to hold-on to their flock as herders are now expecting to see an increase in their animal numbers due to the widely available pastures, thereby providing better conditions for animal rearing.

Figure 21: Syrian Arab Republic - National average retail price of a live two-year old male sheep, SYP/head, 2016-2019



Source: WFP.

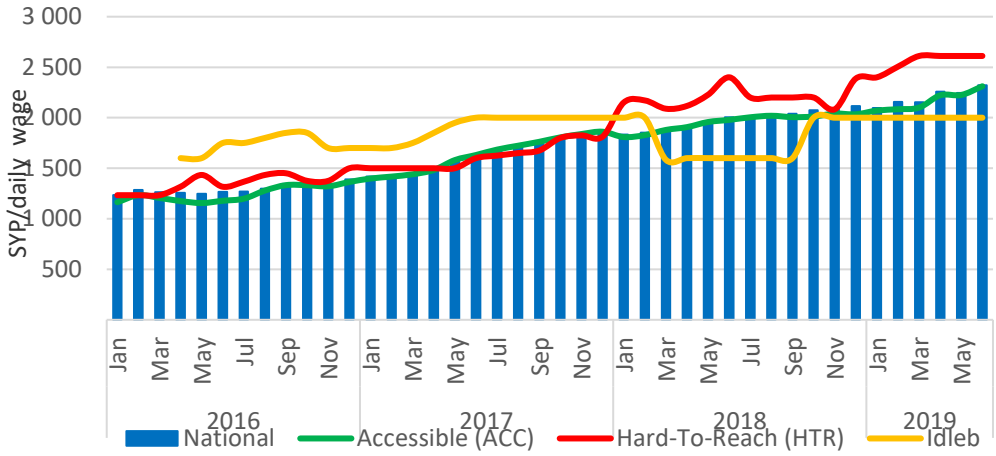
Terms of Trade (ToT)

In June 2019, the national average daily wage for non-skilled workers was SYP 2 320 (USD 5.3). As shown in Figure 22, the daily wage for unskilled workers has experienced a constant upward trend since January 2016 and by June 2019 it increased by 16 percent compared to June 2018.

The last 12 months have seen an increase in non-skilled wage rates across all the country's accessibility levels: accessible areas reported a 17 percent y-o-y increase; hard-to-reach areas reported a nine percent y-o-y increase; while Idleb reported a 25 percent y-o-y increase (Figure 22). The increase in daily income levels

was however more than offset by the depreciation of the Syrian Pound making imports more expensive in addition to the more than doubling of the price of fuel from SYP 225/litre of subsidised petrol to SYP 600/litre of imported fuel, hereby increasing the price of most commodities sold on the market.

Figure 22: Syrian Arab Republic - Non-skilled wage labour rates

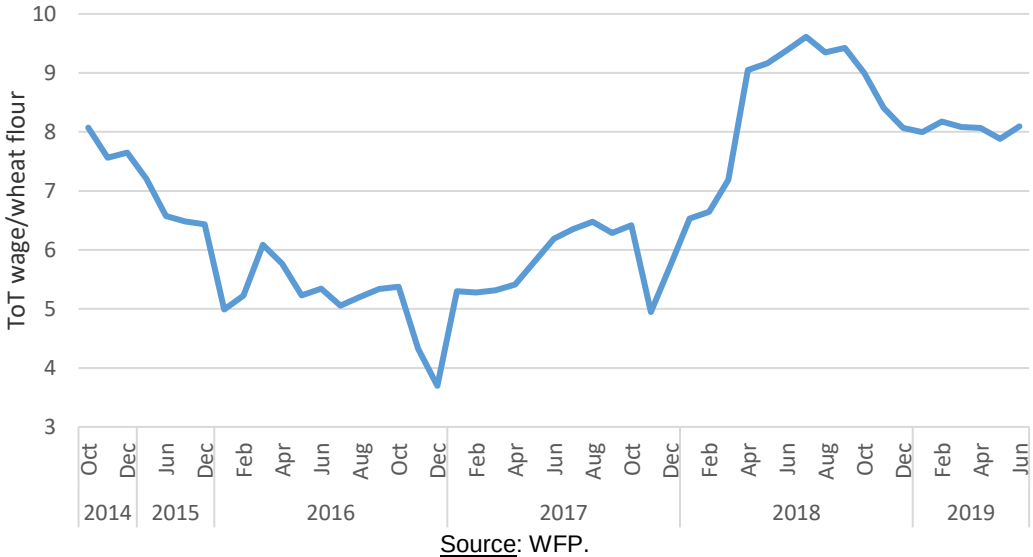


Source: WFP.

In the early stage of the Syrian crisis the increase in food prices was outpacing the increase in daily unskilled wage rate and as a result the purchasing power of casual labourers, measured in ToT, was decreasing. This negative trend is clearly visible in the first part of Figure 23 where in October 2014 the national average daily wage of a casual labourer would purchase 7.9 kg of wheat flour and by December 2016 the average wage rate could only buy 3.7 kg of wheat flour. However, between December 2016 and July 2018 the continued increase in casual labour wage rates and the general reduction in wheat flour prices saw a progressive improvement in the casual labourer's purchasing power vis-à-vis wheat flour. So much so that by July 2018, a casual labourer's average daily wage would buy 9.6 kg of wheat flour, representing a 160 percent increase. However, since July 2018 wheat prices have been outpacing the increase in labour wages. By June 2019, the national average daily unskilled labour could only purchase 8.1 kg of wheat flour, representing a fall of 16 percent y-o-y.

The fall in purchasing power however varies by an area's level of accessibility. Accessible area markets reported a constant gradual decrease in purchasing power amounting to -16 percent y-o-y while hard-to-reach areas experienced an initial increase in purchasing power by 18 percent by December 2018 compared to June 2018 followed by a subsequently reduction by June 2019, with rates now similar to the level seen in June 2018. Idleb also experienced an initial increase in purchasing power reaching 25 percent by November 2018 compared to June 2018 however the purchasing power has since reduced by 9 percent and is now 14 percent above June 2018 levels.

Figure 23: Syrian Arab Republic - National average ToT between daily unskilled labour (SYP) and wheat flour (kg)



Source: WFP.

CEREAL SUPPLY/DEMAND SITUATION

Population

Population developments are described in the Background and Socio-Economic Context section above. With the losses and uncertainty associated with a conflict situation, it is difficult to estimate the level of inward migration and population growth. However, with increasing security in the country, refugees, especially those who had been living in Lebanon, have started to return to the Syrian Arab Republic. UN-OCHA puts the number of registered voluntary returnees in the first quarter of 2019 at 57 000. Since 2015 up to and including 2018, there have been an estimated 137 000 voluntary refugee returnees according to UNHCR. Although this is only a small fraction of the overall pool of refugees, it has added to the natural population growth rate and reversed the downward trend of recent years. UN-OCHA, taking account also of the reduction in conflict-related mortality, estimated the population to be 20.4 million in April 2019, approximately half a million more than last year. This figure, 20.4 million, has been assumed for the calculation of the food balance sheet below.[16] Assuming an annual population growth rate of 3 percent, the population by the end of 2019 will be approximately 20.8 million.

Over the last two years, there has been a significant movement of IDPs from safe areas within the country back to their home governorates once these have been made secure. Last year MAAR estimated that some 800 000 IDPs, many of them farmers, returned to their land, and UN-OCHA reckons that a further 130 000 have returned this year. However, since these movements are within the country they have no effect on the overall national population.

National cereal balance sheet

The national cereal balance sheet for the Syrian Arab Republic's 2018/19 harvest (2019/20 marketing year) is presented in Table 20. The following assumptions have been made:

- By the middle of the 2019/20 marketing year (31 December 2019), the human population of the Syrian Arab Republic will be 20.8 million (see above).
- Cereal production in 2018/19 comprises 2.176 million tonnes of wheat and 1.999 million tonnes of barley. A small amount of maize (less than 100 000 tonnes) was also harvested but is not considered in the balance sheet.
- Opening stocks of wheat at the beginning of July 2019 amounted to 500 000 tonnes.
- The closing stock of wheat by 30 June 2020 will be approximately 100 000 tonnes.
- Opening stocks of barley held either privately or by the Government are 250 000 tonnes. (This includes other grains held by GOF; see Livestock: Animal nutrition above.)
- Per capita wheat consumption will be 170 kg/annum. (A reduction of 15 kg/capita/annum from the previously assumed 185 kg/capita/annum has been used to reflect the generally reported reduction in daily household consumption).
- A sheep/goat population of 11.6 million, and a cattle population of 593 000.
- An average feed requirement of 0.25 kg of barley grain/sheep per day as part of a ration of 1 kg/animal per day of total feed, including bran, browse and crop residues. This represents a minimum physiological maintenance requirement for sheep. An average feed requirement of 3.5 kg of barley grain/bovine per day. Out of 11.65 million chickens, about 2.7 million are fed 100 g wheat daily.
- The planned cereal area for the 2020 harvest will be similar to that of 2018/19, viz 1.796 million hectares of wheat, and 1.492 million hectares of barley.
- Seed rates of 220 kg/hectare for wheat and 170 kg/hectare for barley.
- Harvest and storage losses of 15 percent of production for wheat, barley and maize.
- The Government will import 1 million tonnes of wheat (as per agreement with Russian Federation) and 50 000 tonnes of barley.
- Commercial companies will import 200 000 tonnes of wheat.

For 2019/20, some 90 000 tonnes of wheat flour will be received as in-kind food assistance by WFP[17], and it is estimated that wheat flour imports from other international agencies will be around 10 000 tonnes. Assuming all white flour is imported, the wheat grain equivalent of 100 000 tonnes of wheat flour is between 130 000 and 140 000 of wheat. Therefore, the balance sheet considers 135 000 tonnes of wheat as food assistance. (Food assistance by other organizations would reduce the uncovered shortfall.)

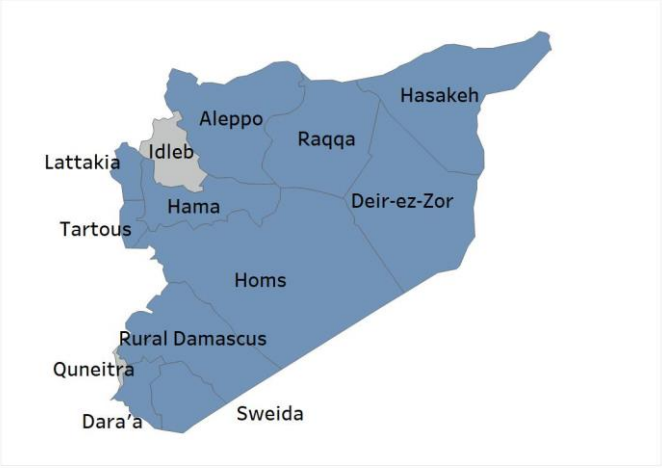
[16] It should be noted, however, that other observers believe the population to be much lower. For instance Country metres (https://countrymeters.info/en/Syria) puts the population at 16.8 million.
[17] WFP has been procuring bulgur locally since 2016 and is currently importing only wheat flour to the country.

Table 20: Syrian Arab Republic - National cereal balance sheet, 2019/20 marketing year ('000 tonnes)

	Wheat	Barley
Total availability	**2 676**	**2 249**
Production	2 176	1 999
Opening stocks	500	250
Total utilization	**4 456**	**2 369**
Food use	3 536	0
Feed use	99	1 816
Seeds	395	254
Losses, field and post-harvest	326	300
Closing stocks	100	0
Import requirement	**1 780**	**121**
Anticipated Government imports	1 000	50
Anticipated commercial imports	200	0
Food assistance	135	0
Uncovered shortfall	**445**	**71**

HOUSEHOLD FOOD SECURITY SITUATION

Map 5 – Syrian Arab Republic - mVAM coverage in 2019 (governorates)



Classifying vulnerability to food insecurity for annual trend analysis (mVAM data):

Highly vulnerable: Households with poor food consumption (or borderline consumption if they are relying on assistance over the past month).

Vulnerable: Households with borderline consumption who are not assisted (or households with an acceptable food consumption who rely on assistance and are depleting assets).

At risk: Households with acceptable food consumption who rely on assistance or are depleting assets.

Better-off: Households with acceptable food consumption who are not relying on assistance and are not depleting their assets.

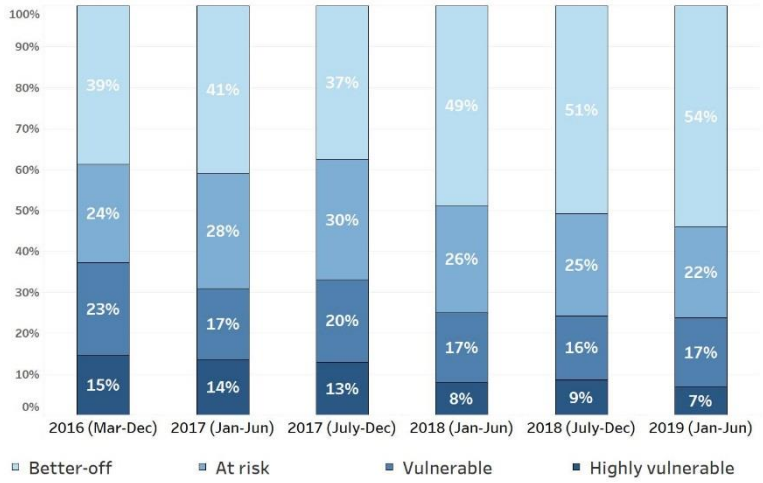
Food security situation and trends[18]

The overall food security situation has improved in many parts of the Syrian Arab Republic over the past years due to the enhanced security situation which has in turn provided improved access to markets. However, there remain areas of serious concern due to continued localized hostilities, new and protracted displacement, increased numbers of returnees and the sustained erosion of communities' resilience during the nine years of crisis.

[18] Data sources in this section include WFP's mobile Vulnerability and Mapping (mVAM) data, focus groups discussions and key informant interviews conducted during the field Mission. The trend analysis presented in this section is based on mVAM data (starting from Figure 15). For the trend analysis, the Mission has estimated the proportion of households vulnerable to food insecurity based on two indicators: food consumption and asset depletion strategies. In addition, reliance on assistance over the past month was also considered to ensure that the impact of food assistance would not lead to an underestimation of the vulnerability situation.

Based on mVAM data[19], the percent of highly vulnerable and vulnerable households has decreased significantly since 2016. Moreover in the last two years food security levels have gradually stabilized. In 2019 (January-June), the percent of vulnerable households has reduced by 1 percentage point compared with the same period in the previous year. However, the proportion of households considered at risk has reduced by 4 percentage points in the areas covered (Figure 24).

Figure 24: Syrian Arab Republic – Food security vulnerability trends, 2016-2019 (12 out 14 governorates)



Source: mVAM.

mVAM analysis results showed variations in vulnerability among governorates. With the exception of Damascus, the situation has improved compared to last year in almost all the assessed areas. Dara'a, Deir-ez-Zor and Raqqa witnessed a higher decrease in the share on vulnerable households compared to 2018. In Sweida, Rural Damascus and Tartous no changes were observed in the food security situation of households.

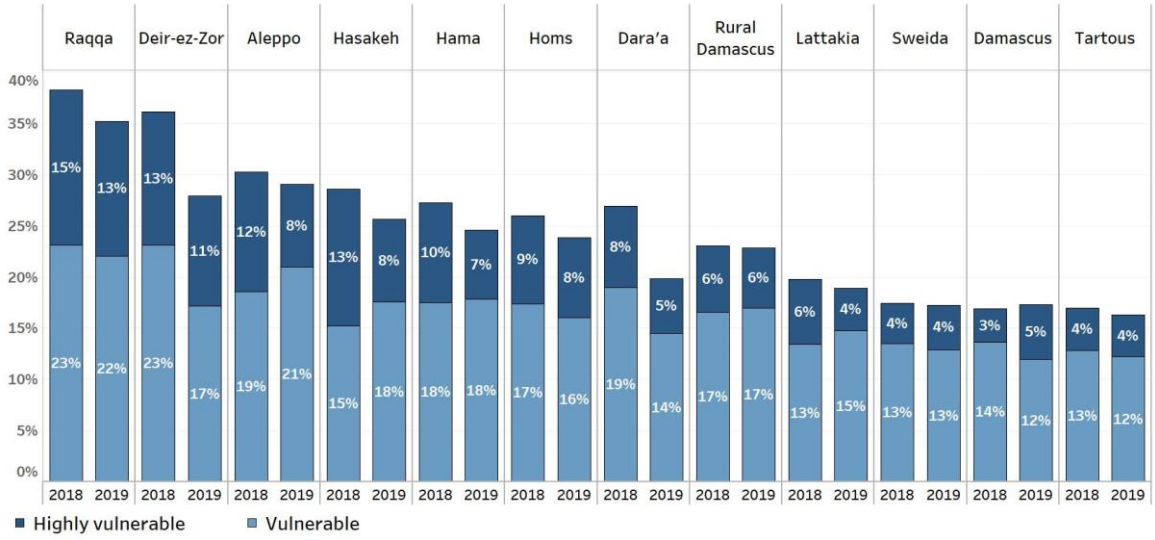
The most vulnerable governorates of the country remain those where localized military operations are still ongoing such as Aleppo, Raqqa and Deir-ez-Zor. Improved security and accessibility has allowed for more data to be collected from these governorates and to present them as part of this assessment for the first time since the beginning of the crisis.

By end 2017, IS was removed from Raqqa and by early 2019 also from Deir-ez-Zor. However, nine years of conflict resulted in large-scale infrastructure destruction, looting of houses and the return of displaced populations to their partially or fully destroyed homes. The positive impact of improved security and the good agricultural season in 2019 have partially been offset by the above-mentioned challenges, as the Mission observed that households in Deir-ez-Zor are still struggling to compensate for their losses, repay their debts, and rebuild their homes/farms. Similar difficulties were also reported by returnee households in other governorates across the country.

Nevertheless, as shown in Figure 25, the level of vulnerability is much higher in comparison with other governorates; however, it is lower when compared with the same period in 2018.

[19] For 2019, the analysis is based on mVAM data from 12 governorates: Hasakeh, Aleppo, Sweida, Damascus, Dara'a, Hama, Homs, Lattakia, Rural Damascus, Tartous, Raqqa, and Deir-ez-zor. Quneitra and Idleb have been excluded for all annual trend analysis to allow comparability over time.

Figure 25: Syrian Arab Republic – Vulnerable and highly vulnerable households by Governorate, 2018-2019 (January-June)



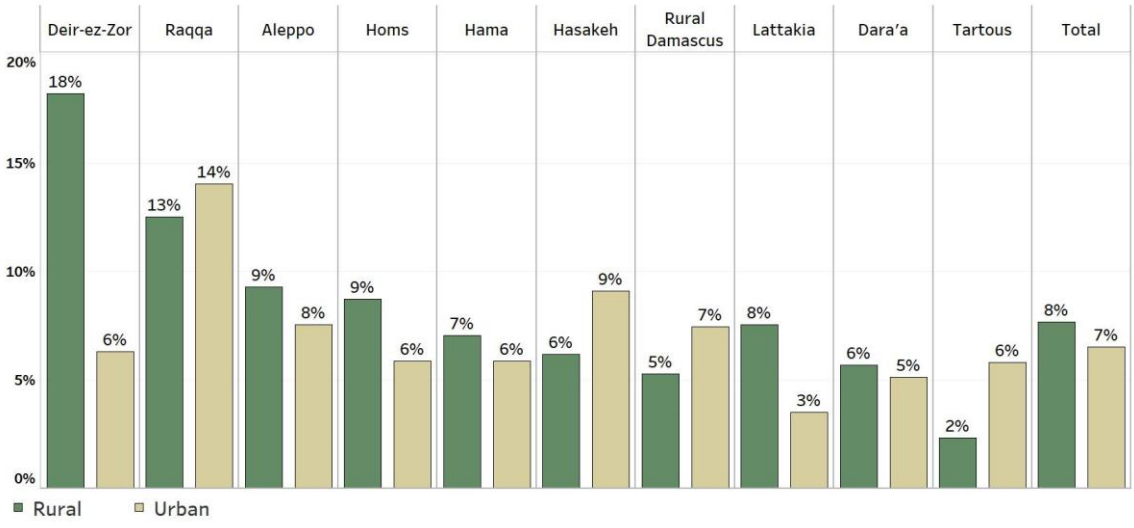
Source: mVAM.

Major improvements since 2018 were also observed in Aleppo and Hasakeh. This governorate has historically been the breadbasket of the Syrian Arab Republic and a large proportion of the Syrian population depends directly or indirectly on the agricultural sector. The winter season's good rains and consequent favourable agricultural production have no doubt contributed to the improvements in recorded food security levels.

The situation continues to be particularly dire, however, in the areas affected by recent or ongoing conflict and crossline fighting, particularly in Idleb in northeast of the country. While the mVAM sample size was not large enough to provide reliable findings for Quneitra, slight improvements or at least a stabilization is expected here, as many areas became accessible compared to the previous year. In mid-August 2018, the Government of the Syrian Arab Republic gained control of Quneitra, Dara'a and Sweida, as well as the Nasib border crossing. However, access to people in need in these areas remains limited, mainly owing to lack of approvals, insecurity and explosive hazard contamination.

The Mission found the main reasons for food insecurity in the Syrian Arab Republic to include displacement, economic sanctions, insecurity, loss of assets, limited income generating opportunities, inflation and high food prices, which negatively impact households' purchasing power. In addition, economic sanctions imposed on the country also resulted in an increase in the costs of energy, inputs and other imported goods, which, in turn, led to a marked reduction of agriculture inputs such as in the availability of fertilizers, pesticides and quality seeds and livestock vaccinations. Many farmers have been forced to return to a more traditional form of agriculture using their own inputs, with concomitant reductions in their output quantity and quality. Hereby, reducing crop yields and income generated from livelihood activities.

Figure 26: Syrian Arab Republic – Highly vulnerable and vulnerable households by rural/urban all and selected governorates 2019 (January-June)



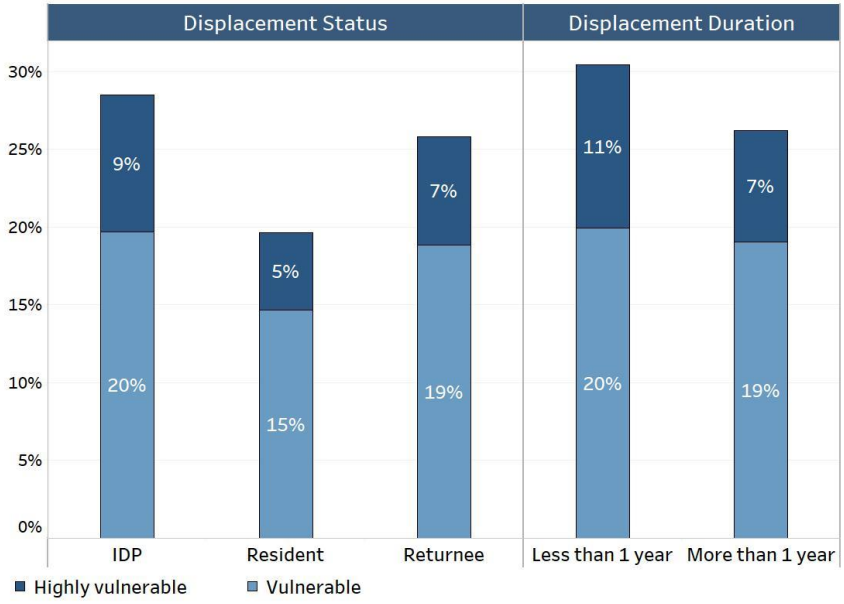
Source: mVAM.

Vulnerability to food insecurity in the Syrian Arab Republic is very similar across urban and rural areas Figure 26). This is in line with previous surveys, mainly because people in urban areas have better access to markets and to more potential income opportunities. However, IDPs are mostly concentrated in urban areas, which creates pressure on urban services. The situation also varies among governorates: while in Hasakeh, Aleppo, Raqqa, Rural Damascus and Tartous urban households tend to be more vulnerable compared to rural households, the opposite holds for other governorates, especially Deir-ez-Zor, where vulnerability is higher in rural areas.

In governorates where the economy is dominated by agriculture, the favourable rainfall season in 2018/19 has contributed to a better situation in 2019 compared with previous years. In addition, many IDPs came back to these governorates over the course of last year and partially resumed their agricultural activities (MAAR estimates that around 800 000 households, many of whom are farmers, returned to their areas of origin in 2018, with further returns expected in 2019). However, farmers in rural areas are still facing many challenges, including access to water and agricultural inputs, presence of unexploded remnants of war and improvised explosive devices, limited marketing opportunities, high transportation costs and fires that have destroyed harvests and crops.

The plentiful rains in 2018/19 have meant increased production especially of vegetables and fruits across the country in May-July 2019. Increased production however does not necessarily translate into increased food security, as selling and transporting agricultural products within the country is still a huge challenge, mainly due to high prices of fuel, insecurity and lack of proper refrigerator trucks. As farmers have not been able to sell or transport their produce, substantial amounts of wheat have been stockpiled, while other agricultural products such as fruits and vegetables are reported to have been wasted. According to traders in Tartous and Latakia wholesale markets, this has led to a doubling of food wastage in markets, which risks making their trade economically unviable.

Figure 27: Syrian Arab Republic – Vulnerability by residence status and length of displacement, 2019 (January-June)



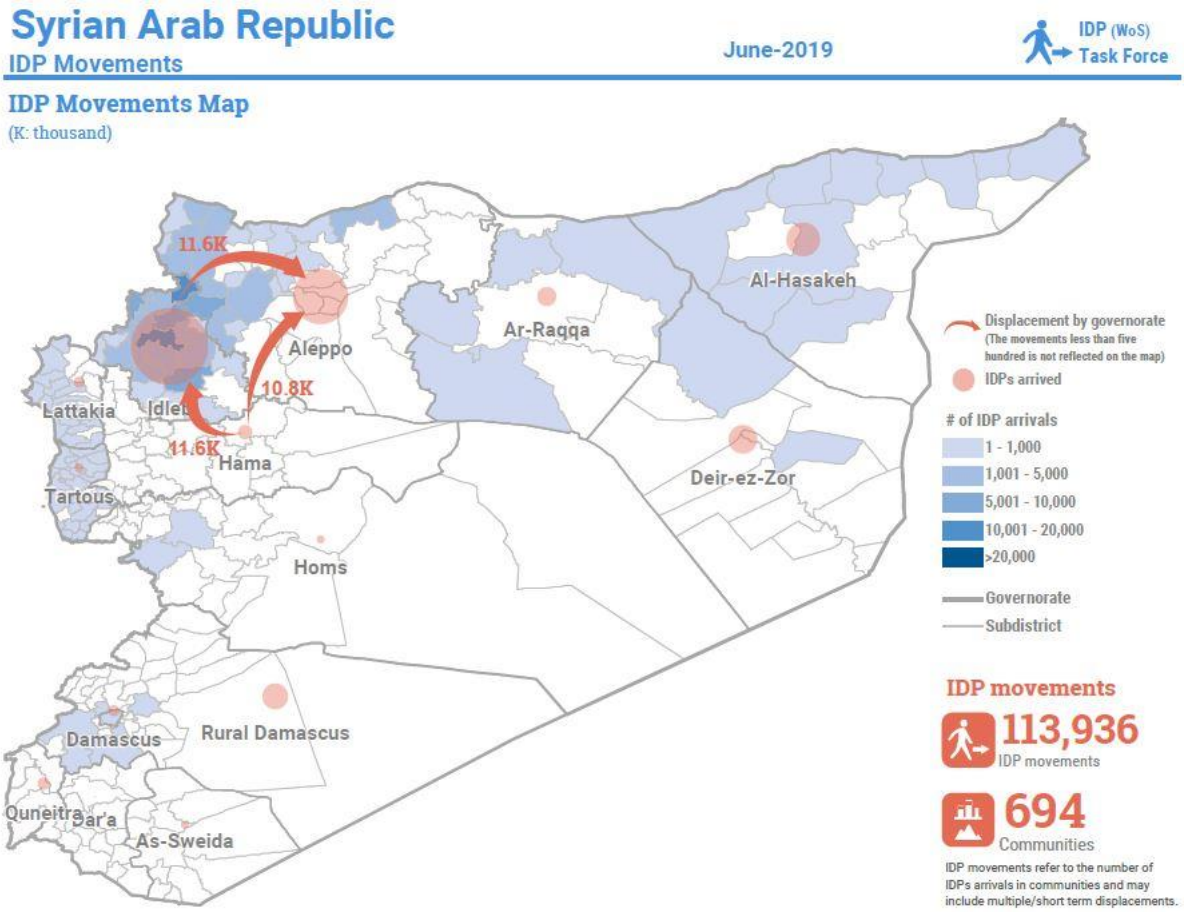
Source: mVAM.

According to the Mission's observations and mVAM data, returnees and IDPs are more likely to be food insecure compared to resident households. Length of displacement continues to be an important factor influencing food security. Findings suggest that recently displaced households (less than one year) are more likely to be more vulnerable to food insecurity compared to those who have been displaced for a longer period (Figure 27).

Displacement due to conflict continues to be one of the main drivers of food insecurity in the Syrian Arab Republic as IDPs lost most of their livelihoods and productive assets. Based on numbers provided by the Interagency Population Task Force for May 2019, 29 percent of Syrian households, approximately 5.9 million people, are currently internally displaced. Of these, 5 percent are returnees, who were previously displaced inside the country. In May-July 2019, due to the violence in southern Idleb, northern Hama and western Aleppo, the humanitarian community recorded 518 000 new IDPs across the country as people moved away from

areas affected by airstrikes, shelling and ground fighting to find safety. More than two-thirds of this newly displaced group were displaced to locations within Idleb governorate. Population movements were also recorded in areas outside of Government control located in the western and northern parts of the Government of Aleppo and in Homs, where people are arriving from Rukban camp (Rural Damascus), Map 6.

Map 6 – Syrian Arab Republic - IDP movement tracking, June 2019

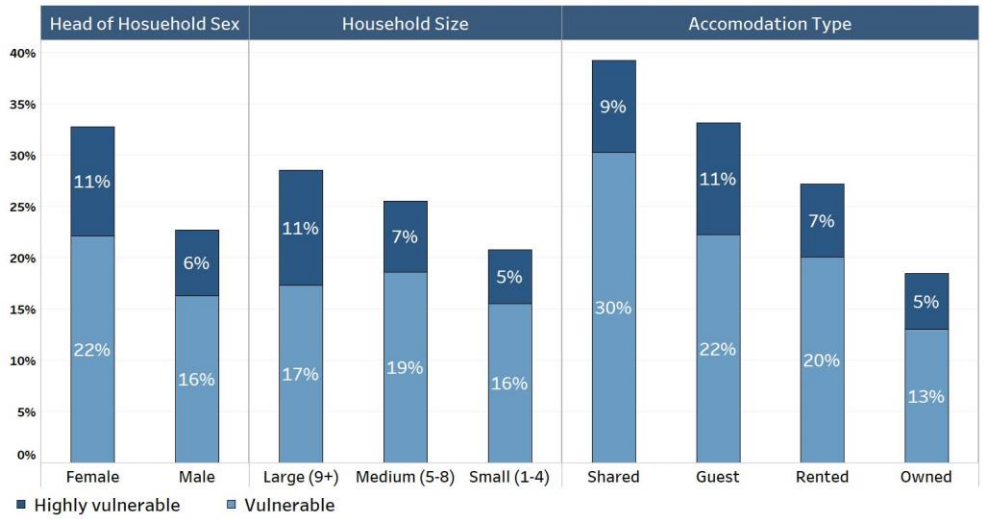


Source: Information as reported by CCCM, UN-OCHA, Syrian Arab Republic and HNAP for June 2019.

In terms of household demographics, female-headed households show higher levels of vulnerability to food insecurity compared to those headed by men. Rural women are among the country's most disadvantaged people and suffer the most from the consequences of the conflict. They play an important role in raising livestock, growing crops and processing food. The absence of skilled employment for many rural women, along with the fact that often times the male breadwinner has either migrated in search of work or has joined an armed force group, renders women-headed households particularly vulnerable to food insecurity among other risks.

Similarly, mVAM analysis found that the likelihood of being highly vulnerable increases as the household size increases. Households living in shared accommodation are more vulnerable to food insecurity (nearly six out of ten) compared to those living as guests, renting or owning their houses (Figure 28).

Figure 28: Syrian Arab Republic – Vulnerability to food insecurity by sex of the household head, household size and house ownership, January-June 2019



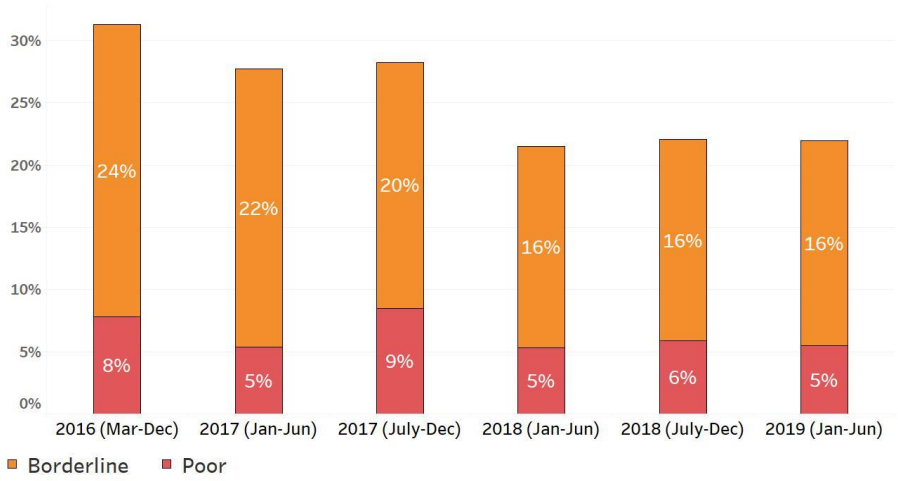
Source: mVAM.

Food consumption

Based on mVAM data, overall food consumption has remained stable in the analysed governorates (see Figure 29) and nearly a quarter of the households had inadequate diets (poor and borderline consumption).

Female-headed households are much more likely to have poor and borderline consumption (30 percent) compared to those headed by men (21 percent).

Figure 29: Syrian Arab Republic – Share of households with poor/borderline consumption, 2016-2019 (January-June)

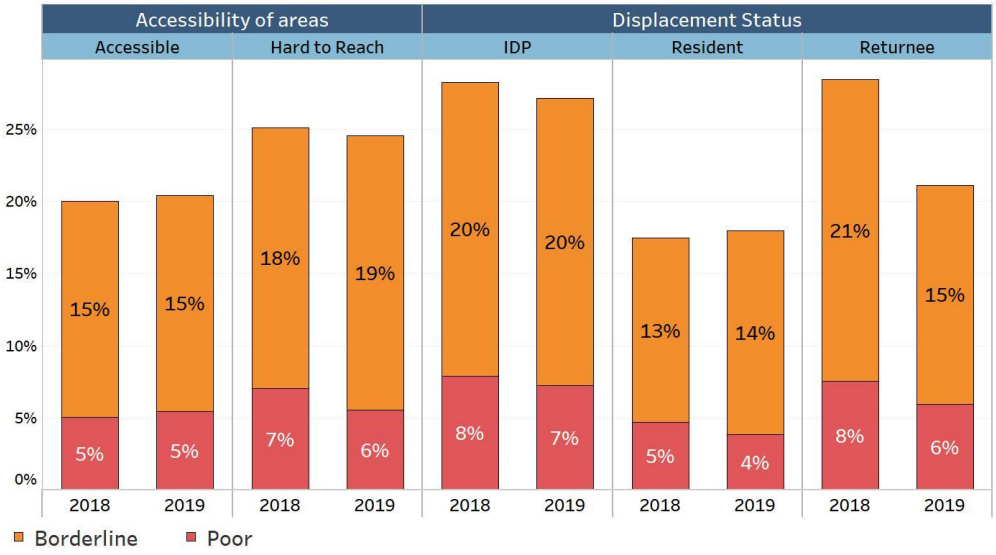


Source: mVAM.

A positive trend was observed across all groups and especially among returnees, which now make up a much larger group compared to 2018, when returns of IDPs to their area of origin was very limited.

The proportion of households consuming inadequate diets in hard-to-reach areas has reached similar levels of that of households located in accessible areas, an indication that improved access in many parts of the country has had a positive impact on dietary habits of Syrians (Figure 30). This was confirmed during the Mission's field visits.

Figure 30: Syrian Arab Republic – Poor and borderline food consumption by displacement and access status, January-June 2018-2019



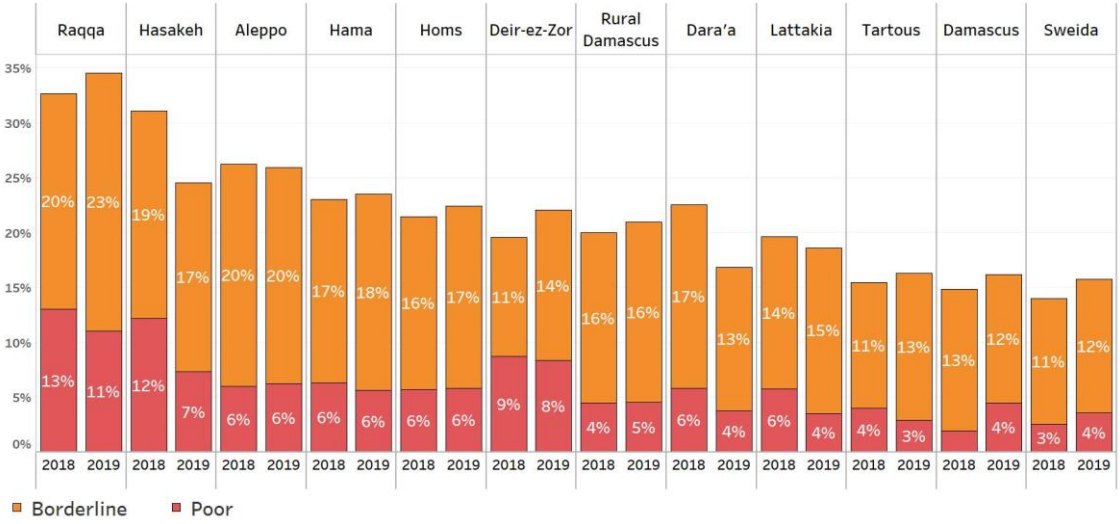
Source: mVAM.

At the governorate level, the highest decrease in households consuming inadequate diets was registered in Hasakeh and Dara'a, where the majority of the population engages in agriculture-related activities. Further highlighting the benefits of the good rainfall season in 2018/19 and its impact on the country's food security especially in agrarian dependant areas of the country.

The governorate with the highest proportion of households with poor food consumption is Raqqa where the share of households with poor food consumption reached 11 percent followed by Deir-ez-Zor at eight percent (Figure 31).

Despite the progressive de-escalation of active conflict and improved humanitarian access, access to food remains a challenge as income is limited and unpredictable. The need to buy food despite the limited resources has led Syrian households to greater dependence on alternative sources of income, including help or gifts from friends and relatives. According to focus group discussions, livelihood opportunities remain the most pressing need since a large proportion of the population lost their means of support/income.

Figure 31: Syrian Arab Republic – Share of households with poor and borderline food consumption by Governorate, January-June 2019



Source: mVAM.

Overall, there is an overwhelming reliance on markets as this has been the primary source of food in the Syrian Arab Republic both now and before the beginning of the crisis. However, high prices of commodities have limited households' purchasing power and their ability to access food available on markets. Although, around 50 percent of households have been able to rely on their own production for eggs, dairy and green vegetables,

the Mission observed that buying items from shopkeepers on credit was the most commonly reported source of food as most households' income is not enough to cover all monthly expenditure, including food. According to focus group discussions, the share of monthly expenses covered by credit has increased and it is reaching 60 percent in certain governorates such as Aleppo, Deir-ez-Zor and Rural Damascus.

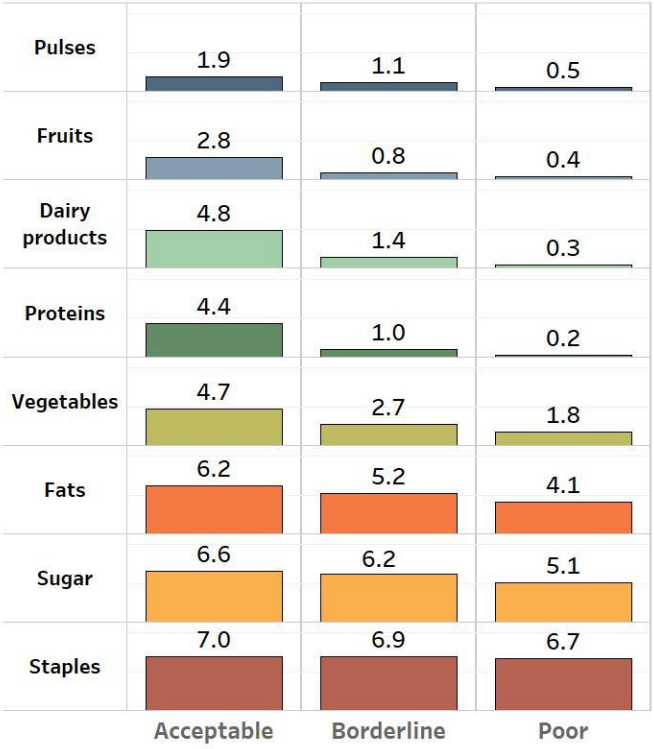
Quality of the diet and the long-term impact on nutrition and health

The consumption of inadequate diets is associated with limited access to food in terms of both quantity and quality. Households with poor food consumption show very poor dietary diversity as their consumption is mainly based on staples, oil and sugar with very limited access to vegetables. Diets of the most vulnerable households largely consist of bread, potatoes, seasonal vegetables and commodities provided as food assistance (Figure 32). A diet lacking in adequate quantity, quality and in variety of foods increases the risk of acute (wasting) and chronic malnutrition (stunting) as well as the risk of suffering from micro-nutrient deficiencies.

Prices of nutrient-dense fresh foods have increased more than the price of staple foods, which further reduces their affordability and, eventually consumption. A potential reduction of the already pre-crisis limited consumption of nutrient-rich foods might put Syrians at a higher risk of suffering from micro-nutrient deficiencies, which, in the case of haem iron, had already been recorded before the crisis. Since more families adopt negative coping mechanisms and many are highly dependent on food assistance, the risk of suffering from malnutrition increases as their ability to supplement food assistance with nutrient dense fresh food commodities decreases.

According to the 2019 Humanitarian Needs Overview[20], pockets of acute and chronic malnutrition affecting children between 6-59 months of age can be found throughout the whole of the Syrian Arab Republic, which demonstrates the long-term damage caused by the protracted crisis. There are also indications that acute malnutrition among pregnant and lactating women (PLW) has increased more than two-fold in 2018. PLW are in urgent need of nutrition services and should be prioritized for all basic services.

Figure 32: Syrian Arab Republic – Total food groups consumption (number of days consumed out of last 7 days) by food consumption groups (poor, borderline and acceptable), January-June 2019



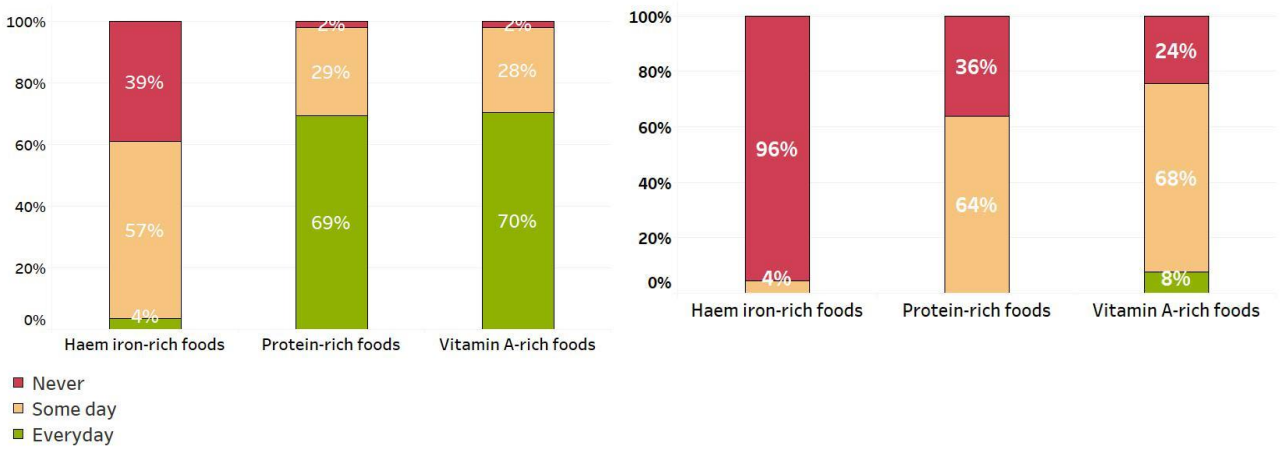
Source: mVAM.

[20] 2019 Humanitarian Needs Overview - Syrian Arab Republic Available at https://hno-syria.org/#resources

Assessing the macro and micro-nutrients consumed by the interviewed households, as in previous years, almost all households reported having no access to haem iron (Figure 33). Iron deficiency is one of the main causes of anaemia with documented long-term impacts on people's productivity and quality of life. Infants and young children are particularly vulnerable to iron deficiency due to a negative iron balance resulting from increasing demands for growth that surpass dietary supplies.

Vitamin A deficiency, if tackled before the age of five, can reduce mortality and the risk of contracting infectious diseases such as measles, diarrhoea and malaria. Protein plays a key role in growth and is crucial for the prevention of wasting and stunting which takes place largely within the first 1 000 days. Limited access to Vitamin A and protein rich foods affects around 30 percent of all interviewed household. In addition, households with poor food consumption are more likely to be affected by micronutrient and protein deficiencies, with none having regular access.

Figure 33: Syrian Arab Republic – Consumption of macro- and micro-nutrients and households with poor food consumption, January-June 2019



Source: mVAM.

Food coping strategies

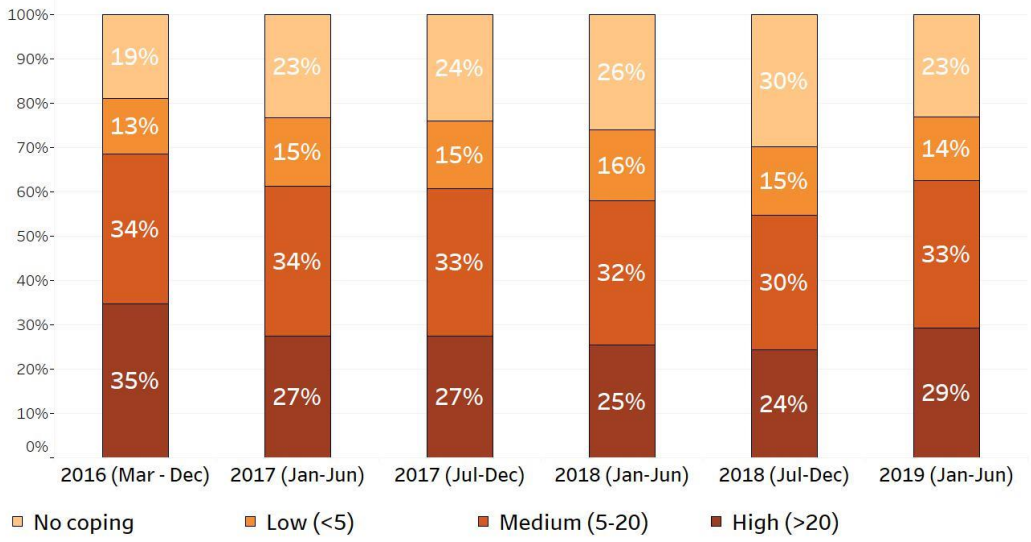
Despite an initial improving trend, households implementing a high degree of coping[21] to meet food shortages has slightly increased compared to the first semester of 2018 (+15 percent), without exceeding, however, negative coping levels recorded in 2016 (Figure 34). The increase in the level of coping was confirmed across all focus group discussions to be heavily influenced by the increasing cost of fuel (petrol, diesel, and gas) as well as the increasing prices of commodities on the market during late 2018 to mid-2019. Lack of employment opportunities makes households more susceptible to shocks which have an immediate knock-on effect on households' food security levels.

Households' limited purchasing power is also reflected in the implementation of food coping strategies as more than 50 percent rely on less preferred and less expensive food, 46 percent reduced number of meals and 38 percent restricted the consumption of adults to prioritize their children's food consumption needs. Consuming less preferred and less expensive food is by-and-large the most widely adopted food coping mechanism across the country.

Returnees in Aleppo, Homs and Deir-ez-Zor reported that in most households, adult members decide not to consume micro-nutrient rich foods – such as eggs and dairy products – in order not to reduce their children's food intake of these micro-nutrient rich foods.

[21] The reduced Coping Strategy Index (rCSI) measures the stress level a household is facing when exposed to food shortage. The higher the stress, the higher is the index. It is comprised of five food coping strategies: 1) relying on less preferred and less expensive food; 2) borrowing food or relying on help from relatives or friends; 3) limiting portion size at meals; 4) restricting consumption by adults in order for small children to eat; and 5) reducing number of meals eaten in a day.

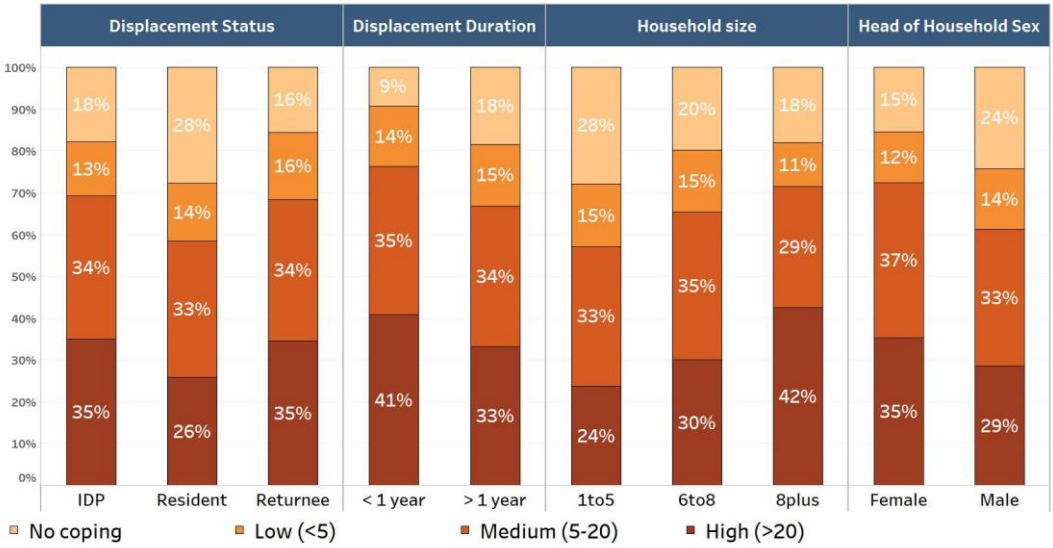
Figure 34: Syrian Arab Republic – Adoption of food coping strategies (rCSI), 2016-2019



Source: mVAM.

The analysis by residence group also confirms a similar trend (Figure 35). Returnees and IDPs are more likely to adopt food coping strategies; female-headed households as well as large households are also more likely to resort to this type of negative coping mechanisms.

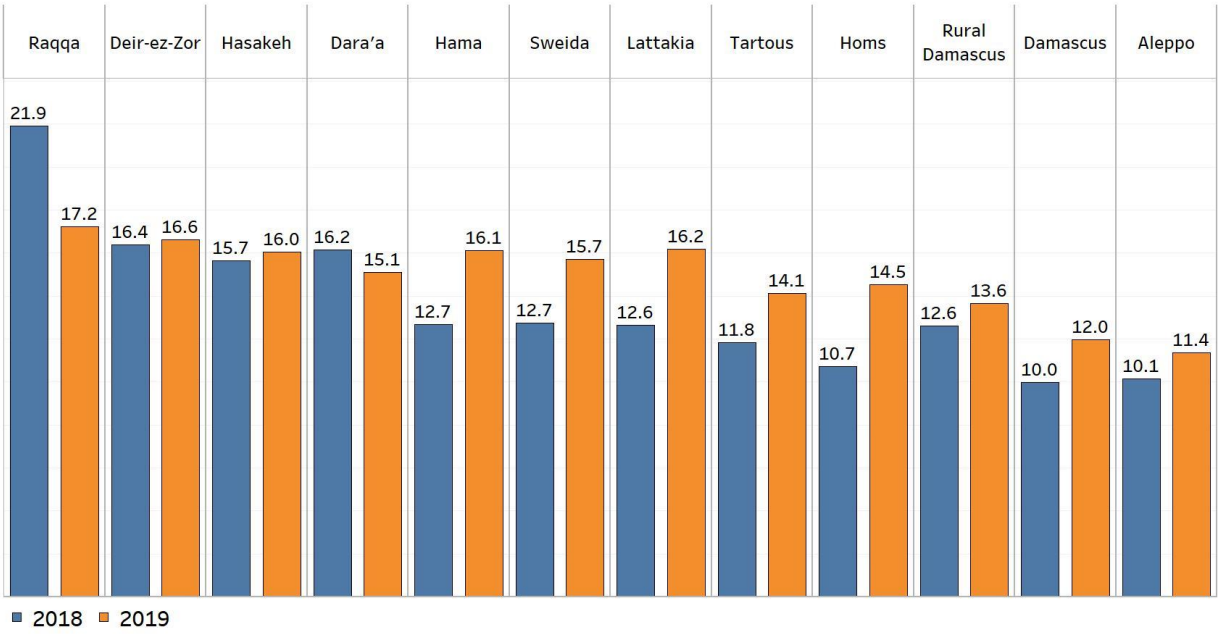
Figure 35: Syrian Arab Republic – Characteristics of households using food coping strategies, January-June 2019



Source: mVAM.

The governorate with the highest rCSI score is Raqqa followed by Deir-ez-Zor. All governorates, except for Raqqa and Dara'a, recorded a slight increase compared to the same period in 2018 (Figure 36). Hereby highlighting worsening levels of consumption patterns likely due to the worsening economic situation in the Syrian Arab Republic with increasing commodity prices which as a result have led to a reduction in households' purchasing power.

Figure 36: Syrian Arab Republic – rCSI by Governorate, January-June 2018-2019



Source: mVAM.

Livelihood trends

Similar to last year, the Mission observed an increase in agricultural activities, mainly due to improved security in many parts of the country, re-opening of supply routes, good winter rains and greater market access. Several areas recorded an increase in the number of IDP farmers returning to their place of origin, mainly in Aleppo, Deir-ez-Zor, Rural Damascus and Dara'a. Yet, the activities of farmers and other groups depending on the agricultural sector have been impacted by the high costs of inputs, poor status of infrastructures and marketing constraints.

Due to overall greater stability, small business/petty trade activities are regularly running in many urban areas. The Mission found that markets are well supplied with agricultural produce; however, several constraints affect Syrians' ability to purchase food, mainly high transport costs to reach markets, reduced demand due to high unemployment rates and limited household purchasing power resulting from the depreciation of the Syrian Pound. Prices have decreased compared to the peak of the crisis in 2016, however, they are still very high. Limited purchasing power continues to be a key driver of food insecurity (see Figures 11 and 23).

According to WFP food monitoring, unskilled wage labour rates continues to show an upward trend (+16 percent compared to June 2018). In terms of demographic background, women seem to have more difficulties than men in finding sustainable sources of income as either they sold their productive assets, or they are not skilled enough to reposition themselves in the job market. Child labour and early dropouts from school are still among the major coping strategies adopted by Syrians with a bias towards women-headed households located in conflict-affected areas. Many households have also reported that children find it difficult to go back to school after years of interruption with households' high need for income and the quality of education reportedly decreasing, children are not motivated to continue their studies, hereby preferring to work. Early marriage of girls has seldom been reported as a way to reduce household expenditure, however, when it did occur it mainly took place in Hasakeh and Rural Damascus governorates.

Exposure to shocks and main constraints

The main constraint recorded by the Mission across the visited areas is access to safe and clean drinking water, which was more widely reported by households residing in conflict frontline areas such as Deir-ez-Zor, Homs, Dara'a, Aleppo, and Hasakeh. Households which have no access to tap water are forced to purchase water in bottles or to refill water tanks – a practice that reduces households' available expenditure on other essential needs, namely food, education and healthcare.

Similar to last year, internal displacement continues to be a reality in many parts of the country; however, the number of returnees has increased, and it is expected to rise further between June and August, before the beginning of the new school year. The main concerns expressed by IDPs during the field visits include lack of sustainable job opportunities, poor shelter conditions and high costs of rent, lack of affordable quality education

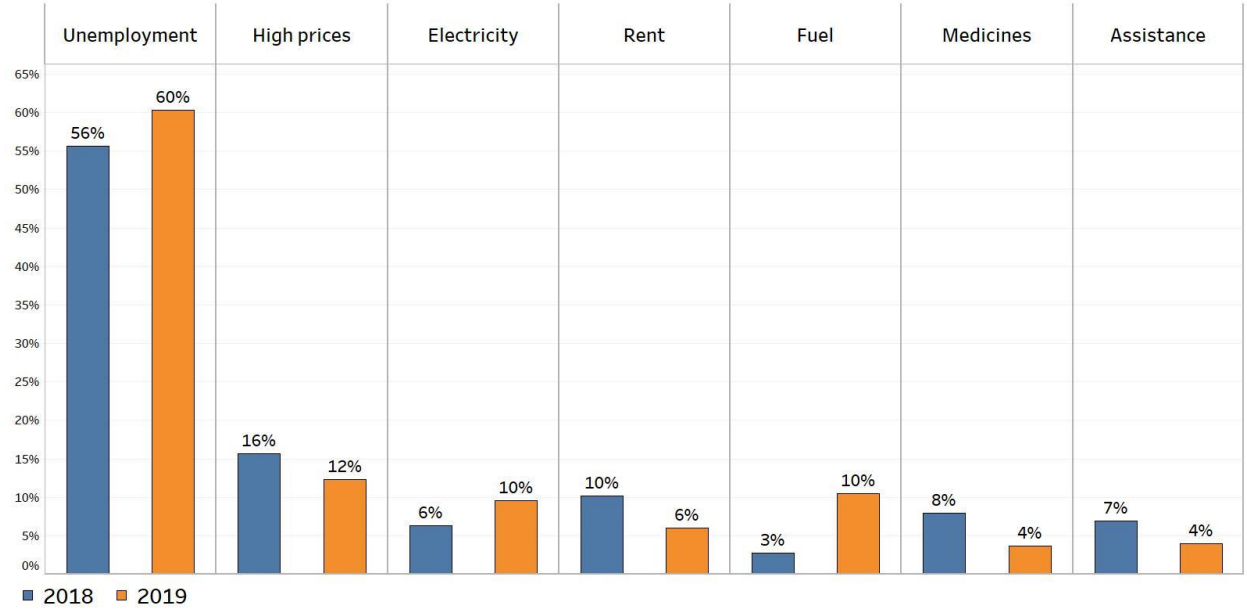
programmes for children and lack of resources to buy food or fuel. Several IDPs, mainly in Lattakia and Tartous, expressed concerns about the reduced food assistance cycles and were worried that it may be phased-out.

Returnees are facing similar constraints. Displaced people returning to urban areas are largely concerned about poor quality of healthcare services, hygiene conditions and access to basic services in the neighbourhoods where they have returned to. In rural areas, recent returnees are primarily concerned about the reconstruction of their homes, the rehabilitation of the rural infrastructure – such as the electricity network – and the access to productive assets to restore their livelihoods – such as seeds and tools. During the field visits, farmers requested assistance through provision of live animals (e.g. chicken, sheep, goats and cattle) to rebuild livelihoods and face less difficulties in making ends meet.

Both in 2018 and in 2019, unemployment has been the main challenge expressed by mVAM respondents in the 12 governorates covered, followed by high food prices. Concerns around job opportunities and the possibility to enter the labour market slightly increased compared to the same period in 2018 (+9 percent). During the field visits, the Mission observed that women were particularly concerned about the lack of job opportunities and need to enter the job market to sustain the needs of their families.

The impact of the fuel crisis in early 2019 is reflected in the findings from the mVAM survey as the proportion of respondents reporting that high fuel prices represented a challenge has increased, passing from three percent in the first semester of 2018 to ten percent in the same period in 2019. The Mission observed that the costs and availability of fuel represented a challenge across all governorates, particularly during the winter months as many households use fuel for heating their homes. To face this difficulty, households located in areas affected by recent conflict (Aleppo, Homs, Hama) or hosting lager number of IDPs (Lattakia and Tartous) had to rely on alternative sources for heating such as cutting down trees or burning old clothing and animal dung. Other main constraints reported in 2019 through the mVAM survey included access to electricity (nine percent) and high rents (six percent) – see Figure 37.

Figure 37: Syrian Arab Republic - Main constraints, January-June 2018/19



Source: mVAM.

Livelihood coping

In the ninth year of the crisis the adoption of livelihood coping strategies such as spending savings or selling assets (productive and non-productive) has reduced compared to the previous year as most households have depleted all or most of their resources and are therefore unable to resort to the same type of livelihood coping strategies (Figure 38).

Buying food on credit continues to be increasingly implemented (+7 percent), particularly towards the end of the month, when households have fewer resources and disposable income (Figure 38). The implementation of this strategy is more common among returnees, IDPs, female headed and rural households. This was confirmed during the field visits by the CFSAM team (Figure 39).

Figure 38: Syrian Arab Republic – Adoption of livelihood coping strategies

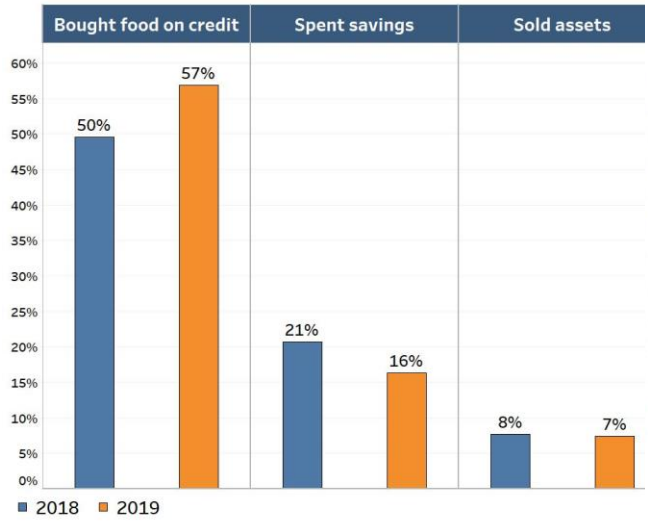
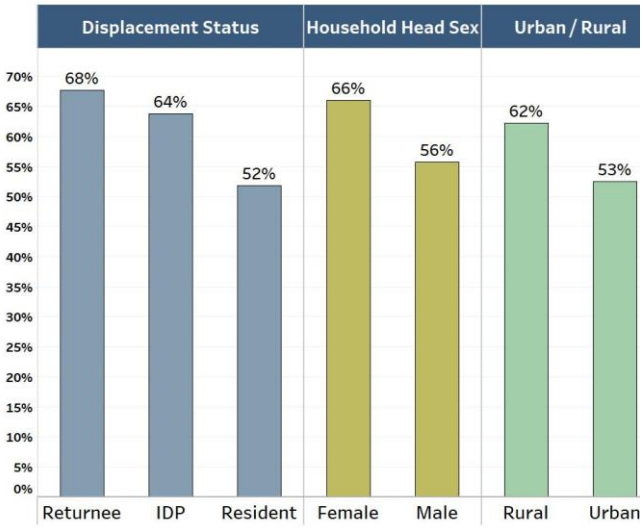


Figure 39: Syrian Arab Republic – Buying food on credit, January-June 2019



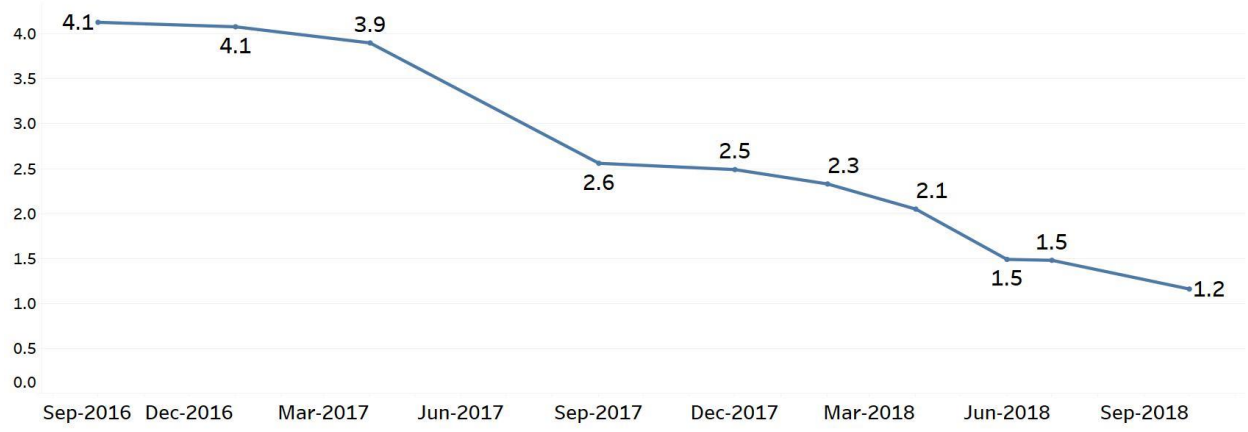
Source: mVAM.

To prioritize food consumption, the majority of Syrian households reduce expenditures on health and education; often times they get into debt to pay for medical treatment and school fees. In Aleppo, Deir-ez-Zor and Rural Damascus, access to adequate healthcare services was reported to be a priority need; however, it remains a challenge as households have limited resources to afford the transport costs to reach the closest hospital or to pay for adequate treatment. Moreover, most healthcare facilities and clinics are not well equipped for the treatment of the most serious or severe conditions; several hospitals are no longer functional or are too poorly equipped to provide care to injured patients or to support persons with disabilities. Lack of access to proper medical and psychological care has also been mentioned as a priority, especially for children.

Humanitarian access

According to OCHA, 2018 marked the end of sieges in the Syrian Arab Republic. Moreover, the number of people who were considered living in hard-to-reach areas[22] has been decreasing since December 2016, reaching its lowest level towards the end of 2018 (down from 4.1 to 1.2 million people) – Figure 40. The decrease can be associated with wider freedom of movement and improved economic activity recovery. Nevertheless, these locations have also recorded high human losses as they have been exposed to long-lasting fighting and widespread destruction and as a result access remains limited due to the high level of infrastructure damage and presence of unexploded devices.

Figure 40: Syrian Arab Republic - Number of people living in hard-to-reach areas (millions)



Source: UN-OCHA, October 2018.

[22] An area that is not regularly accessible to humanitarian actors for the purposes of sustained programming as a result of denial of access, including the need to negotiate access on an ad-hoc basis, or due to restrictions such as active conflict, multiple security check-points, or failure of the authorities to provide timely approval.

Gender overview

Conflict in the Syrian Arab Republic, now in its ninth year, has been inflicting multiple adverse effects upon the Syrian people. Violence and displacement often times have resulted in the loss of households' customary breadwinner, usually a male figure. For a large number of households, the male head has either migrated in search of work or has joined an armed force. This shifted the responsibility of the entire family to women – who have become both the caretaker and the breadwinner of the household – and rendered women-headed households particularly vulnerable to food insecurity and other risks (Figure 41).

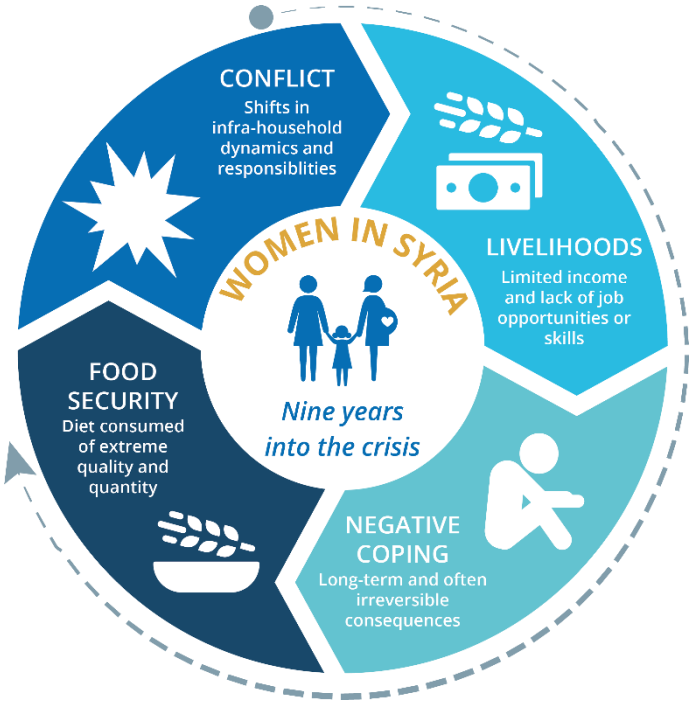
Syrian women struggle to find job opportunities to sustain themselves and their families. According to the field visits, main priorities expressed by Syrian women include the need to find sustainable sources of income or to be included in livelihood programmes as well as the possibility to attend vocational trainings to improve their skills to enter the job market.

Women have a central and decisive role in ensuring the food security of their household, and in their children's health; however, limited work opportunities have further eroded women's capacities to make ends meet. Based on mVAM data, a wider proportion of women-headed households consume inadequate diets compared to their male counterpart (30 percent vs. 21 percent). The diet of these households is mainly based on the daily consumption of staples, oil, sugar and a more sporadic consumption of vegetables.

In terms of coping strategies, women-headed households tend to prioritize food consumption by reducing expenditure on other essential needs such as healthcare and education of children; moreover, most households withdraw children from school and send them to work to have additional income to sustain themselves.

During the field visits, the Mission also observed that in areas affected by recent or ongoing conflict and cross-line fighting adolescent girls are more likely to enter forced and early marriage. According to the 2019 Voices from the Syrian Arab Republic[23], early marriage is not a new phenomenon in the country; however, it has turned into a coping mechanism as the marriage of an adolescent girl might lessen the economic burden on the household by reducing its size while ensuring access to the dowry as means of income. This strategy is more common among the most vulnerable segments of the population such as IDPs living in camps who are also more exposed to other protection risks.

Figure 41: Syrian Arab Republic - Effect of the conflict on Women



Source: UNFPA.

[23] Voices from Syria 2019 - Assessment Findings of the Humanitarian Needs Overview, available at https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/voices_from_syria_2019_0_0.pdf

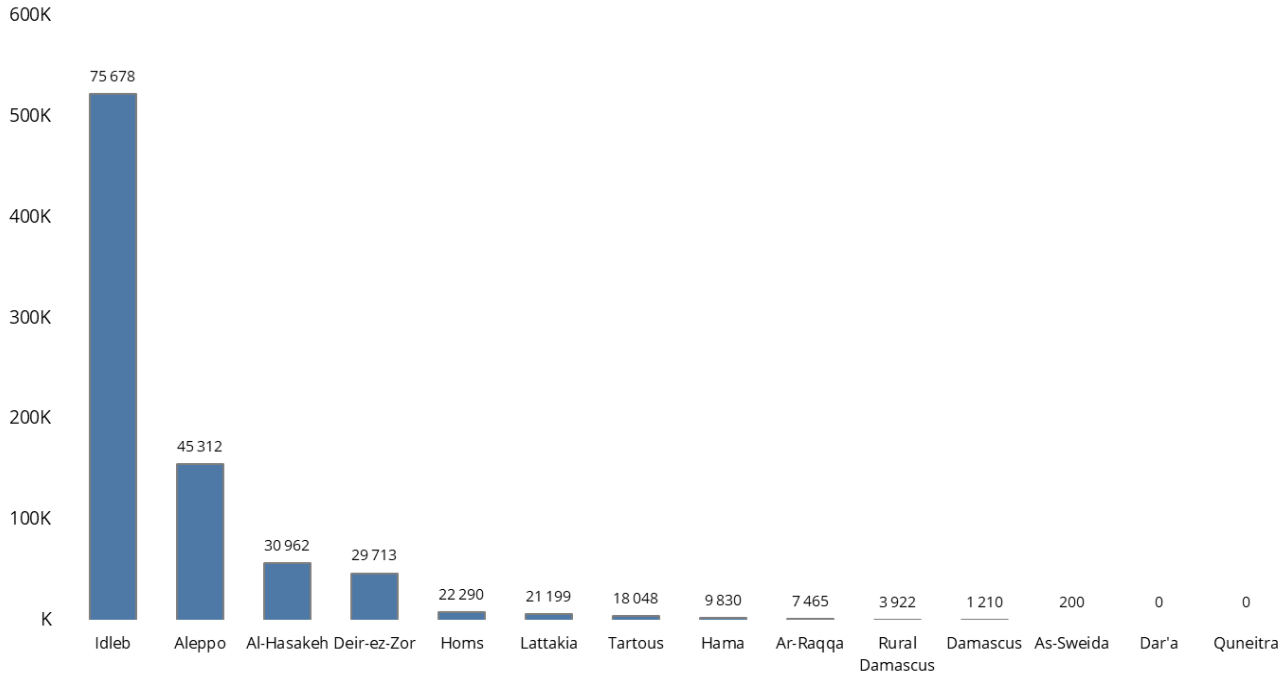
Displacement and return

A large proportion of the population continues to be on the move inside the Syrian Arab Republic. According to estimates from UN-OCHA, 803 459 new IDPs have been recorded in 2019 (January-June 2019), including 113 936 people in June alone. The highest IDP burden was observed in Idleb (82 302 individuals) and Aleppo (27 741 individuals) as intensification of hostilities in southern Idleb, northern Hama and western Aleppo governorates is pushing people to flee their communities to find safety (Figures 42 and 43).

In addition, the estimated cumulative number of spontaneous IDP returnees in 2019 reached 265 828 people (January to June), with 21 652 returnees recorded in June alone[24]. Deir-ez-Zor governorate recorded the largest number of returns (4 763 individuals), followed by Idleb (4 541), Dara'a. (4 077) and Homs (3 836)[25].

In June 2019, the humanitarian community recorded 21 652 spontaneous IDP returnees in several areas across the country. The largest number of these returns were recorded in Deir-ez-Zor governorate with 4 763 returnees, mostly from Hasakeh and Damascus governorates. The second largest number of returns were recorded in Idleb governorate with 4 541 returnees who were almost exclusively displaced within the governorate. The trend in Idleb suggests that these individuals were displaced recently due to hostilities in northwest Syrian Arab Republic, but remained close to their homes in order to return once violence in that particular area has ceased. The third largest number of IDP returnees with 4 077 spontaneous returns were registered in Dara'a governorate, mostly within the governorate, while Homs governorate followed with 3 836 returns, also mostly from within the governorate.

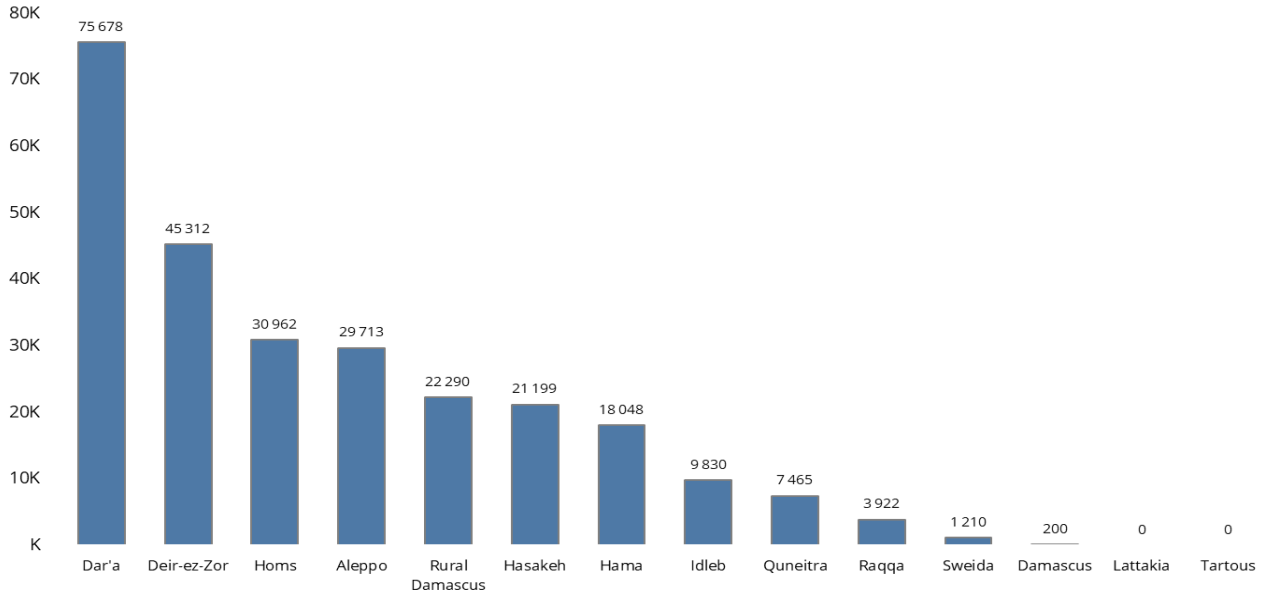
Figure 42: Syrian Arab Republic - Estimated Number of IDPs by Governorate, January-June 2019)



Source: UN-OCHA, Population Update Dataset, January-June 2019.

[24] UN-OCHA, Population Update Dataset, June 2019.
[25] The numbers reported are only those monitored/verified by UNHCR and do not reflect the entire returns.

Figure 43: Syrian Arab Republic - Estimated Number of IDP Returnees by Governorate, January-June 2019



Source: UN-OCHA, Population Update Dataset, January-June 2019.

Food assistance and assistance requirements in 2019

In 2019, the number of people estimated to be food insecure and in need of food and livelihoods support by the Food Security Sector (FSS) is 6.5 million. In addition, the FSS estimates another 2.5 million people to be at risk of food insecurity and hence in need of livelihoods services to strengthen their resilience and prevent further deterioration into acute food insecurity. As per its HRP strategy, the sector aimed to provide food assistance as well as protection and restoration of livelihoods at both household and community levels, as well as the coordination of these activities across hubs under the Whole of the Syrian Arab Republic framework.

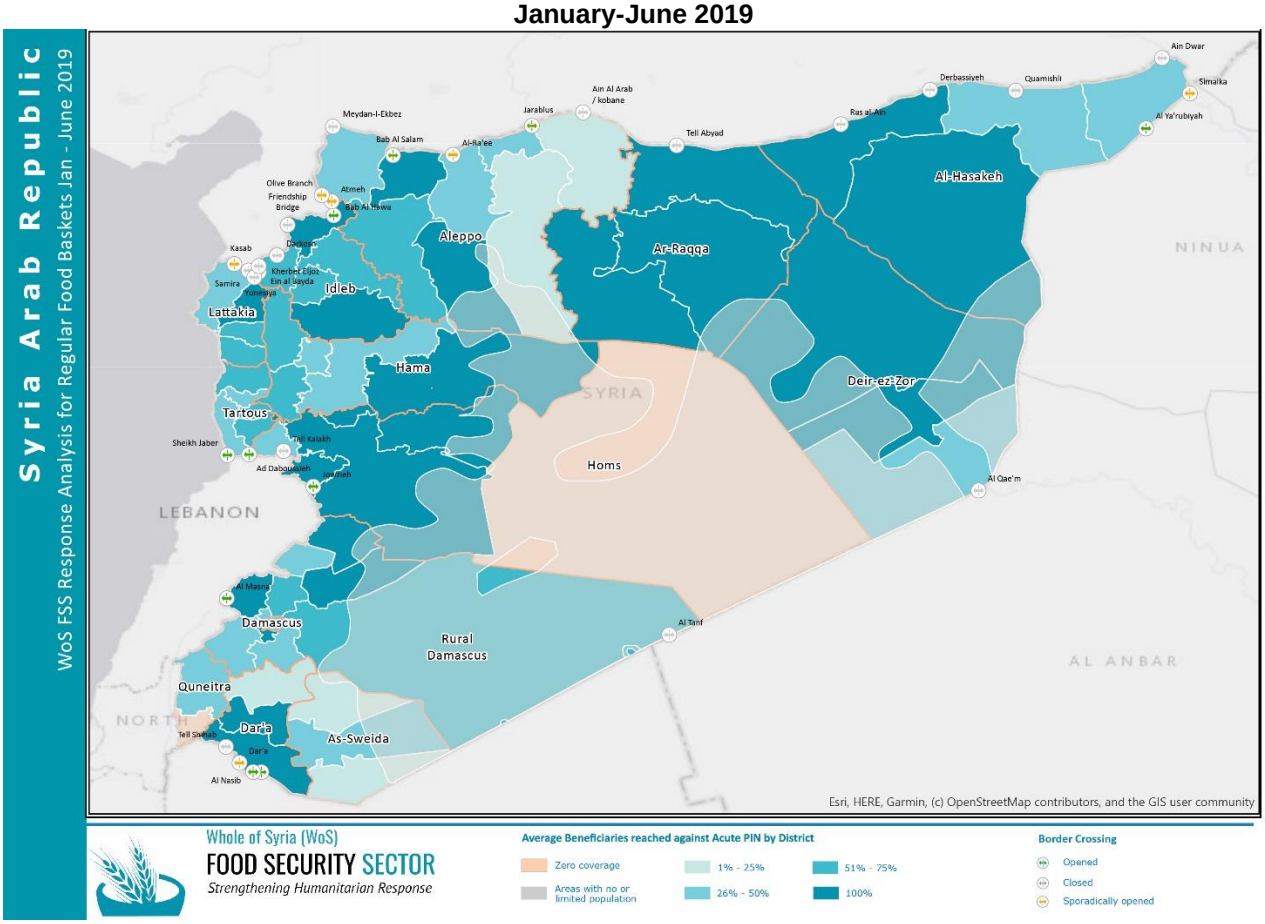
In terms of food assistance, the sector aimed to reach 5 million people with regular food baskets; 1.2 million people with emergency food assistance in form of ready to eat meals (RTEs); 1 million people with bread/flour distribution and another 1 million people with mixed food items and supplementary food baskets. Between January and June 2019, the FSS achieved 100 percent of the target for bread/flour distribution and provision of emergency food rations. Regular food baskets covered 88 percent (4.4 million people) of the target providing a minimum of 1 560 kcal/person/day. Supplementary foods and mixed food items had a relatively lower reach covering 59 percent (589 997 people) of the target.

As indicated in the response map (Map 7), areas having the highest severity levels as per the 2019 HNO analysis had a high coverage of food assistance up to 100 percent although relatively lower in some of the locations. In the North East, these include Raqqa, Hasakeh and Deir-ez-Zor. In the North West, parts of Hama, Idleb and Aleppo hosting a high number of IDPs as a result of the recent military incursions also received high food assistance coverage. Owing to the increased number of people in need of assistance in the North Western part of the country due the recent escalation of military offensives, WFP increased its caseload from 3.8 million people to cover 4.1 million people in the second half of 2019. In addition, WFP plans to cover 100 percent of the net food gap (2 100 kcal/person/day) among populations facing the highest levels of food insecurity such as those living in camps. The food security sector does not foresee major gaps in the provision of food assistance until the end of 2019 as the food assistance component of the sector is relatively well resourced.

It is, however, important to highlight that despite substantial achievements in the provision of food assistance, the agriculture component of the FSS was poorly resourced in the first half of the year leading to achievement of an average of only 12 percent of the target for the sub-sector by June 2019. This includes the provision of agriculture inputs, animal treatment/vaccination, income generating activities, livestock asset restoration, small-scale food production, infrastructure rehabilitation and the provision of services. This implies that efforts to engage people in food production to supplement on other sources of food and reduce reliance on food assistance could not be meaningfully achieved in the first half of 2019. The sector considers livelihoods as a lifesaving component and unless there is increased support for agriculture and livelihoods interventions, the reliance on food assistance will remain in areas with both high as well as medium severity. The sector advocates for the integration of livelihood protection/life sustaining actions at the early phase of

emergencies to reduce the cost of response in the long-run and enable quicker recovery by the affected population.

Map 7: Syrian Arab Republic - Whole Food Security Sector Regular Food Baskets Delivery, January-June 2019



Source: WoS FSS, January-June 2019.

RECOMMENDATIONS

Agriculture

The main recommendations emerging from the discussion the Mission held focused on the urgent need to boost direct and indirect employment particularly in the rural areas, increase profitability of farmers, and increase sustainability of using natural resources in agriculture. Unlike in previous years when advancing longer-term agricultural production recommendations under the prevailing conditions of conflict might have appeared hypothetical, with improved security across much of the country and a gradual return to farming, the conditions for moving away from emergency and basic livelihood support to recovery and reconstruction of the agricultural sector seem to be opportune. While the immediate goal is to revitalise production and provide livelihood options to returnees resuming farming operations on their land, production revitalisation should be pursued taking into account environmental constraints such as water availability and the recurrence of drought. Any intervention supporting the sector should be integrated. For instance, it is not sufficient to restock livestock without providing at the same time veterinary services, fodder and feed and supporting essential value chains.

Urgent to mid-term

- **Seed**: support the technical recovery of GOSM so that it can provide as many farmers as possible with clean certified cereal seeds of varieties that are appropriate for their agro-ecological zones. Support could include financing to increase the number of contracted out-growers, the provision of herbicides and fertilizers that many contract farmers must now purchase themselves, and the provision of seed-cleaning equipment. This will benefit both the farmers and the country as a whole by increasing the production of staple food and livestock concentrates. GOSM's other activities, such as the multiplication of seed potato and the planned revival of vegetable seed production should also be supported.
- **Availability and proper use of agro-chemicals**: farmers complained that available agro-chemicals that they apply are ineffective, and bee-keepers suspect they are harming their colonies. Extension agents and

staff of agricultural pharmacies should be given extra training on the correct use of agro-chemicals, including .the correct timing of application, the correct concentration and dosage according to the manufacturer's instructions, and safe usage practices. Extensionists should also instruct farmers on the recognition, application and purchase of chemicals that have been approved by the Government.

- **Irrigation and unauthorized wells**: because of the destruction of a major part of the irrigation network, the approach to irrigation has been individualistic rather than community-based. Farmers now have their own wells - authorized or not - and in many instances compete with their neighbours to extract water from a declining source. Tail-end users of surviving canal networks often receive inadequate amounts of water as a result of unregulated upstream use by other farmers. Farmers should be instructed about the financial and production benefits of water-users associations (WUAs), and effective WUA structures should be promulgated.
- **Improve registration of animals** to gather accurate information on animals and their location in the country to facilitate programming and assistance for the livestock development until the next census is carried out. Registration of animals is now being undertaken, but progress is relatively slow. Financial support (for personnel, transport, etc.) would hasten registration.
- **Artificial insemination:** Cattle owners reported that artificial insemination was only occasionally effective. The reason for this is less likely to be poor quality of semen than a failure on the part of some veterinarians to correctly identify the period of oestrus. Veterinarians and AI technicians should, therefore, receive further training on the correct identification of oestrus in both local and exotic breeds of cattle.
- **Cold chain for safe distribution** of vaccines, veterinary drugs and AI straws should be rehabilitated. The possibility of collaboration with refrigerated-transport companies should be explored.
- **Improve conditions for livestock producers in the Badia:** After the good rains of 2018/19 and several years of under-grazing, the Badia now provides excellent pasture. Support should be provided to herders and breeders for re-stocking, especially of sheep. Where possible, safe areas of the Badia that are known to be clear of landmines should be demarcated. Watering places in the Badia that have been damaged during the crisis should be rehabilitated.
- **Rehabilitation of veterinary diagnostic laboratories, food safety laboratories and slaughterhouses** in order to improve the identification of animal diseases and of food that is unfit for human consumption; thus, enhancing not only the control of animal diseases but also food safety and public health.
- **Revitalize the hatchery centres** to restart the activities of industrial poultry units.
- **Rehabilitation of processing factories:** to avoid the very significant waste of fruits and vegetables, support should be provided for the rehabilitation of some processing factories in the main producing areas. In the shorter term, the factories would not necessarily be profit-making but would ensure that farmers were paid a fair price for their surplus produce, and that the processed produce could be sold even if below the production costs. Waste would thus be avoided and farmers, some of whom are currently considering going out of business because costs exceed returns, would benefit financially and be kept in production.
- **Improve market information systems** to assist producers in making the right decisions and increase their profits as well as to reduce waste. Extension agents well informed about the profitability of different crops, and in particular of highly perishable fresh produce, should advise producers accordingly.

<u>Long term</u>

- **Consider cooperative arrangements:** Where appropriate and necessary, farmers should be advised about the financial advantages of cooperative purchase of inputs and the marketing of produce, and of collective credit.
- **Explore the feasibility of solar energy**: to decrease the cost of running petrol-driven pumps for irrigation. The economic feasibility of using solar pumps for irrigation from wells should be further explored. A stated argument against the use of solar pumps is that they would lead to the profligate use of irrigation water, but with well-managed water-user associations this would not necessarily be the case.
- **Carry out a livestock census** when conditions allow.
- **Re-establish various supply chains in the country** to allow full recovery of the sector, including functioning cold chains that would allow the smooth transportation of agricultural products from surplus to deficit parts of the country. Functioning markets and supply chains will also contribute to a reduction of postharvest losses in the field crops sector as well as losses in livestock production.
- **Consider introducing risk-management-scheme** tools such as weather-based insurance schemes to allow farmers to effectively hedge their risks.
- **Improve the general technical capacity of human resources** in the sector.
- **Boost investment to assist reconstruction and recovery** of the agricultural sector**.**

Food security

Urgent

Provision of multiple and simultaneous food security interventions for improved sustainability of the impact of the assistance. In particular:

- Design multiple food security interventions to address Syrians' immediate food needs whilst at the same time providing assistance in a way that reduces dependency on food assistance and helps increase food availability as well as food access.
- Build on partnerships with local institutions and actors that can provide value-added activities and expertise to food security interventions.
- Identify clear entry and exit points for the delivery of food security assistance, based on the severity of food insecurity, and designing interventions suited to different groups of people.
- Provide emergency food assistance for crisis-affected people within 72 hours of displacement to cover short-term immediate food needs with appropriate foods and shifting to more targeted food assistance based on need.
- Prioritize those who are cut off from their normal food and income sources for short-term food assistance to meet their immediate food needs, but simultaneously identify households whose livelihood asset base can be strengthened through food security specific support.
- Continue with targeting food assistance to those newly displaced from their place of origin for an initial period.
- Identify additional ways of assisting those who receive food assistance once they return to their place of origin. Households receiving food assistance upon arrival should be identified for further support with additional interventions that improve their livelihood opportunities and access to food and income. This may require additional sector support for recovering lost assets and shelter, as well as restarting livelihoods.
- Support vulnerable residents who face access issues to cover their basic food needs.
- In terms of specific groups, dedicated attention should be on: Households with young children under five-years of age and other nutritionally vulnerable groups – such as families with disabled members or elderly households - identify FCS for households with large dependency ratios and nutritionally vulnerable groups and carry out a more in-depth profile of their characteristics that makes it easier to identify and target them for food interventions.

Effective and timely monitoring of food security levels across the country. The collection of regular key food-security and nutrition indicators at sub-district/district and governorate level would allow the continuous monitoring of the food security situation and impending needs on the ground. This warrants:

- A country-wide monthly data collection and analysis system to be established and updated on a timely basis.
- National representative food security assessments to be conducted on an annual basis to assess progress made in addressing food needs and assess where greater efforts need to be focused.
- An Inter-Agency food security analysis system composed of food security related Humanitarian Actors and Government Ministries to be set up to assess and validate food security levels in the country.

Mid-term

- Identify more food-security-sensitive approaches to target newly displaced households with additional or alternative assistance depending on their food and income opportunities. Ensure additional support for agricultural sector is provided.
- Identify interventions that strengthen food availability and food stability of resident households who are able to invest in longer-term planning because of relative stability, who would potentially create job opportunities, especially for unskilled labours.
- Apply a working-poor lens to household-level food insecurity to identify those households whose incomes are so low or so unstable and they allocate over 75 percent of their available income to food and have limited food sources.
- Complete market assessments across all of the Syrian Arab Republic to assess the possibility of expanding to market based interventions (i.e. cash and/or vouchers).
- Where feasible, transition from in-kind food assistance to market based interventions to enhance consumers' purchasing power. This could help address some of the issues related to localised produce surplus in parts of the country, while improving the dietary diversity of the assisted population.

- After nine years of conflict, many Syrians seem to have exhausted many of their typical food-based coping mechanisms. There is therefore a need to reassess and update Syrians' employed food-based coping mechanisms.

Long term

- Better identification of interventions for those at risk of food insecurity and for whom food assistance could be part of a larger package of support that meets livelihood needs and prevents the use of negative livelihood coping strategies that could affect food consumption and lead to food insecurity.
- Consider seasonal food assistance if appropriate instead of long intervals between periodic monthly assistance which make it difficult to accurately measure food security outcomes.
- Conduct a study on the cost/effect of international sanctions on Syrian's food security particularly on the production capacity of the agricultural sector.

Ensure food stability needs are considered in targeting food security interventions that protect and support livelihoods. This means:

- Strengthening the agricultural sector and households engaged in food production systems in a way that promotes household-level food security and food availability in the country.
- Strengthening livelihood opportunities for people at risk of food insecurity through a menu of interventions appropriate to location, considering community-level productive assets.
- Identifying non-food production market-based livelihoods that contribute to food security in the country and help to improve market environment across the country.
- Working with actors along the main food value chains for more efficient economies of scale and market-based interventions for better profit margins.
- Working with the youth to ensure skill building around the main livelihood opportunities that are available to them in their location.

ANNEX

PHOTOGRAPHS FROM THE MISSION

Harvested field awaiting threshing, Rural Damascus

Photograph: ©WFP/Cinzia Monetta

Threshing, Deir-ez-Zor

Photograph: ©Swithun Goodbody

Farmers delivering barley, Aleppo

Photograph: ©Swithun Goodbody

Gathering straw, Homs

Photograph: ©Swithun Goodbody

Burnt field, Hasakeh

Photograph: ©Luca Innocente

Silo, Homs

Photograph: ©Swithun Goodbody

Damaged silo, Aleppo

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Sacks of barley stacked in the open air, Aleppo

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Apple orchard, Tartous

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Cotton field, Deir-ez-Zor

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Drip-irrigated pepper crop in a citrus orchard, Lattakia

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Young tobacco, Lattakia

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Irrigated vegetable fields, Rural Damascus

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Last of a polytunnel tomato crop, Tartous

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Damaged irrigation canal, Aleppo

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Destroyed bridge across Euphrates River, Deir-ez-Zor

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Irrigation inlet from Euphrates to damaged pumping station, Deir-ez-Zor

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Orchard tractor, Tartous

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Small olive grove destroyed by fire, Hama

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Wholesale market, Homs

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Retailer's truck leaving wholesale market, Tartous

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Farmstead, Hasakeh

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Holstein-Friesian cross, Homs

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Man attending flock of sheep-goats at crop residues, Rural Damascus

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Pen for fattening lambs and goat kids, Aleppo

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Ram with orchitis (inflamed testicles), Deir-ez-Zor

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Woman milking her sheep, Deir-ez-Zor

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Rams, Homs

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Sick Holstein cross, Deir-ez-Zor

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Livestock market, Hasakeh

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Abattoir, Qamishli, Hasakeh

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Bee-hives, Aleppo

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Bee colony, Lattakia

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Fish market, Tartous

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Women baking bread in Al Myadin, Deir-ez-Zor

Photograph: ©Luca Innocente

Fresh bread in Al Myadin, Deir-ez-Zor

Photograph: ©Luca Innocente

Female focus group discussion with returnees, Menbij District, Aleppo

Photograph: ©WFP/Jan Michiels

Male focus group discussion with returnees, Menbij District, Aleppo

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Children in Al Shekh Meskein, Dara'a

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