Food and Agriculture Organization of the United Nations

World Food Programme

ISSN 2707-2479

SPECIAL REPORT

2021 FAO/WFP CROP AND FOOD SECURITY ASSESSMENT MISSION (CFSAM) TO THE REPUBLIC OF TAJIKISTAN

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Rome, 2022

Required citation:
FAO. 2022. Special Report - 2021 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan. May 2022. Rome. *https://doi.org/10.4060/cb9996en*.

ISSN 2707-2479 [Print]
ISSN 2707-2487 [Online]

ISBN 978-92-5-136168-9

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ABBREVIATIONS AND ACRONYMS

AoS	Agency of Statistics under the President of the Republic of Tajikistan
CFSAM	Crop and Food Security Assessment Mission
CIS	Commonwealth of Independent States
DRS	Districts of Republican Subordination
FAO	Food and Agricultural Organization of the United Nations
FCS	food consumption score
FGD	focus group discussion
GBAO	Gorno-Badakhshan Autonomous Oblast
GDP	gross domestic product
GIEWS	Global Information and Early Warning System on Food and Agriculture
HDI	human development index
Hydromet	State Agency for Hydrometeorology of the Republic of Tajikistan
KII	key informant interview
LCS	Livelihood Coping Strategy
MEDT	Ministry of Economic Development and Trade
MoA	Ministry of Agriculture of the Republic of Tajikistan
NBRT	National Bank of the Republic of Tajikistan
NGOs	non-governmental organizations
WFP	World Food Programme
WUA	water users association
TJS	Somoni
USD	United States dollar


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HIGHLIGHTS

- Total grain production in 2021 (first and second season crops) was estimated at 1.4 million tonnes, about 10 percent above the 2020 level, due to a slight increase in plantings and better weather conditions which boosted yields, and 4 percent above the five-year average. Wheat production, the country's main staple, was estimated at a near average level of 852 000 tonnes, while the output of potatoes, another main staple, was estimated at slightly below-average level of 919 000 tonnes.

- In the 2021/22 marketing year (November/October), total cereal import requirements are forecast at about 1.35 million tonnes, including 1.19 million tonnes of wheat, 148 400 tonnes of maize and small quantities of rice and barley. Import requirements for potatoes are forecast at 265 300 tonnes.

- Although wheat import requirements are always fully covered by commercial purchases, after the outbreak of the conflict in Ukraine in February 2022, the country's import capacity could be significantly constrained by high international prices of wheat and the introduction of export bans and quotas in several countries in the region.

- Despite insufficient grazing resources and fodder supplies, livestock body conditions were generally good due to an adequate availability of alternative livestock feed (from food crops waste).

- Domestic prices of wheat flour were generally stable or declined between January and July 2021 and showed an increasing trend between August and December 2021, reflecting the sharp rise of Kazakh wheat export quotations. With the outbreak of the war in Ukraine, international price increases could result in higher domestic prices until the 2022 main harvest reaches the markets in August 2022.

- Prices of potatoes increased seasonally between January and April 2021, followed by a decline in May and June 2021. From July, prices increased seasonally until November and declined slightly in December 2021, although remaining about 12 percent higher than a year before.

- Overall, about 20 percent of the households were classified as moderately and severely food insecure in August 2021 taking into account their food consumption, income sources and coping strategies adopted. The prevalence of food insecure households was higher in rural areas, particularly among the female-headed households.

- The mission found that about 32 percent of the total interviewed households spent more than 65 percent of their entire expenditures on food,

which limited their capacity to make improved livelihood choices as a significant portion of their spending goes to fulfil their food needs.

- Overall, the amount of remittance inflows in the country decreased compared with the pre-COVID-19 period and the majority of the households who received remittances in 2021 reported that these were used to cover their food needs. The situation could aggravate further due to the impacts of the war in Ukraine.

OVERVIEW

Following an official request by the Ministry of Agriculture of the Republic of Tajikistan on 4 May 2021, FAO and WFP carried out an abridged approach to the Crop and Food Security Assessment Mission (CFSAM) to the country. After thorough planning and preparation, the two agencies assessed the 2021 food crop production, estimated the food import requirements for the 2021/22 marketing year and analysed the 2021 food security situation at household level. The mission's core team was composed of FAO and WFP staff members with support from a contracted service provider for conducting key informant interviews, community interaction and a telephone interview-based household survey.

After reviewing and collecting existing information in the capital, Dushanbe, the mission was in the field from 22 June to 2 July 2021 and again from 16 to 22 September 2021 to estimate the production of the first and second season crops. The mission's core team was composed of one FAO Economist and one FAO Agronomist, while WFP provided experts in qualitative assessment of food security and emergency food assistance requirements for the vulnerable groups. Technical support was provided by officials of the Ministry of Agriculture (MoA) of the Republic of Tajikistan and the Agency on Statistics (AoS) under the President of the Republic of Tajikistan.

Before starting the fieldwork, all team members received extensive online training on the CFSAM methodology and tools by FAO senior staff, elaborated the checklist to be used (Annex 3), discussed the data to be collected and finalized the itinerary as well as logistical arrangements.

Regarding the assessment of the first and second season crops production, the teams visited all regions of the country in both periods of field work, with the exception of the Gorno Badakhshan

Autonomous (GBAO) Region that was not visited in July as there is only one cropping season that starts later compared to other regions. Overall, 26 out of the 57 agriculture districts of the country were visited. Each team included representatives from FAO and WFP, crop and livestock specialists from the MoA and agriculture statisticians from the AoS. In total, the teams spent 20 days in the field. During the field work, teams met with local government officials and extension workers and were briefed on the general agricultural and food security situation. Each team conducted structured interviews with farming households to discuss the status and prospects of crop production and observed the conditions of the crops still standing in the field. Local markets, traders and millers in each district were visited to assess the availability of food commodities and the recent changes in prices.

The mission obtained data on planted and harvested areas as well as yield estimates from agriculture departments at district and region levels, and agriculture staff of *jamoats* (subdistrict entities). The data was then crosschecked against the information provided by farmers and traders that were interviewed during the field trips and against the evidence provided by the estimated rainfall and other remotely sensed meteorological data.

During the field visits, meetings and interviews were conducted with key informants as heads of *dehkan*[1] farms and farmers in order to assess the agricultural situation in the country. Issues related to harvest, pest control, availability of inputs financing and credit provision, the state of meadows and pastures and the state of the livestock sector were discussed at these key informant interview (KII) meetings. The meetings provided also an opportunity to receive first-hand insights of the factors that affected agricultural production in 2021 in both the first and second seasons.

In November 2020, heavy rains and cold temperatures delayed planting operations by one to two weeks, but below-average rains in December reduced the excess of soil moisture and allowed planting operations to resume. Dry weather conditions continued in January and February 2021, negatively affecting crops in some areas. Rains improved between late February and mid-May, bringing relief to vegetation conditions in the areas affected by dry weather and lifting crop prospects in most parts of the country. However, the above-average rains triggered floods and landslides causing localized crop damages to crops in Khatlon and Sughd regions. Weather conditions continued to be generally favourable from June until the end of 2021, benefiting the second season crops.

Localized damages to crops were caused by the Italian and Moroccan locusts, especially in sub mountainous areas. During the field interviews, farmers reported outbreaks of Stripe Rust and Head Smut on grain crops, particularly during the spring. Timely control measures and interventions limited the impact of locusts and other diseases on crops.

The mission found that the number of tractors and agricultural machinery for carrying out certain agricultural practices (tillage, harvesting, etc.) was inadequate to cover local demand and prices for their services increased in 2021 compared to the previous year. Farmers also informed about the increase in the prices of fuel and lubricants during the sowing and harvesting of agricultural crops.

Interviewed farmers flagged the urgent need for extension and advisory services on the use of innovative cultivation technologies, the introduction of new high-yielding crops and climate-resilient varieties, and the distribution of pesticides and fertilizers.

Total grain production in 2021 is estimated by the mission at 1.4 million tonnes, about 10 percent above the 2020 level, due to a slight increase in plantings and better weather conditions which boosted yields and about 4 percent above the five-year average. The production of wheat, the country's main cereal crop and a staple food, is estimated at a near-average level of 852 000 tonnes. The output of potatoes, another main staple, is estimated at 919 000 tonnes, slightly below the average level. The outputs of maize and barley are estimated above the average levels.

Cereals import requirements in the 2021/22 marketing year are forecast at about 1.35 million tonnes, including 1.19 million tonnes of wheat, 148 400 tonnes of maize and about 12 000 tonnes of rice. In addition, the mission estimated the import requirements for potatoes at 265 300 tonnes. As in previous years, all wheat imports are expected to be covered by commercial purchases. However, after the outbreak of the conflict in Ukraine, the country's import capacity could be significantly constrained by the high international prices of wheat and the introduction of export bans and quotas in several countries in the region, including in Kazakhstan, the main wheat exporter to the country.

In most areas of the country, a low fodder production, coupled with high prices for fodder and concentrates, reduced livestock numbers compared to the previous year's level. In addition,

[1] *Dehkan* farms are mid-sized farmer farms that are legally and physically distinct from household plots. About 60 percent of the agricultural land in the country belongs to *dehkan* farms. A *dehkan* farm is on average about 20 hectares, which is much larger than the 2 hectares of household plots where crops such as cotton, wheat and vegetables are grown.

the lack of irrigation water and a dry summer in parts of the country affected pastures, reducing the availability of grass to feed livestock. However, the use of fodder crops and grass as livestock feed was replaced by other (food) crops waste.

Between May 2020 and July 2021, prices of wheat flour remained overall stable or decreased slightly, amid adequate domestic availabilities of wheat, the easing of COVID-19 restrictive measures and the launch of price stabilization initiatives by the government. Prices increased by about 7 percent in August 2021, to a new record, reflecting the sharp rise of Kazakh wheat export quotations since June 2021. In September 2021, prices remained stable and increased slightly between October and December 2021. At the end of the year, they were over 30 percent higher than the pre-pandemic levels (March 2020). Prices of potatoes increased seasonally between January and April 2021, followed by a decline in May and June 2021. From July, prices increased seasonally until November and declined slightly in December 2021, although remaining about 12 percent higher than a year before. Increased export quotations in the subregion, triggered by the outbreak of the conflict in Ukraine, could result in higher domestic prices until the 2022 main harvest reaches the markets next August.

The majority of households were found to have adequate food consumption during the survey period, whereas 15 percent had poor or borderline consumption. The prevalence of food insecure households was higher in rural areas, particularly among the female-headed households.

The female-headed households were more likely to have poor food consumption compared to male-headed households. In addition, the mission found that a large proportion, accounting for about 60 percent of the total interviewed households, spent more than half of their total expenditure on food that limited their capacity to make improved livelihood choices as a significant portion of their spending goes to fulfil their food needs.

Over 60 percent of the surveyed households reported adopting one or more livelihood-based coping strategies to meet their food gaps. The most prevalent strategy was spending savings and reducing non-food expenditures. Overall, the amount of remittance inflows in the country decreased compared to pre-COVID-19 levels and the majority of the households who received remittances in 2021 reported that the money was used to cover for their food needs. The situation could aggravate further due to the impacts of the war in Ukraine.


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SOCIOECONOMIC CONTEXT

Macroeconomic situation

Tajikistan is a landlocked, lower middle income country located in Central Asia. The country borders with Uzbekistan (on the west and east sides), Kyrgyzstan (in the north), China (in the east) and Afghanistan (in the south). The population in 2021 amounted to about 9.5 million and, according to approximate estimates, about 74 percent of the population lives in rural areas. Most of the communities are concentrated in irrigated valleys linked with agricultural systems that support the population and the farm surpluses are sold.

Immediately upon independence in 1991, the country went through a civil war (1992–1997), which resulted in serious destruction and human losses. Peace and stability were restored in 1997. After the transition to a market economy in 1991, the country faced high levels of migration. At the initial stage, emigration was stimulated by the war and conflicts that followed upon independence. In recent years, economic factors have become the predominant incentive for migration. Cash flows/remittances from labour migrants are one of the main drivers of the rapid growth of the national economy: between 2014 and 2019, the gross domestic product (GDP) grew by an average of 7 percent per year. In 2020, it grew only by 4.5 percent due to the COVID-19 pandemic, but rebounded in 2021 with a growth of 8.9 percent between January and September. In addition to remittances, the national economy depends heavily on the export of aluminium and cotton fibres. A brief time series of macroeconomic indicators is provided in Table 1.

In recent years, the national currency, the somoni (TJS), was sharply devaluated against the US dollar (Figure 1) and the official exchange rate moved from an average of TJS 6.16/US dollar in 2015 to TJS 11.31/US dollar in 2021. Due to the influence of global and regional, economic and financial processes, the devaluation trend slowed down slightly in 2021.

Population and employment

According to AoS, the population of the country was estimated at about 9.5 million in 2021, with an annual growth rate of 2.2 percent, of which 2 to 2.5 percent is officially (i.e., registered as) unemployed. Labour migrants contribute significantly to households' food security through remittances (21 percent of the GDP in 2020) that have significantly dropped in 2020 due to the COVID-19 pandemic. During the January to June 2021 period, remittances of labour migrants amounted to 752.4 million, about 11 percent more than in the same period of 2020.

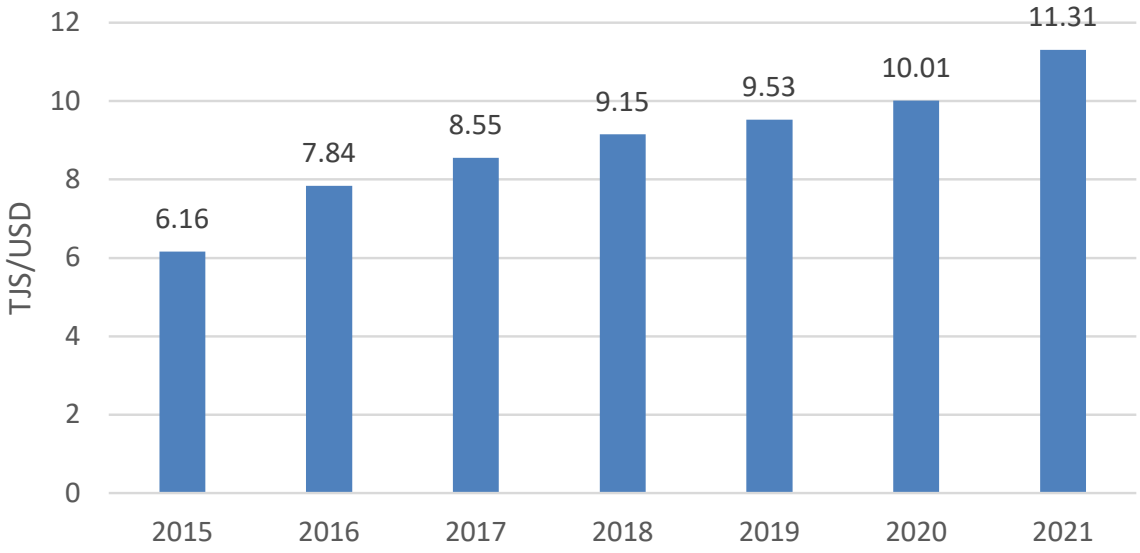
Regarding the quality of life and welfare, notwithstanding the economic improvements compared to 2020, in 2021 Tajikistan ranked 125th[i] out of the 189 countries in the United Nations human development index (HDI) exhibiting a slight progress since 2018 (by two positions). In terms of the safety and protection indicator, the country ranked 86th[ii], personal freedom: 149th, state administration: 141st, social capital: 26th, business environment: 117th, education: 89th and health: 74th.

Table 1: Tajikistan - Key economic indicators, 2015–2020

Economic indicators	2015	2016	2017	2018	2019	2020
GDP (USD million)[1/]	7 852.8	6 952.8	7 157.9	7 765.0	8 116.9	7 996.9
GDP per capita (USD)	929.2	804.1	810.0	860.0	880.2	851.5
GDP (percent/year)	6.0	6.9	7.1	7.6	7.5	4.5
Poverty rate (percent)	31.0	30.3	29.5	27.4	26.3	26.3[2/]
Unemployment rate (percent)	2.4	2.3	2.2	2.2	2.0	2.1
Cash receipts from labour migrants (as percent of GDP)	28.1	27.3	35.0	33.6	37.0	21.5
Agricultural production (as percent of GDP)	22.0	20.4	21.0	21.1	19.8	22.6
Budget deficit/surplus (as percent of GDP)	0.8	-1.7	3.6	0.4	-0.6	0.3
Growth in exports (percent/year)	-8.9	0.9	33.3	-10.4	9.4	119.8
Growth in imports (percent/year)	-20.1	-11.8	-8.5	13.5	6.3	94.1
Trade balance (USD million)	-2 545.0	-2 132.5	-1 576.8	-2 076.2	-2 174.9	-1 744.0
Trade balance (as percent of GDP)	32.4	30.7	22.0	26.7	26.8	21.8

Sources: The indicators presented are obtained from various sources, including AoS, MEDT, NBRT, Central Bank of the Russian Federation, https://www.stat.tj/ru/macroeconomic-indicators; https://tajikta.tj/ru/news/na-20-sokratyatsya-denezhnye-perevody-v-tadzhikistan-v-2020-godu-prognoz-vb; https://fergana.agency/news/113758/.
[1/] Preliminary data.
[2/] 2019.

Figure 1: Tajikistan - Official exchange rates, 2015–2021



Source: AoS, 2021.

Agricultural sector

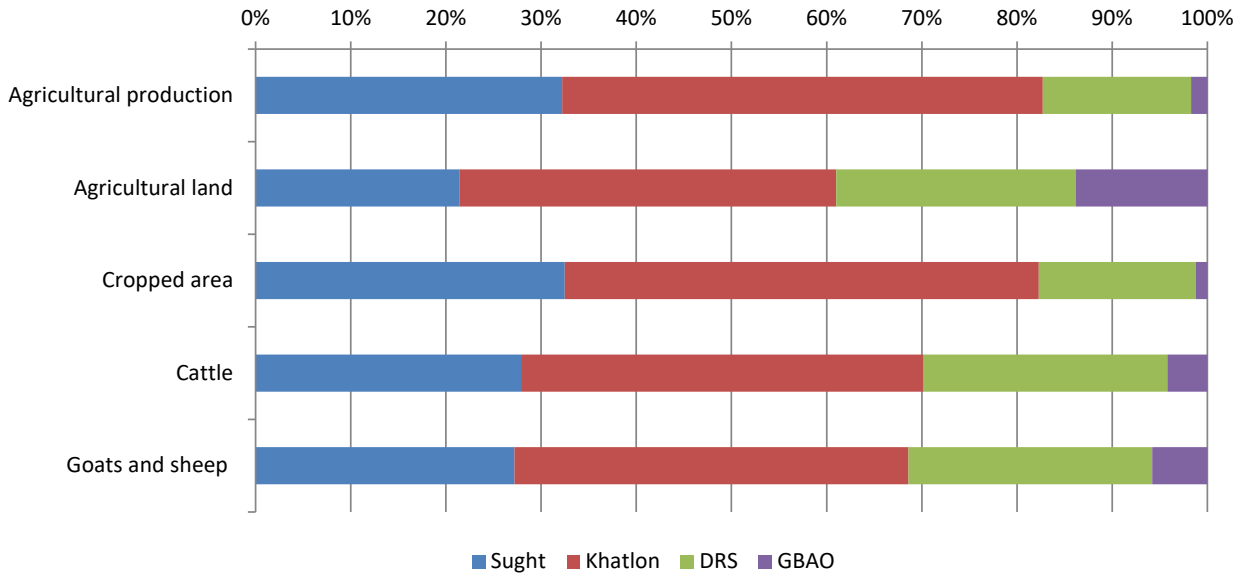
The agricultural sector employs about 45 percent of the economically active population and its production accounts for about 23 percent of the GDP.[iii] In 2020, agricultural products provided for about 20 percent of official export earnings. Tajikistan is a mountainous country and arable land accounts for only 7 percent of the territory. Half of the country is at altitudes of more than 3 000 m above sea level, with the highest point being the Ismail Somoni Peak (7 495 m) in the Akademiya Nauk Range (Pamir). Large glaciers cover more than 8 000 sq km, mainly in the Pamir Mountains and their water feeds several rivers flowing through the country as well as neighbouring Uzbekistan into the west.

Arable agriculture takes place primarily in river valleys where about 70 percent of the farmed land depends on irrigation. The number of irrigation rounds varies from one or two up to eight to ten per growing season, depending on the type of crop (cotton usually ranks first in terms of priority) and the effectiveness of the irrigation lift/delivery system. There are four main, well-defined valley systems:

- The Ferghana Valley in the north of the country along the Syr Darya River, its southwestern part stretches from Uzbekistan into Tajikistan.
- The broad Khatlon lowlands in the southwest, extending from Kulyab town in the east to the border with Uzbekistan in the west.
- The Hissor Valley between Dushanbe and Tursunzade towns, in the north of the Khatlon Region.
- The narrow strip of the Zarafshan Valley, extending from east to west between Ferghana and Hissor valleys.

The importance of the agricultural sector in the three regions (oblasts) of Sughd, Khatlon, GBAO and the Districts of Republican Subordination (DRS) is connected to the proportional representation of the four river basins with their feeder water catchments within the respective provincial boundaries. The main agricultural areas of the country are the Khatlon Region in the southwest, the Sughd Region in the north and the Hissor and Rasht zones in the western and southern parts of the DRS. Figure 2 shows the provincial distribution of agricultural land, cropped area, livestock units and the average gross agricultural output.

Figure 2: Tajikistan - Relative contribution of regions to agricultural production, 2020 (percent)



Source: AoS/Statistical Yearbook, 2020.

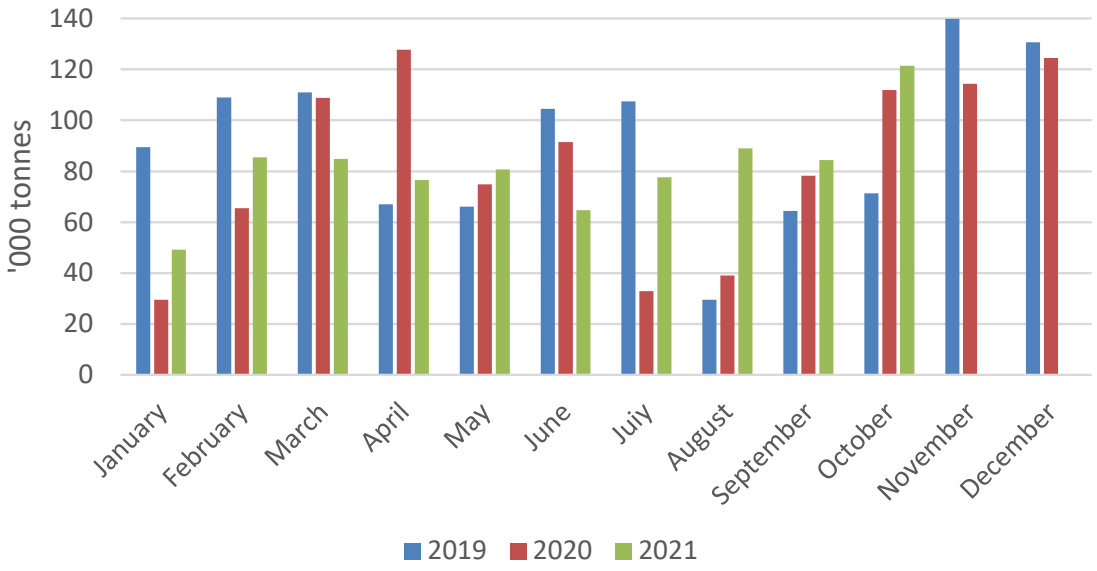
The mountainous GBAO is the largest region by territory, but it has the smallest population and the smallest level of agricultural activity. The Khatlon Region has the largest population (2.7 million) and the largest agriculture area accounting for about 52 percent of the national agricultural output, with 30 percent of cotton, 45 percent of cereals and about 50 percent grazing for cattle and small ruminants. Livestock units in the region are 42 percent of all cattle and 41 percent of small ruminants in the country. The Sughd Region makes a significant contribution to agricultural production: 29 percent, while the DRS and the GBAO contribute for 17 and 2 percent, respectively.

The areas sown with potatoes, vegetables and melons are mostly located in the regions of Khatlon (about 50 percent), Sughd (32.5 percent) and DRS (16.5 percent). Roughly, the same situation is observed for the production of fruits and berries. The area with vineyards is evenly distributed across the three regions.

According to official statistics, the cotton area accounted for about 177 000 hectares in 2021. Cotton was previously grown under obligatory quotas and currently it is still the main cash crop. During the last ten years, the quotas were relaxed and more flexibility was granted to farmers. However, the production of cotton is associated with an established system of mandatory sale through cotton factories. The existence of long term cotton debts at household level have restricted farming options to seek for markets that are more profitable. In addition to the direct competition for land during the spring and early summer, growing cotton does not allow farmers to plant a second crop in mid summer, as its growing season is longer than that of the winter wheat crop that is harvested between June and August, and allows planting of the second season crops such as maize, potatoes and vegetables.

The country imports several basic food items, including wheat grain and flour, oil, seeds, sugar, fruits, vegetables, meat and dairy products to cover its domestic needs. According to the AoS, in January–September 2021, about 38 000 tonnes of wheat flour and 693 000 tonnes of wheat grain were imported. During the last ten years, due to improved local milling capacities, imports of wheat grain have been increasing, while purchases of wheat flour have decreased by almost 90 percent. The value of wheat grain and flour imports, mostly sourced from Kazakhstan, during the first nine months of 2021 amounted to 6 percent of total imports.

Figure 3: Tajikistan - Wheat imports, 2019–2021



Source: AoS, 2021.

The value of exports for the first seven months of 2021 amounted to USD 1.33 billion, about 90 percent more than the same period in 2020. Over half of the country's exports are precious stones and metals and the foreign exchange earnings from these goods amounted to USD 709 million, about 2.3 times more than in the same period in 2020. The export of Tajik food products to other CIS countries is growing and it amounted to about USD 13.5 million between January and September 2021. The increase in exports was mainly due to canned fruits and vegetables (2.5 times), flour (5 times) and dried fruits (1.8 times).[iv]

Structure of farms

IIn the privatization of state assets that followed the dissolution of the former Soviet Union, new forms of management evolved relating to land reform, changing the structure of the agricultural sector. The structure of agriculture is now based on three types of farms: (a) agricultural enterprises: resulting from the privatization of specialized state farms; (b) *dehkan* farms: cooperative and private resulting from worker accessions of collective (kolkhoz) land on a group or individual basis; and (c) family plots: household plots, including President's plots[2] (Table 2). Enterprises are large-scale units, former state farms taken over by companies during the privatization. The private *dehkan* farms (179 005 farms) are managed by *dehkan*/farm chairmen on behalf of workers with land share certificates. They are fully privatized with the right to joint land use, which is given to owners of private land holdings with a lease of 50 years. They have the right to buy and sell this land share certificates. The agricultural enterprises and farms are tax-paying registered businesses. Household plots/kitchen gardens are an important household asset and have been responsible for the subsistence of most families for decades. The majority of the families in rural areas and small towns have access to small plots (0.08–0.2 hectares) of land, usually adjacent to their homes. Some part of the produce from the household plots is supplied to the local markets, but if products are produced in large quantities, the surplus is sold to wholesalers who supply products to nearby cities. The area under productive cultivation in such units increased by 75 000 hectares under a Presidential Decree in 1997.

Table 2: Tajikistan - Structure of farms as of 1 January 2021

Farm category	Quantity (units)	Agricultural land (hectares)	Average farm size (hectares)	Area (percent)
Agricultural enterprises	4 921	117 800	23.9	14.03
Dehkan farms	179 005	544 100	3.04	64.82
Household farms	1 300 000	177 500	0.14	21.15
TOTAL	**-**	**839 400**	**-**	**100.00**
Including President's plots	375 000	-	0.2	-

Source: AoS/Statistical Yearbook, 2021.

[2] According to the Decree of the President of the Republic of Tajikistan dated 9 October 1995, 50 000 hectares of land were allocated for personal subsidiary plots (without the right to build housing and other household facilities) and in 1997 an additional 25 000 hectares were allocated. These lands were later named President's plots by the people.

Precipitation and calendar of agricultural activities

The country has abundant surface water resources, sufficient for irrigated cropping, and glaciers are the main source of irrigation water. About 55 percent of the area sown to winter cereals rely on precipitation during the cropping season. The area planted with cereal and oilseed crops in the rainfed lands of the foothills tends to be larger in years with favourable rains. The rains usually start in September and continue until May of the following year, which create optimal conditions for the autumn/winter plantings and spring growth. In years with abundant snowfall, the melting of the snow also provides a significant amount of moisture needed for crop growth in rainfed areas. The absence of precipitation from June to October determines the high dependency of spring crops on supplementary irrigation.

The first (main) season crops are planted in part in the autumn, from October to December (mainly wheat, but also barley and pulses), and in part in the spring, in March-April (wheat, barley, maize, rice and cotton). Planting of the second (small) season crops (maize, sorghum, soybeans, beans, vegetables and potatoes) takes place after the harvest of the winter and spring cereals in June–July (Table 3). The planting of vegetables can take place throughout the year, especially in farms with greenhouses.

The majority of crop types is grown on irrigated land, water use controls are of particular importance. The present system is an adaptation of the inherited former Soviet Union system where the relevant ministry departments and water users associations (WUAs) control and manage the primary supply. In certain zones, the responsibility for the distribution of water for irrigation has been transferred to WUAs, which are supported by international organizations. However, several WUAs have limited capacity for maintaining the irrigation facilities and ensuring a stable water supply.

Crop patterns

Since the former Soviet Union period, cotton has been the main cash crop in the country. Over the years, exports of cotton accounted for 75 to 90 percent of total agricultural exports. Cotton is grown on irrigated lands and its cultivation requires a large volume of inputs. The centralized procurement system of cotton is based on the determination of mandatory quotas for each district. After 1997, the state procurement system for other crops and raw materials ceased to exist, but the production of cotton remained under state control.

At the same time, since 2007, the mandatory quota system for cotton areas has become less stringent and farmers have been able to allocate their land to other crops with greater flexibility. As a result, in recent years, cotton cultivation has decreased significantly. The collapse of the former Soviet Union system led to the breaking of state-supported supply chains and cotton production was cut in half. The constant failures in the management of the cotton industry at all levels in the post-Soviet Union period have led to large debts at every stage of the value chain, from farms and ginneries to cotton fibres wholesaler organizations. In addition, indebted farmers do not have enough resources to acquire the inputs needed for the cultivation of other crops.

Since 2019, there has been a decreasing trend in cotton area that in 2021 was estimated at about 177 000 hectares. Theoretically, an increase in the share of cotton growing, combined with a cotton debt remission, opens up opportunities for cash crops production and sale of a wider range, as well as increased production of staple crops. In practice, manifestation of such opportunities depends on the proper and timely functioning of water delivery systems and increased exporting of products depends on the ability of traders to cope with Tajikistan's bureaucracy for exporting goods.

Wheat is the main grain and food crop produced in the country. In recent years, both in agricultural farms and private *dehkan* farms, the area planted

Table 3: Tajikistan - Crop calendar for major food crops

Source: AoS, 2020.

with wheat has significantly expanded in the irrigated areas where cotton was previously grown. Here, water is supplied no more than once or twice per season. Wheat plantings in household farms (garden plots) have gradually increased during the last years, partially replacing barley. Domestic wheat production covers about half of the local demand of bread and the rest is imported mainly from Kazakhstan.

An approximate breakdown of crop production by type of farm is provided in Table 4. According to official statistics on domestic food production, excluding cotton, about 45 to 70 percent of all field crops are grown on *dehkan* farms. *Dehkan* farms produce mainly agricultural products such as wheat, barley, rice, potatoes and cotton. Smallholders with household plots produce from 18 to 50 percent of the total output of pulses, maize, vegetables and fruits. Agricultural enterprises account for only 2 to 15 percent of the food crop production. About three-quarters of cotton production is concentrated in *dehkan* farms, while the rest is grown by agricultural enterprises.

Agricultural inputs

Seeds

About 70 percent of the interviewed farmers reported that they use seeds purchased from seed farms and agro-shops, while about 20 percent use their own seed from the previous year's harvest. The remaining 10 percent of farmers use seeds purchased at the market, which have low quality and unknown origin. This is the main cause of poor germination, increase in diseases and weeds, and low yields. The purity of varieties is often questionable. In small farms, seeds are rarely pre treated with fungicides.

Fertilizers, chemicals and machinery

Fertilizers, chemicals, machinery and fuel are mainly imported from the Russian Federation, Kazakhstan and Uzbekistan. Some fertilizers come illegally from neighbouring countries. The most widely used fertilizers are ammonium nitrate and urea, which reportedly contain an average of 34.5 and 46 percent of nitrogen, respectively.

Fertilizers are mainly used in cotton fields as well as in wheat cultivation. While the basic application of phosphate fertilizers has become rare and potassium fertilizers are not used, the application of nitrogen fertilizers in the spring remains part of the standard agro-technical practice. Soil fertility in household/garden plots and parts of *dehkan* farms is restored annually due to the application of manure, while this practice is not feasible in agricultural enterprises where the need of manure is too large.

Migratory pests remain a primary concern for the government. Following the pattern established during the former Soviet Union period, thousands of hectares of the semi-desert grasslands bordering Afghanistan, which are breeding areas for the *Calliptamusitalicus* (the Italian locust) and *Dociostaurusmaroccanus* (the Moroccan locust) locusts, are regularly blanket-sprayed with broad-spectrum pesticides. This practice aims to control the hopper (larval) generations before they reach the flying stages and threaten field crops in nearby arable areas.

Table 4: Tajikistan - Agricultural production by farm category, 2020 (percent)

	Crops								
	Wheat	**Barley**	**Maize**	**Rice**	**Potatoes**	**Pulses**	**Vegetables**	**Fruits**	**Cotton**
Households	26.4	18.4	50.8	22.0	35.8	50.2	39.3	46.1	-
Dehkan farms	62.1	68.7	44.8	62.7	54.3	47.6	55.6	49.4	76.7
Agricultural enterprises	11.5	12.9	4.4	15.3	9.9	2.2	5.1	4.5	23.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: AoS/Statistical Yearbook, 2020.

Livestock

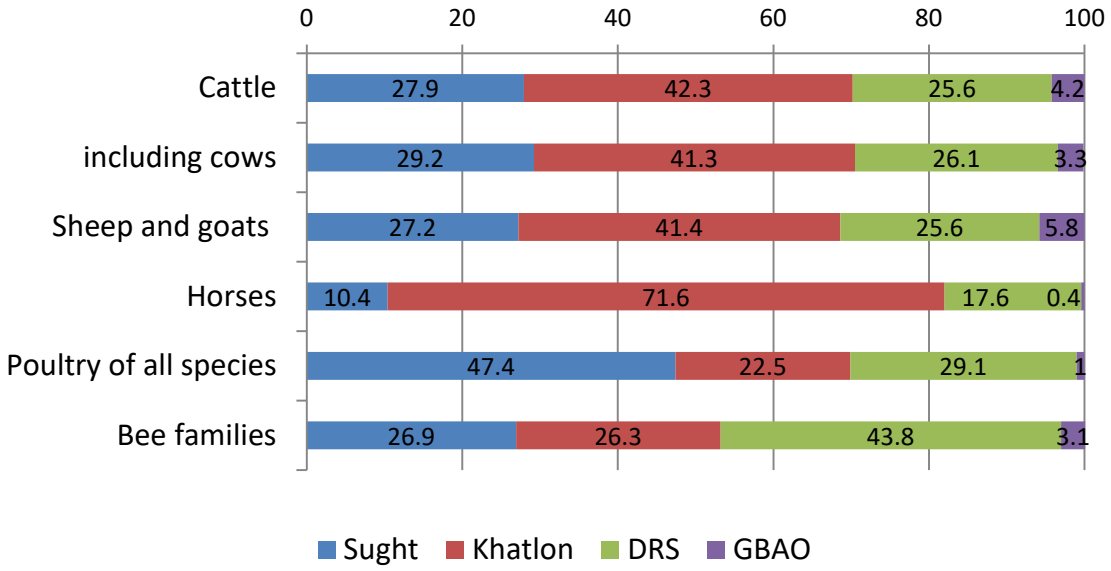
As of 1 January 2021, there were about 2.4 million cattle, including 1.3 million cows, 5.8 million sheep and goats, about 82 600 horses, over 9.7 million poultry of all types and about 235 600 bee families.

The largest share of livestock is concentrated in Khatlon Region, with 42.3 percent of cattle, 41.4 percent of sheep and goats, about 72 percent of horses, 22.5 percent of poultry and 26.3 percent of bee families (Figure 4). The share in Sughd Region is 27.9 percent of cattle, 27.2 percent of sheep and goats, 10.4 percent of horses, 47.4 percent of poultry and about 27 percent of bee families.

The share of DRS comprises 25.6 percent of cattle, 25.6 percent of sheep and goats, 17.6 percent of horses, 29 percent of poultry and about 44 percent of bee families.

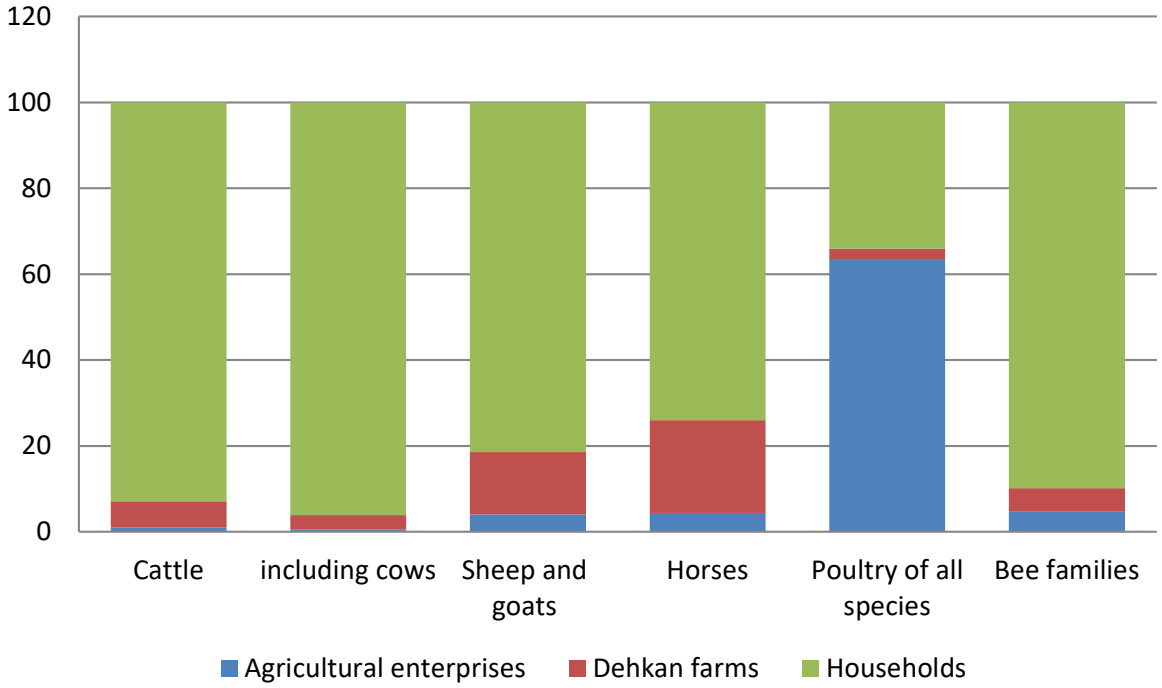
The largest share of livestock (including bee families), with the exception of poultry of all species, is concentrated in household farms, which varies from 74 to 93 percent of their total number. In relation to the number of poultry, agricultural enterprises dominate with 63.5 percent compared to 34 percent in households (Figure 5).

Figure 4: Tajikistan - Distribution of livestock, poultry and bee families by region, 2020 (percent)



Source: AoS/Statistical Yearbook, 2020.

Figure 5: Tajikistan - Distribution of livestock, poultry and bee families by farm categories, 2020 (percent)



Source: AoS/Statistical Yearbook, 2020.

CROP PRODUCTION

Factors affecting cereal crop production

Temperature and precipitation

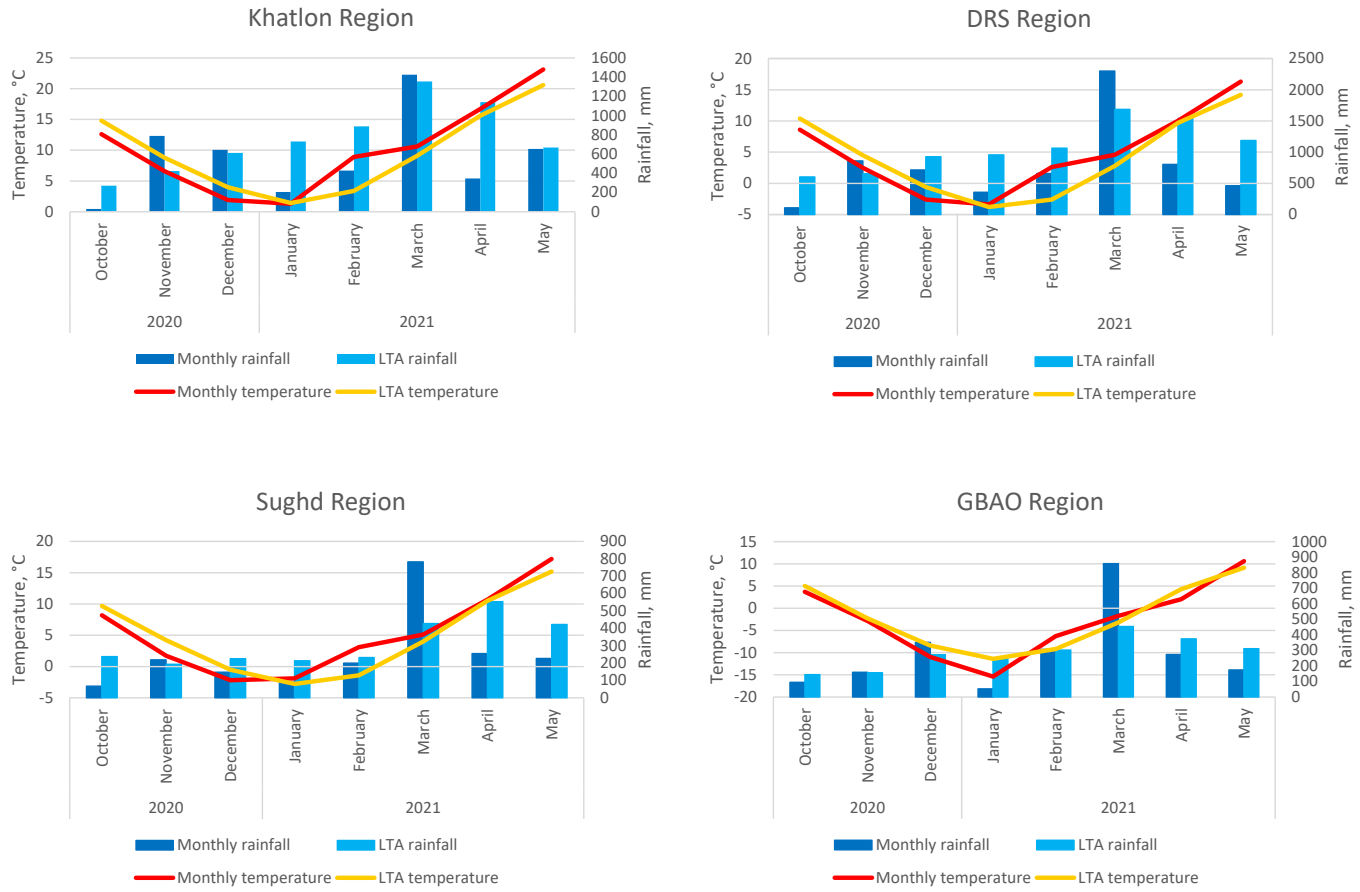
The mission analysed data on temperatures and precipitation provided by the State Agency for Hydrometeorology of the Republic of Tajikistan (Hydromet). The average monthly data on temperatures and precipitation in the four zones of Khatlon, Sughd, GBAO regions and in DRS are reported in Figure 6, which shows rainfall patterns during the growing season of winter and spring crops. The absence of rain in all regions from June to October indicates a high level of dependency of late sown spring crops on irrigation and the importance of good water management practices. Snowmelt also provides substantial quantities of moisture to support growth in the rainfed sectors in years of heavy snowfall. Precipitation in November contributes to wheat sprouting in rainfed areas.

The average annual temperature in October–December 2020 in Khatlon Region was 2.2 degrees lower than average, while it was lower by 1.9 degrees in the Sughd Region and in the DRS, and by 1.5 degrees in GBAO. Temperatures were near-average in January 2021 and slightly above-average between February and May in most parts of the country, benefiting crops in the fields.

Precipitation between September and December 2020 had an erratic temporal distribution. Cumulative precipitation amounts were generally below average in the months of September and October over most of the country, particularly in GBAO, DRS and Sughd regions. However, farmers were able to reduce the impact of the rainfall deficits by accessing irrigation water supplies and were able to plant their crops.

In November, heavy rains and cold temperatures reportedly delayed planting operations by one to two weeks, but rains were below average in December, reducing the excess of soil moisture and allowing planting operations to resume. Dry weather conditions continued in January and February 2021, negatively affecting crops in some fields and raising concerns over the final yields. Subsequently, rain levels were above average from late February to mid-May, bringing relief to the areas affected by dry weather and improving vegetation conditions, lifting crop prospects in most parts of the country. The months of March and April are usually the wettest in the country, accounting for about 35 percent of the total annual precipitation amounts. Above-average precipitation in March–April 2021 triggered floods and landslides in early May and June, predominantly concentrated in Khatlon and Sughd regions, resulting in localized damage to standing crops and infrastructure, and livestock losses. From June to August, rain levels were average to below average, reducing the excess soil moisture and benefiting harvesting operations. Due to low rainfall amounts recorded in August, water availability in the springs

Figure 6: Tajikistan - Rainfall amounts October 2020–May 2021, by region



Source: FAO/GIEWS Earth Observation - www.fao.org/giews/earthobservation.

and small rivers quickly limited, which resulted in localized crop losses but overall, the impact was minimal as in larger rivers or wells water availability was adequate.

According to the mission's data, in Sughd, over 40 percent of the irrigation water comes directly from rivers (gravity irrigation), 30 percent from pumped canals and 30 percent relies on small rivers and streams. By contrast, in Khatlon Region, gravity irrigation predominates, as it accounts for 65 percent, while the rest receives water through pumped irrigation. In this region, 85 percent of the pumping units are private, while only 15 percent are public. In DRS, about 80 percent of interviewed farmers reported to use river water for gravity irrigation, while 20 percent said to draw water from pumped canals.

In general, the country has abundant surface water resources to sustain a core crop-producing area of about 700 000 hectares where irrigation systems are properly functioning, albeit with problems connected to delivery, particularly power supply for pump schemes. Despite the needs for improvements in the maintenance and efficiency of use, it is anticipated that the existing irrigation facilities allowed farmers to cultivate about 105 000 hectares during the second cropping season in the summer.

Since March 2021, a number of localized extreme weather events, including heat waves and freezing temperatures in the spring, hit the country, resulting in low yields for early vegetables and fruit trees.

In April 2021, in Sughd Region, hail caused localized crop losses of standing cereal crops and horticultural crops, which contributed to a decrease in yield of potatoes by 20.5 percent at national level compared to the five-year average.

In addition, in early May and June, a series of floods and mudflows locally damaged arable land

and pastures and caused livestock losses, as well as damaged houses and other facilities, seriously affecting the most populated areas of the Khatlon and Sughd regions.

Extreme weather events have exacerbated the existing socioeconomic issues in the affected areas, with negative impacts on the food security and livelihoods of the most vulnerable households. The government has initiated an emergency response and has requested assistance of the UN Country Team. The FAO Tajikistan Office worked with the MoA to identify potential losses and assistance required to recover agricultural production in the remaining months of the crop season.

Seeds

In 2021, out of the 274 748 hectares of the total wheat area planned by the MoA, 206 452 hectares were cultivated with winter crops and 68 296 hectares with spring crops. The volume of seed requirements was about 41 290 tonnes for winter wheat and 13 659 tonnes for spring wheat. Domestic seed production provided 90 percent of the total demand for winter varieties and 95 percent for spring varieties, while the remaining part was covered by imported seeds.

Chemical treatment of seeds with disinfectants is very rare among small and medium-sized farms. The seeding rates for wheat and barley largely correspond to the former Soviet Union agro-technical system: the high density of winter wheat after tillage should ensure about 600 heads of wheat per square metre at the time of harvesting. In 2021, the seeding rate for wheat was 225 kg/hectare in Khatlon Region, 215 kg/hectare in Sughd Region, 200 kg/hectare in DRS and 265 kg/hectare in GBAO (Table 5). Higher seeding rates were used to compensate germination failures due to freezing temperatures during the winter and crop losses due to weeds during the spring. The seeding rate for cotton was 70 kg/hectare in Khatlon Region, 110 kg/hectare in Sughd Region and 120 kg/hectare in DRS.

The planting rate of potatoes was 3 000 kg/hectare in Khatlon Region and DRS, 3 200 kg/hectare in Sughd Region and 3 600 kg/hectare in GBAO.

According to mission data, as reported in Table 5, prices of seeds varied widely across the country and were higher in GBAO compared to other regions, mainly due to high transportation costs. Across the regions, prices in 2021 have increased compared to the previous year by 10-15 percent.

Table 5: Tajikistan - Seeding rates and prices for main crops, 2021

Region	Seeding rate (kg/hectare)					Price (TJS/kg)				
	Wheat	Barley	Maize	Potatoes	Cotton	Wheat	Barley	Maize	Potatoes	Cotton
Khatlon	225.0	220.0	20.0	3 000	70	4.25	4.0	34.2	4.3	10.5
Sughd	215.0	192.0	30.0	3 200	110	4.15	3.85	25.9	4.2	10.5
DRS	200.0	180.0	20.0	3 000	120	3.8	3.0	31.6	4.1	11.0
GBAO	265.0	440.0	-	3600	-	6.0	6.0	-	5.7	-

Source: CFSAM, 2021.

Fertilizers

In the last few years, the use of fertilizers has been substantially increasing, especially through the wide adoption of organic practices on cereal and industrial crops (Table 6). Most mineral fertilizers are used on cotton, mainly cultivated by enterprises and private *dehkan* farms with base applications of phosphate and two split top dressings of nitrogenous fertilizers. Although base dressing of phosphates is now uncommon and potassium is not applied, most crops receive nitrogenous fertilizers during the growth and development stages. In most household and President's plots, some nitrogenous fertilizers are noted to have been used also on wheat. However, on such plots, soil fertility is generally maintained by the application of Farm Yard Manure (FYM) on wheat, potatoes and other vegetables. Small plot farmers, in both household plots and *dehkan* farms on potatoes and vegetables, apply from 8 to 10 tonnes of organic fertilizers and they adopt alfalfa-based rotations to maintain the fertility of their plots.

The mission found that 45 to 85 percent of the interviewed farmers use ammonium nitrate as a nitrogen fertilizer and 45 to 95 percent of them use urea (Table 7). The wide use of urea rests on two main reasons: (a) it contains more nitrogen active substance and (b) its unit price is lower than the price of ammonium nitrate. As a phosphorus-containing fertilizer, farmers mainly use superphosphate. One third of the farmers in Sughd Region and in DRS and 9 percent in Khatlon Region use this fertilizer. About 33 percent of the farmers in Khatlon Region and about 14 percent of farmers in DRS and about 4 percent Sughd Region use combined fertilizers that contain two or three types of macronutrients. This is because, at almost the same price, farmers apply not only nitrogen, but also phosphorus and potassium. The advantage of using this type of fertilizer is also the reduction in production costs.

In Khatlon Region, farmers did not mention the use of organic fertilizers (manure), while 22 percent of the interviewed farmers in the Sughd Region reported that they used about 16.5 tonnes of manure per hectare. About 10 percent of the interviewed farmers in DRS reported to apply an average of 10 tonnes of manure per hectare, while in GBAO about 75 percent of respondents applied an average of about 4 tonnes of manure per hectare. Farmers used mostly their own manure, while the cost of manure on the markets ranged from TJS 133 to 216 per tonne.

In 2021, despite fertilizers had year-on-year higher prices, farmers were able to use about the same quantities per hectare as in the previous year. Organic fertilizers are mostly used in farms with livestock.

Table 6: Tajikistan - Mineral and organic fertilizer use for staple agricultural crops ('000 tonnes)

Indicators	2015	2016	2017	2018	2019	2020	Difference 2020 compared to 2019 (percent)
Total mineral fertilizers (in terms of 100 percent nutrient value)	**58.3**	**50.9**	**59.6**	**61.2**	**67.9**	**69.0**	**101.6**
Including on - cereal crops	16.1	16.2	17.9	15.4	16.6	17.0	102.4
- potatoes	4.9	4.8	3.7	6.6	4.9	4.4	89.7
- industrial crops	28.9	22.6	28.5	28.7	34.6	34.2	98.8
Total organic fertilizers	**192.9**	**205.1**	**185.3**	**172.3**	**265.4**	**247.7**	**93.3**
Including on - cereal crops	74.4	77.4	73.0	65.0	37.4	43.6	116.6
- potatoes	77.8	83.3	57.6	53.0	124.7	101.1	81.1
- industrial crops	12.8	14.7	19.5	18.1	38.9	40.4	103.8
Total fertilizers	**251.2**	**256.0**	**244.9**	**233.5**	**333.3**	**316.7**	**95.0**

Source: AoS/Statistical Yearbook, 2020.

Table 7: Tajikistan - Use and price of mineral fertilizers by respondents, 2021

Region	Use of mineral fertilizers (percent of interviewed farmers)				Price (TJS/kg)			
	Ammonium nitrate	Carbamide	Super phosphate	NPK	Ammonium nitrate	Carbamide	Super phosphate	NPK
Khatlon	45.4	96.3	9.1	32.7	5.0	5.0	3.2	4.5
Sughd	84.5	70.1	32.7	3.6	5.3	4.1	5.1	3.4
DRS	44.6	46.4	28.6	14.3	5.5	5.5	4.9	4.5
GBAO	29.5	38.6	45.4	-	5.6	5.9	6,2	-

Source: CFSAM, 2021.

Crop pests and diseases

During the mission, the interviewed farmers most frequently mentioned the presence of the following pests and diseases:

- Italian (*Calliptamusitalicus*) and Moroccan (*Dociostaurusmaroccanus*) locusts on all crops.
- Stripe Rust (*Pucciniastriiformis West.*), Head smut (*Tilletia caries [DC.] Tul.*) on wheat.
- Maize worm (*Ostrinianubilalis*), Colorado potato beetle (*Leptinotarsadecemlineata*) and cotton budworm (*Helicoverpaarmigera Hubn.*) on maize.
- Onion Fly (*Delia antique Mg.*), False Mildew (*Peronospora destructor Casp.*) and Tobacco Thrips (*Thripstabaci*) on onions.
- Powdery Mildew (Erysiphecichoracearum and Sphaerothecafuliginea) and Downy Mildew (PseudoperonosporacubensisRostowz.) on melons.
- Colorado Potato Beetle (*Leptinotarsadecemlineata*), Wireworms (*Conoderus sp.*) and Damping-out (*Erwiniacarotovora*) on potatoes.
- Aphids (*Aphis gossypii, Aphis craccivorava Acyrhosiphon*), Red Spider (*Acyrhosiphongossyp. et Nik.*), Gummosis (*Xanthomonascampestrisp.v. malyacearum [Sm]*), Cotton Moth (*Helicoverpaarmigera and Hubn.*) and Winter Moth (*Agrotis segetum X.Schiff.*) on cotton.
- Green Apple Aphid (*Aphis pomi Deg.*), Fruit Tree Red Spider (*Metatetranychusulmi Koch.*), Apple Worm (*Carpocapsa [Laspeyresia] pomonella L.*) and Apple Ermine Moth (*Hyponomeutamalinella L.*), Apple scab (*Venturia inaequalis*) on fruit crops.
- Tomato Moth (*Tutaabsoluta Meyr*.) on tomatoes.

The Italian and Moroccan locusts caused localized damages to crops, especially in sub mountainous areas. During the field interviews, farmers reported outbreaks of Stripe Rust and Head Smut on grain crops, particularly during the spring. Timely control measures and interventions limited the impact of locusts and other diseases on crops.

The government's intervention regarding pest control was mainly related to locusts. By MoA as of 20 May 2021, about 84 000 hectares of land were chemically treated throughout the country, including 55 100 hectares in Khatlon Region, 16 400 hectares in Sughd Region, 12 300 hectares in DRS and 20 hectares in GBAO. Treatments took place in the fields where locusts were breeding. At farm level, in addition to the rigorous pesticide treatment of cotton crops, private purchases of pesticides from the commercial network have been reported in all districts. Pesticides were used to protect potatoes from the Colorado Potato Beetle, to control the Winter Moth, Aphids and the Turkestani Moth (*Euproctiskargalika*) in gardens.

The mission acknowledged that the percentage of farmers using pesticides for pest and disease control varied widely across the regions, from about 20 percent in GBAO to 70 percent in Sughd. Interviewed farmers reported to use chemical pesticides such as *Nurel-D*, *Karate*, *Bi 58 (new)*, *Typhoon*, *Omayt* and *Mospilan*, while some of them have recently started using biologically active agents and antibiotics. Most farmers reported that they had adequate access to pesticides and that they mainly bought them from agro-shops that sold certified and licensed products. In the local markets, there are also pesticides for controlling non migratory pests and these are often used to protect cash crops, primarily cotton, but also orchards, vegetable and fruit plantations.

Over the past years, thanks to international organizations whose agricultural projects are being implemented throughout the country, a large number of farmers have been trained on the correct use of pesticides and the compliance with safety measures.

The mission noted that, in 2021, in the fields of wheat and other grain crops, manual weeding was carried out only once, during the application of top dressing or just before it, or it was not conducted at all. In fact, it was noted that wheat fields, especially in Kurgan-Tyube Zone of Khatlon Region, were infested by persistent weeds such as Oat-Grass (*Avenafatua L.*) and Rapeseed (*Brássicanápus*). In maize fields, weeding is often done manually and rarely with machines. Potatoes and vegetables are also weeded manually, often using households' labour resources.

Farm mechanization

Despite the efforts of the government with support of international donors to import new farm machineries, the total number of tractors in 2020 decreased by 1.4 percent compared to 2019 and major decreases occurred in Khatlon and Sughd regions. The number of combine harvesters, seed planters/sowers and cultivators decreased by 3–5 percent. Depending on the region, each unit of tractors serves from 17 to 28 hectares of arable land (Table 8).

The small and household farms that use tractors usually hire them from large farms. The mission noted that the rent price varies considerably across the regions and among districts of the same region (Table 9). Although the average rent price in 2021 was higher than the previous year due to increased prices for fuel, in the areas where new tractors were available through leasing companies and international organizations, their high efficiency reduced the rental costs.

Since the start of the COVID-19 pandemic in 2020 and the implementation of restrictions to travel, a large number of the working age population who used to work abroad was forced to stay in the country. This caused an excess of labour resources in parts of the country where, for most agricultural practices, manual work is more common than using machinery. The daily cost of hired labour decreased in 2021 compared to 2020 and varied from TJS 30 to TJS 70/day across regions. The in-kind price for manual or machine harvesting and threshing in 2021 was almost identical in all zones, averaging 100 kg of grain/tonne of harvested or threshed crop, as in 2020. In 2021, some increases of overall machinery service prices were observed, most likely due to the increased prices of fuel.

Table 8: Tajikistan - Availability of farm machinery 2016–2020, by region (units)

Region	2016	2017	2018	2019	2020	Hectares to tractors ratio in 2020 (hectares/ unit)
Tractors of all models						
Dushanbe	-	54	62	134	145	19.1
GBAO	220	236	244	242	284	26.7
Sughd	8 720	8 606	8 611	8 548	7 833	28.6
Khatlon	12 230	12 144	12 639	13 155	13 045	27.8
DRS	4 932	5 365	5 578	5 697	6 069	17.5
Total	**26 102**	**26 405**	**27 134**	**27 776**	**27 376**	**25.6**
Tractors harvesters						
Dushanbe	-	3	3	19	11	-
GBAO	1	1	1	2	4	-
Sughd	403	399	396	418	390	-
Khatlon	406	455	469	486	475	-
DRS	170	163	155	174	188	-
Total	**980**	**1 021**	**1 024**	**1 099**	**1 068**	**-**
Tractor-mounted sowers						
Dushanbe	-	-	-	34	7	-
GBAO	1	1	1	1	1	-
Sughd	992	966	955	960	793	-
Khatlon	1 142	1 116	1 132	1 209	1 283	-
DRS	240	227	219	211	217	-
Total	**2 375**	**2 310**	**2 307**	**2 415**	**2 301**	**-**
Tractor-mounted cultivators						
Dushanbe	-	-	-	-	-	-
GBAO	21	25	25	25	32	-
Sughd	1 348	1 325	1 319	1 275	11 52	-
Khatlon	1 471	1 552	1 681	1 765	1 761	-
DRS	292	272	243	291	302	-
Total	**3 132**	**3 174**	**3 268**	**3 382**	**3 269**	**-**

Source: AoS/Statistical Yearbook, 2020.

Table 9: Tajikistan - Summary of key informants' opinions regarding farm machinery and manual power in 2020/21 season, by region

Region (7 districts visited in each region)	Khatlon	Sughd	DRS	DRS
Ploughing				
- Mechanically/manually	84/16	89/11	96/4	69/31
- Cost machinery service	310-600	300-800	100-1 000	800-1 500
Chiselling				
- Mechanically/manually	45/55	84/16	54/46	n/d
- Cost machinery service	150-400	150-400	60-400	n/d
Land leveling				
- Mechanically/manually	n/d	54/46	n/d	n/d
- Cost machinery service	n/d	100-300	n/d	n/d
Harrowing				
- Mechanically/manually	62/38	95/5	n/d	n/d
- Cost machinery service	100-200	100-400	n/d	n/d
Cultivation				
- Mechanically/manually	62/38	60/40	39/61	n/d
- Cost machinery service	100-200	150-300	60-350	n/d
Sowing				
- Mechanically/manually	63/37	69/31	5/95	n/d
- Cost machinery service	Machinery 100-200 Workforce 60-150	Machinery 120-200	Machinery 600-800	n/d
Harvesting				
- Mechanically/manually	62/38	47/53	58/42	14/86
- Cost machinery service	450-1 000	250-1 200	150-1 000	700-1 000
Mower				
- Mechanically/manually	2/98	9/91	5/95	n/d
- Cost machinery service	Machinery 500 Workforce 500	Machinery 60-500	Machinery 60-300	n/d
Pressing				
- Mechanically/manually	n/d	18/82	n/d	n/d
- Cost machinery service	n/d	1.5-2.5	n/d	n/d

Source: AoS and CFSAM data, 2021.
Note: Cost in TJS/hectare, manually/machinery in percent.
n/d = no data.

Cereal planted area - First season 2021

Areas planted with (aggregate autumn and spring) crops in 2020 and 2021 first seasons are shown in Table 10. According to AoS, in 2021, the area planted with first season cereals increased by 2 percent compared to the same season in 2020. The area increased by 2 and 4 percent in Khatlon and Sughd regions, respectively, mainly due to larger wheat plantings, while it decreased by 1 percent in DRS Region to lower barley area and by 3 percent in GBAO Region, due to smaller wheat plantings. Disaggregated by crops, the total (national) first season:

- Wheat area is estimated at 274 748 hectares, 2.4 percent above 2020.
- Barley area is estimated at 69 962 hectares, 0.8 percent below 2020.
- Maize area is estimated at 17 635 hectares, 2.3 percent above 2020.
- Rice area is estimated at 12 694 hectares, 1.9 percent below 2020.

The area planted with potatoes in the first season in 2021 compared to 2020 increased by 22 percent amounting to 58 239 hectares and decreased by 5 percent for cotton to 177 048 hectares.

According to the interviewed farmers, the main reasons for the change in planted areas in the 2021 first season compared to the same season in 2020 (Table 10) were the following:

- Small changes of rice and maize areas are due to crop rotations.
- The decrease in barley area is due to low productivity and profitability in previous years.
- The decrease in cotton area is due to a sharp decrease of international prices in 2020.

Table 10: Tajikistan - Planted areas in the first season, 2020 and 2021 (hectares)

Crop	Khatlon		Sughd		DRS		GBAO		TOTAL		Percent change 2021 over 2020
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	
Wheat	161 652	165 451	50 077	54 937	54 159	53 969	2 486	2 391	268 374	27 4748	2.4
Barley	11 596	11 609	50 202	50 450	8 083	7 255	665	648	70 546	69 962	-0.8
Maize	6 988	7 508	6 444	6 437	3 784	3 663	22	28	17 238	17 635	2.3
Rice	2 365	1930	9 200	9 198	1 379	1 566	-	-	12 944	12 694	-1.9
Total cereals	**182 601**	**186 498**	**115 923**	**121 022**	**67 405**	**66 453**	**3 173**	**3 067**	**369 102**	**375 039**	2.0
Pulses	5 672	5680	4 993	4958	4 964	4 821	1 625	1 822	17 254	17 280	0.2
Cotton	124 175	121 236	58 905	52782	3 075	3 015	-	16	186 155	177 048	-4.9
Potatoes	10 606	12 058	15 720	25 449	20 250	18 740	12 925	1 992	47 868	58 239	21.7
Vegetables	36 524	36 900	17 232	17 680	15 367	15 848	662	687	69 785	71 114	1.9

Source: AoS, 2021/Results of sown areas in Tajikistan.

Table 11 shows the area planted, disaggregated by winter and spring crops for the 2021 first season. The 2021 first season (winter) wheat and barley crops were sown in autumn 2020 on a total area of about 230 400 hectares, about two times more than the area planted with the same crops in the spring. The total area with 2021 first season grain crops (including winter and spring crops) was about 395 500 hectares.

Crop production estimates - First season 2021

Although the first season was characterized by the uneven distribution of rainfall and by localized floods, hail and limited irrigation water availabilities, weather conditions in the main producing areas were generally favourable for crops during the season with a positive impact on yields. The positive outcome of the 2021 first cropping season was confirmed by interviewed farmers, who reported average to above-average yields in most areas visited for most major crops, with the exception of potatoes, of which yields decreased by 20.5 percent compared to the average due to adverse weather conditions. By contrast, interviewed farmers reported that 2021 barley and maize yields were 40.0 and 22.2 percent above average, respectively (Table 12).

Table 11: Tajikistan - Areas planted with main food crops in the first season, 2021 (hectares)

Crop	Area		
	First season[1/]		TOTAL
	Winter crops	Spring crops	
Wheat	206 452	68 296	274 748
Barley	23 983	45 979	69 962
Maize	-	17 635	17 635
Rice	-	12 694	12 694
Total cereals	**230 435**	**133 604**	**375 039**
Potatoes	-	58 239	58 239
Vegetables	-	71 114	71 114
Pulses	-	17 280	17 280

Source: AoS and CFSAM, 2021.
[1/] CFSAM data.

Table 12: Tajikistan - Yield estimates for first season crops, 2021 (tonnes/hectare)

Crop	Mission's estimates	Average yield 2016–2020	Difference 2021 vs average (percent)
Wheat	3.1	3.1	0.0
Barley	2.8	2.0	40.0
Maize	6.6	5.4	22.2
Rice	5.3	5.0	6.0
Pulses	1.8	1.7	5.9
Potatoes	15.5	19.5	-20.5
Vegetables	27.0	25.5	5.9
Cotton	3.0	1.9	58.0

Source: AoS and CFSAM, 2021.
[1/] CFSAM data.

First season cereal crops were sown on an area of 375 039 hectares and the harvest amounted to 1.23 million tonnes. Production of wheat for the first season amounted to 852 000 tonnes and barley, maize and rice outputs amounted to 196 000, 116 000 and 67 000 tonnes, respectively (Table 13).

Crop production estimates - Second season 2021

During the mission, it was revealed that in the districts of the Sughd and Khatlon regions sowing of second season crops was carried out in May–August; while in DRS Region it took place in May–July, not more than one month after harvesting of the first season crops (wheat, barley, potatoes and some vegetables).

In the second season of 2021, yields of maize increased by 77 percent year on year, due to comparatively better weather conditions, which allowed a rebound in yields and the yields of legumes and vegetables rose by 21 and 24 percent, respectively, primarily due to the identification of adequate agricultural practices and crops rotation. Table 14 shows the areas, yields and production estimates for the second season based on data collected by the mission team.

Table 13: Tajikistan - Production estimates for first season main food crops, 2021

Crop	Area planted (hectares)[1/]	Yield (tonnes/hectare)[2/]	Production ('000 tonnes)
Wheat	274 748	3.10	852
Barley	69 962	2.80	196
Maize	17 635	6.60	116
Rice	12 694	5.30	67
Total cereals	**375 039**	**4.45**	**1 231**
Potatoes	58 239	15.50	903
Vegetables	71 114	27.00	1 920
Pulses	17 280	1.80	31
Cotton	177 048	3.00	531

Source: AoS and CFSAM, 2021.
[1/] AoS/Statistical Yearbook, 2020 and results of the cropped areas in Tajikistan.
[2/] CFSAM estimates.

Table 14: Tajikistan - Production estimates for second season main food crops, 2020–2021

Crop	Area planted ('000 hectares)[1/]	Yield in 2021 (tonnes/hectare)[2/]	Production ('000 tonnes)	Yield in 2020 (tonnes/hectare)[2/]	Change of yield 2021 vs 2020 (percentage)
Maize	19.9	6.24	124.4	3.51	77.78
Rice	11.0	4.08	44.9	4.04	0.99
Pulses	12.2	1.76	22.5	1.44	20.83
Potatoes	1.1	14.10	15.1	14.25	-1.05
Vegetables	12.9	26.96	347.1	21.81	23.61
Total	**57.6**	**10.63**	**554.9**	**9.01**	**17.98**

Source: AoS and CFSAM, 2021.
[1/] AoS/Statistical Yearbook, 2020 and results of the cropped areas in Tajikistan.
[2/] CFSAM estimates.

Crop production estimates - Total 2021 first and second seasons

The total volume of cereal production in 2021, including first and second season crops, is estimated at 1.4 million tonnes, almost 10 percent above the 2020 level due to a slight increase in plantings and better weather conditions which boosted yields and 4 percent above the five-year average (Table 16). In 2021, wheat production, despite local crop losses caused by adverse weather conditions, remained close to the 2020 level and to the five-year average. Production of barley, maize and rice increased by 31, 32 and 13 percent year on year, respectively, due to the identification of more successful agricultural practices and crops rotation. At the same time, compared to the average of the last five years, barley production in 2021 increased by 39 percent, rice production increased slightly and maize production remained at the same level. On the contrary, vegetable production in 2021 decreased by 3.5 percent compared to 2020, due to insufficient irrigation water and higher-than-average temperatures during the growing season, but it was still 9 percent above the last five-year average due to an increase in planted area. Pulse production in 2021 increased by 7 percent compared to the previous year and it was almost double compared to the average of the last five years.

Table 15: Tajikistan - Total area planted with main food crops, 2021 (hectares)

Crop	First season[1/]		Second season	TOTAL
	Winter crops	Spring crops		
Wheat	206 452	68 296	-	274 748
Barley	23 983	45 979	-	69 962
Maize	-	17 635	19 929	37 564
Rice	-	12 694	11 003	23 697
Total cereals	**230 435**	**144 604**	**30 932**	**405 971**
Potatoes	-	58 239	1 074	59 313
Vegetables	-	71 114	12 873	83 987
Pulses	-	17 280	12 770	30 050

Source: AoS and CFSAM, 2021.
[1/] CFSAM data.

Table 16: Tajikistan - Total area and production estimates for main food crops, 2021

Crop	First season		Second season		Total 2021		Total 2020	Average 2016-2020	Production difference 2021 vs 2020 (percent)	Production difference 2021 vs 5-y average (percent)
	Planted area	Production	Planted area	Production	Planted area	Production	Production	Production		
Wheat	274.80	852	-	-	274.8	852.0	846	859.3	0.7	-0.8
Barley	70.00	196	-	-	70.0	196.0	150	140.9	30.7	39.0
Maize	17.60	116	19.9	124.2	37.5	240.2	182	242.2	32.0	-0.8
Rice	12.70	67	11.1	44.9	23.7	111.9	99	104.9	13.0	6.7
Total cereals	**375.04**	**1 231**	**30.9**	**169.1**	**406.0**	**1 400.0**	**1 277**	**1 347.3**	**9.6**	**3.9**
Potatoes	58.20	903	1.1	15.5	59.3	918.5	916	932.5	0.3	-1.5
Vegetables	71.10	1 920	12.9	347.8	84.0	2 267.8	2 351	2 077.8	-3.5	9.1
Pulses	17.30	31	12.8	22.5	30.1	53.5	50	28.2	7.0	89.7

Source: AoS and CFSAM, 2021.
Note: Area in '000 hectares and production in '000 tonnes.

Livestock

After the privatization of the collective livestock holdings in the 1990s, livestock ownership mainly changed towards households and *dehkan* farms, with the exception of poultry holdings, of which 63 percent are owned by agricultural enterprises and 37 percent are owned by households and *dehkan* farms.

Livestock rearing systems practiced for sheep and goats, as well as for the majority of cattle, incorporate seasonal movements to intermediate and high mountain pastures. The migration usually starts in April–May and ends in September–October. In particular, classical breeding systems for sheep and goats have the following characteristics:

- Lambing time takes place in the spring.
- All population is pastured to the mountains: herds of households and collective farms can be driven by family members or gathered in groups and driven by village shepherds and farm workers.
- At the end of the summer or autumn, the young lambs are taken from the lambing ewe and sold for slaughter or for fattening.
- About 50 percent of the female lambs are left for remount of the herd in order to replace the sheep with "broken mouths" (four to five years old); these female lambs restock the breeding population.
- Extra female lambs are sold for slaughter, for fattening or as breeding population.
- Sheep with "broken mouths" and other culled livestock population are fattened for sale or for slaughter for their own consumption.

The size of the herds is determined by the capabilities of the farm during the winter. In the winter, the fodder harvested by the farm, including low (feed) quality wheat, maize and barley by-products, namely straw, roughage feed and bran, are used for feeding. The basis of a livestock diet is rough grass from plain pastures as well as wheat and barley straw, meadow hay and alfalfa harvested by farms. In case of insufficient availability of feed in the winter, farmers start selling their herd (as observed in years with long winters). Table 17 shows data on livestock population by year and regions. The mission collected complete data for DRS, Sughd, Khatlon and GBAO regions, allowing comparing the livestock population, sheep and goats from 2015 to 2020. The Table 17 shows that, since 2015, the population of cattle, sheep and goats has been slightly, but constantly, increasing in all regions. At the same time, the total planted area with fodder crops (excluding pastures with rough grass) decreased in 2020 in Khatlon and DRS regions by 42.6 and 41.2 percent, respectively, and, in total in all regions, it decreased by 31.7 percent compared to 2019. This was due to the increase of planted area for other crops such as wheat, maize and rice. The use of fodder crops as livestock feed was gradually replaced by other (food) crops waste, justifying the increase in livestock numbers. It should be noted that, households mainly breed livestock of local species. The black-and-white species of cattle is bred in the flatland, and the Kazakh white-headed species is bred in the mountainous regions. The population make their livestock reproduce mainly in a natural way. Artificial insemination of livestock is not frequent in the country.

Interviewed key informants briefed the mission on the following issues regarding livestock:

- Problems with the provision of livestock with fodder were noted in all regions of the country, high prices for fodder and concentrates.
- Lack of irrigation water and a dry summer in parts of the country affected pastures, which, therefore, did not have enough grass to feed livestock.
- The use of fodder crops and grass as livestock feed was replaced by other (food) crops waste.
- Outbreaks of infectious diseases have not been reported in any region, mainly due to the availability and widespread use of vaccines.

Table 17: Tajikistan - Livestock population and area with forage, 2015–2020

Region	2015	2016	2017	2018	2019	2020	Difference 2020 vs 2019 (percent)
Cattle							
GBAO	114.5	117.2	118.3	105.4	95.8	100.0	4.4
Sughd	623.9	634.3	641.9	646.9	665.7	667.1	0.2
Khatlon	898.7	944.8	968.1	981.1	994.2	1011.0	1.7
DRS	572.0	581.7	589.0	594.1	606.2	613.4	1.2
Total	**2 209.2**	**2 278.1**	**2 317.3**	**2 327.5**	**2 361.9**	**2 391.5**	**1.2**
Cows							
GBAO	40.7	41.3	43.1	41.2	40.2	41.2	2.5
Sughd	333.0	340.0	344.2	346.4	356.4	364.0	2.1
Khatlon	459.6	480.8	495.2	503.1	508.4	514.6	1.2
DRS	298.6	306.4	313.0	316.4	322.2	325.0	0.9
Total	**1 131.9**	**1 168.5**	**1 195.5**	**1 207.2**	**1 227.2**	**1 244.8**	**1.4**
Sheep and goats							
GBAO	366.8	375.5	399.1	345.2	323.7	334.7	3.4
Sughd	1 466.7	1 500.7	1 521.1	1 543.2	1 572.4	1 576.0	0.2
Khatlon	2 095.2	2 211.2	2 262.1	2 307.5	2 333.2	2 400.2	2.9
DRS	1 350.6	1 368.8	1 399.3	1 424.4	1 457.1	1 486.5	2.0
Total	**5 279.3**	**5 456.2**	**5 581.5**	**5 620.3**	**5 686.4**	**5 797.5**	**1.9**
Horses							
GBAO	0.3	0.3	0.3	0.3	0.3	0.3	0.0
Sughd	8.2	8.4	8.5	8.5	8.4	8.6	2.4
Khatlon	56.5	56.9	57.6	58.4	58.6	59.1	0.8
DRS	13.3	14.1	14.0	13.6	14.0	14.6	4.3
Total	**78.3**	**79.7**	**80.4**	**80.8**	**81.3**	**82.6**	**1.6**
All types of poultry							
GBAO	128.2	129.9	129.9	108.0	88.4	95.0	7.5
Sughd	1 684.4	1 635.5	1 719.0	2 728.2	4 322.1	4 635.1	7.2
Khatlon	1 697.8	1 772.5	1 809.2	1 822.8	2 046.0	2 205.2	7.8
DRS	1 632.6	1 513.5	1 558.9	1 977.5	2 580.1	2 847.4	10.4
Total	**5 143.0**	**5 051.5**	**5 217.0**	**6 636.5**	**9 036.6**	**9 782.7**	**8.3**
Area planted with forage crops (excluding pastures with rough grass)							
GBAO	38.1	35.3	38.1	36.2	33.7	29.9	-11.3
Sughd	430.4	391.5	410.1	422.2	439.6	405.6	-7.7
Khatlon	536.6	551.9	579.6	604.3	699.4	401.4	-42.6
DRS	306.6	311.9	338.8	360.8	376.7	221.5	-41.2
Total	**1 311.6**	**1 290.6**	**1 366.6**	**1 423.5**	**1 549.4**	**1 058.4**	**-31.7**

Source: AoS/Statistical Yearbook, 2020.
Note: Livestock population in '000 units and area with forage in '000 hectares.

FOOD SUPPLY/DEMAND ANALYSIS

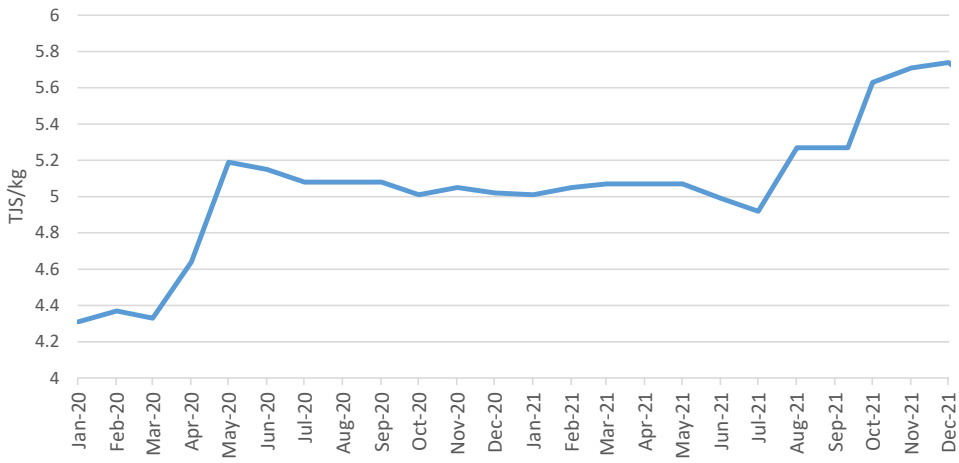
Food prices

Households in both urban and rural areas are reliant on markets to meet their food needs since their own production is not sufficient to cover their domestic needs for the entire year. As a result, their food security is highly dependent on market functionality and food prices. During the focus group discussion (FGD), households from rural communities reported that the main source of food and other essential items are primarily regional markets due to the lack of accessibility to wholesale shops. The respondents reported that, in 2021, market availabilities of non-locally produced food (mainly fruits and vegetables) and imported products were higher compared to previous years. The respondents also reported that over the last few years, demand for imported high quality food items has been increasing. However, interviewed traders reported that, in 2021, enhanced border controls and dysfunctional international supply chains due to the COVID-19 pandemic caused supply problems and led to price rises for imported commodities. Traders also reported that markets have been negatively affected by the rise in fuel prices as these resulted in high transportation costs and, in turn, high retail food prices.

Wheat

Bread and other wheat products are the main staple foods both in rural and urban areas. Local production covers on average about 40 percent of the domestic consumption needs of wheat, while the rest is imported, mostly from Kazakhstan. As shown in Figure 7, the national average retail prices of first grade wheat flour recorded sharp increases between March and May 2020 (from TJS 4.33/kg to TJS 5.19/kg), due to an upsurge in consumer demand amid concerns over the outbreak of the COVID-19

Figure 7: Tajikistan - National average price of wheat flour, January 2020–December 2021



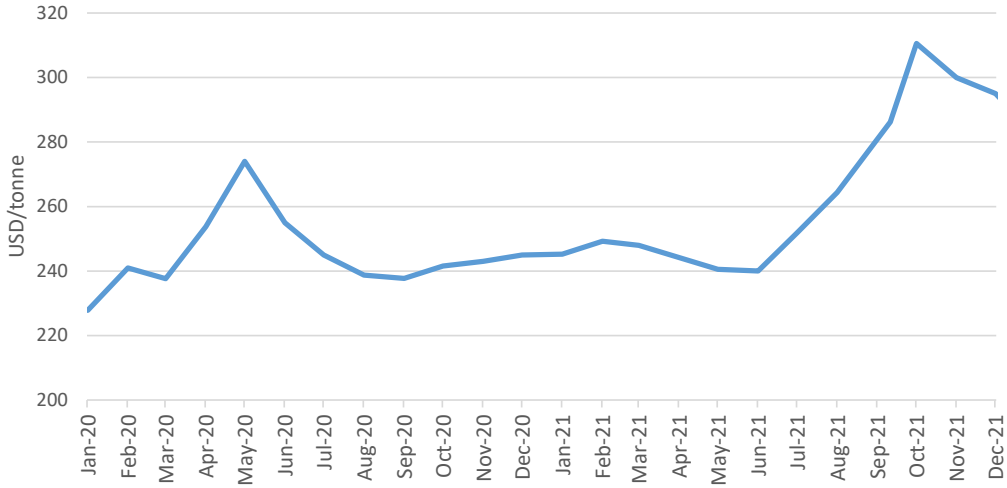
Source: FAO/GIEWS FPMA Tool: https://fpma.apps.fao.org/giews/food-prices/tool/public/#/home.

pandemic, market disruptions and export restrictions in Kazakhstan. In May 2020, prices reached a new record high (TJS 5.19/kg), on average 44 percent above the values of a year before. Between May 2020 and July 2021, prices remained overall stable or decreased slightly (TJS 4.92/kg in July), amid adequate domestic availabilities of wheat, the easing of COVID-19 restrictive measures and the launch of price stabilization initiatives by the government. Prices increased by about 7 percent in August 2021, to a new record of TJS 5.27/kg, reflecting the sharp rise of Kazakh wheat export quotations since June 2021 (Figure 8). The national average prices remained stable in the country in September 2021, and increased slightly between October and December 2021. At the end of the year, prices were over 30 percent higher than the pre-pandemic levels (March 2020). Increased export quotations in the subregion, triggered by the outbreak of the conflict in Ukraine, could result in higher domestic prices until the 2022 main harvest reaches the markets next August.

Potatoes and other important basic food products

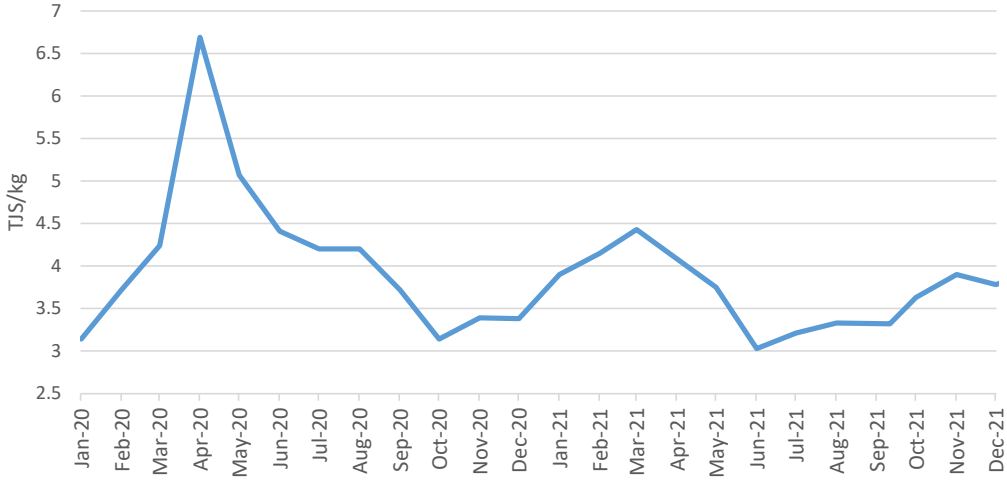
In general, prices of potatoes, another staple food in the country, show seasonal increases between October and April, before the start of the main harvest, and then begin to decline when the newly harvested tubers arrive in the markets. As shown in Figure 9, the national average retail prices of potatoes show unusually steep increases between January and April 2020, reaching the record level of TJS 6.69/kg. Seasonal trends were exacerbated by strong consumers' demand, fearing a supply shortage

Figure 8: Kazakhstan - Export price of milling wheat, January 2020–December 2021



Source: FAO/GIEWS FPMA Tool: https://fpma.apps.fao.org/giews/food-prices/tool/public/#/home.

Figure 9: Tajikistan - National average price of potatoes, January 2020–December 2021

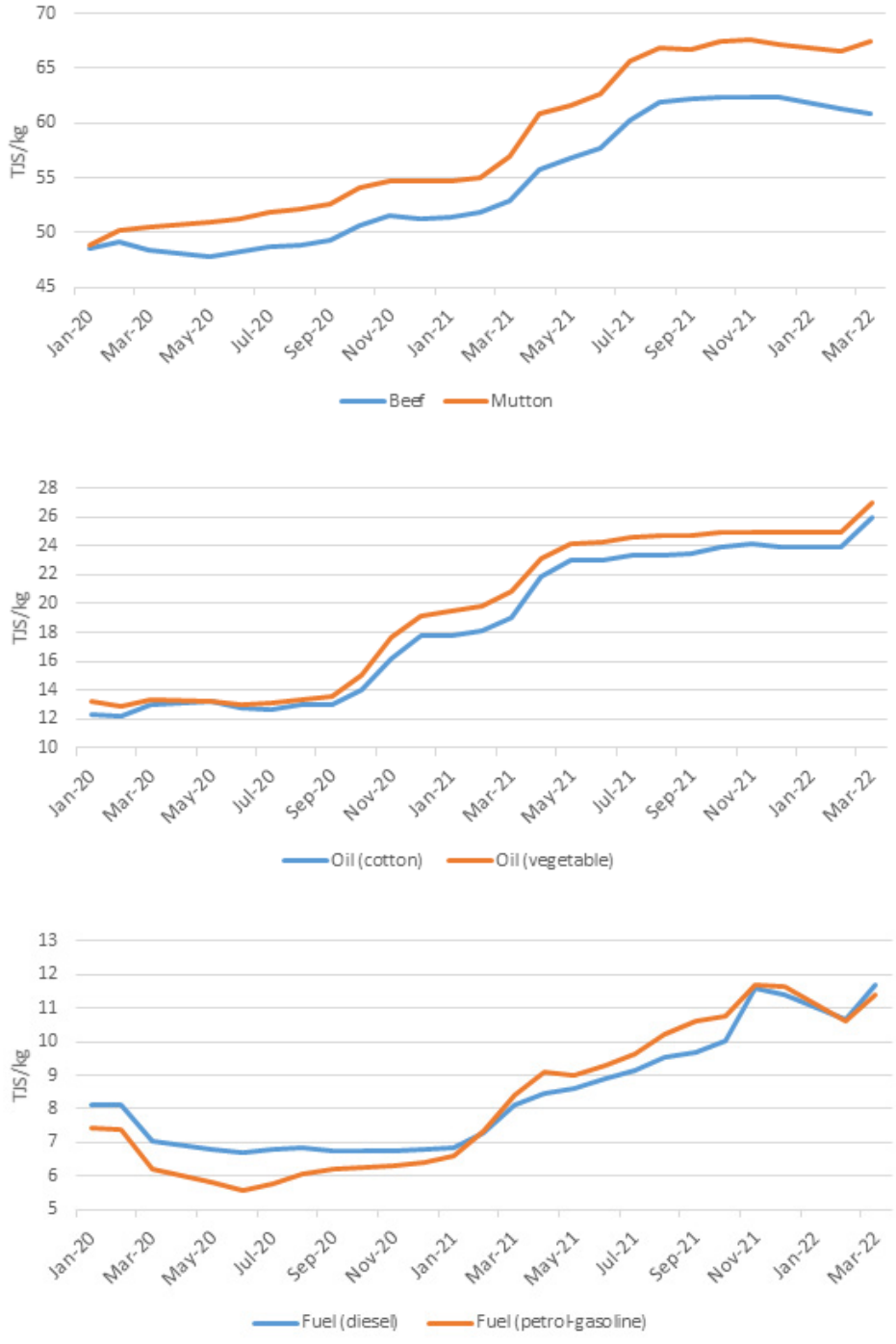


Source: FAO/GIEWS FPMA Tool: https://fpma.apps.fao.org/giews/food-prices/tool/public/#/home.

due to the outbreak of the COVID-19 pandemic and reached levels almost three times higher than in April 2019. The national average retail prices of potatoes then seasonally declined between May and October 2020 and newly increased until April 2021, although remaining below the peak reached a year before. Prices decreased in May and June 2021. Prices increased from July to November, and they declined slightly in December 2021, although remaining about 12 percent higher than a year before.

The price of carrots showed the largest fluctuation out of all the monitored food commodities. The average price of carrots in 2020 was about TJS 2-TJS 3/kg However, in 2021 starting from February, the price increased rapidly and reached TJS 10.5/kg in July,

Figure 10: Tajikistan - National average price of several commodities, January 2020–March 2022



Source: MoA, 2021.

mostly reflecting reduced production. Prices returned to about TJS 3/kg when market availabilities increased following the harvest in the second part of 2021. Similarly, the national average meat prices increased sharply throughout 2021. At the start of the year, the average price for beef meat was about TJS 52/kg, and at the end of 2021 was TJS 62/kg, an increase of almost 20 percent. The average price of mutton meat was TJS 54/kg in January 2021 and by December 2021 it had increased to TJS 67/kg, which represents an increase by 24 percent. Cotton and vegetable oils also saw significant increases in their average prices. The price increase for both commodities by the end of 2021 was around 26 percent compared to the start of the year. Following the same trend, fuel prices also saw a large increase. The average prices of petrol and diesel were around TJS 6.5/litre at the beginning of 2021 and went up to TJS 11.5/litre by the end of the year, with an annual increase of about 80 percent.

Cereals Balance 2021/22 marketing year (November/October)

The national cereal and potatoes supply/demand balance for the 2021/22 marketing year (November/October) is summarized in Table 18 and it considers separately wheat, rice (in milled terms), maize, barley and potatoes. The balance is based on the mission's production estimates and the latest information on population, consumption, trade flows and stocks availability. In drawing up the national food crop balance, the following assumptions were made:

- **Population** of the country as for 1 January 2022 was estimated at about 9.69 million, using a 2 percent growth rate as recommended by the AoS.
- **Cereals stocks** amounted to 625 000 tonnes at the beginning of 2021[v] and, as they are expected to remain the same during the 2021/22 marketing year, the mission adopted a zero-drawdown hypothesis.
- **Domestic production** Cereal production in 2021 is estimated at 1.4 million tonnes. Production of wheat, the main cereal crop, is estimated at about 852 000 tonnes, while the outputs of barley, maize and rice (in milled terms) are estimated at 196 000 tonnes, 240 200 tonnes and 111 900 tonnes, respectively. Potato production is set at 918 500 tonnes.
- **Food use** wheat is the main cereal consumed as food in the country. Available official information on the production and import of

Table 18: Tajikistan – Cereals and potatoes supply/demand balance sheet, 2021/22 marketing year November/October ('000 tonnes)

	Wheat	Rice (milled)	Maize	Barley	TOTAL CEREALS	Potatoes
Domestic availability	**852.0**	**111.9**	**240.2**	**196.0**	**1 400.0**	**918.5**
Domestic production	852.0	111.9	240.2	196.0	1 400.0	918.5
Stock drawdown	0.0	0.0	0.0	0.0	0.0	0.0
Total utilization	**2 043.9**	**124.0**	**388.6**	**196.0**	**2 702.5**	**1 183.8**
Food use	1 754	109.5	10.4	36.5	1 910.4	893.0
Feed use	153.4	-	356.5	129.5	640.4	-
Seed	63.2	4.9	1.1	12.1	81.3	198.0
Post-harvest losses and other uses	73.3	9.6	20.6	16.9	120.4	92.8
Import requirements	**1 191.9**	**12.1**	**148.4**	**0.0**	**1 352.6**	**265.3**

Source: CFSAM, 2021.

wheat grain and flour in recent years suggests that wheat consumption has been increasing. Based on AoS data, wheat consumption (including all wheat products) is estimated at about 181 kg/person/year and rice consumption is estimated at 11.3 kg/person/year. Taking into account the negligible consumption of maize and barley for food, the total food consumption of cereals (including rice in milled terms) is estimated at about 1.9 million tonnes in 2021.

- **Feed use** (animals and poultry) is estimated at about 640 400 tonnes of cereals in 2021. In particular, it is expected that 18 percent of the wheat production (as bran when milled into flour), plus most available barley and maize, will be used as livestock feed.
- **Seed requirements** for 2022 are calculated on the basis of the seed rates used in the country plus 15 percent of the insurance fund. The following seed rates have been used: 200 kg/hectare for wheat, 150 kg/hectare for barley, 180 kg/hectare for paddy, 25 kg/hectare for maize and 2 900 kg/hectare for potatoes. In addition, it is assumed that the cultivated area in 2021/22 will remain the same as the cultivated area in 2020/21.
- **Post-harvest losses** (including handling and storages losses) and other uses are estimated using a loss rate of 8.6 percent for cereals and 10.1 percent for potatoes.[vi]

The cereal import requirements in 2020/21 are forecast at about 1 225 000 tonnes, comprising of 974 000 tonnes of wheat, 216 00 tonnes of maize, 20 000 tonnes of rice and 14 000 tonnes of barley. In addition, the Mission forecasts the potatoes import requirements for 2020/21 at 204 000 tonnes. Based on the country's import capacity, the Mission expects that the entire deficit will be covered by commercial imports.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HOUSEHOLDS FOOD SECURITY

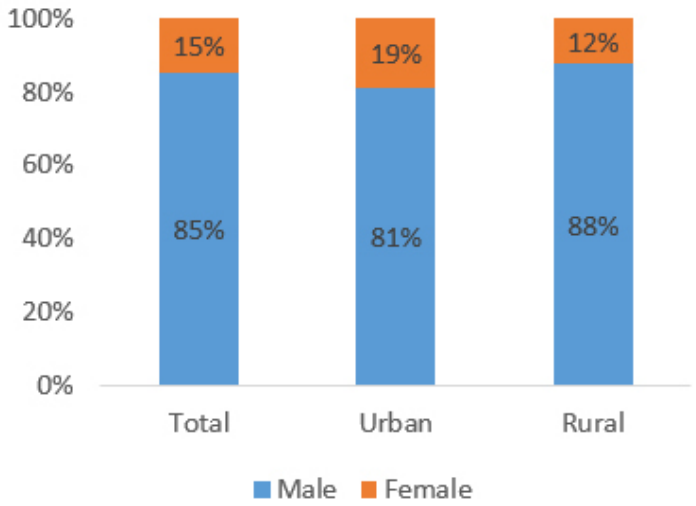
To understand the food security situation of the households in Tajikistan, a food security assessment was carried out in August 2021 through telephone interviews that reached 1 800 households across Tajikistan. This section presents the findings from the assessment.

Demographic characteristics

Overall, 85 percent of the surveyed households were male-headed households. The proportion was slightly higher for households in rural areas where the proportion was 88 percent compared to 81 percent for urban areas (Figure 11).

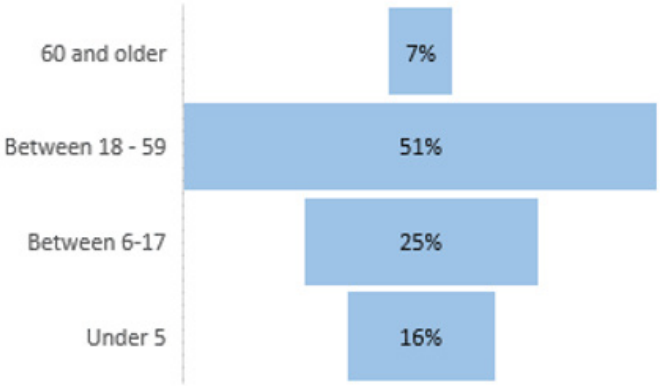
The average size of the household was seven members, with households in rural areas having slightly more members compared to urban areas. Looking at the age distribution of household members, 51 percent of them were adults between 18 years to 59 years old. This also meant that Tajik families have a significant number of dependent population (49 percent), 16 percent of whom are children under five years old (Figure 12).

Figure 11: Tajikistan - Proportion of households reporting whether they are male- or female headed households



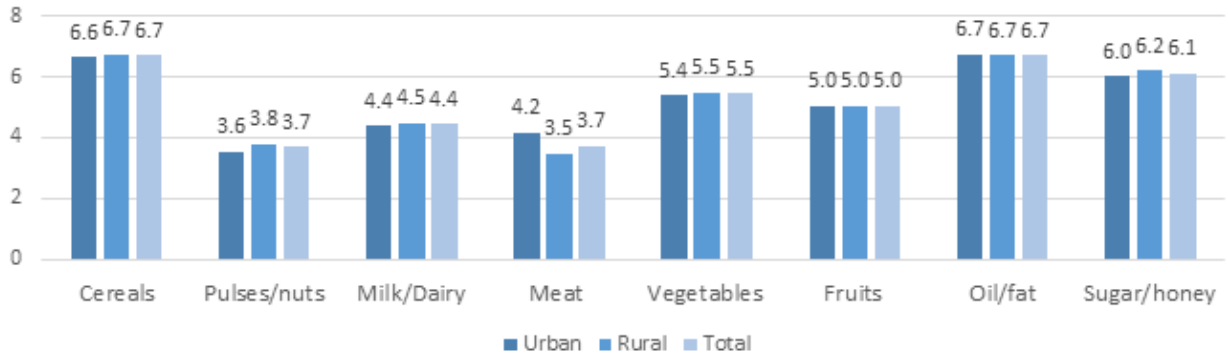
Source: CFSAM, 2021.

Figure 12: Tajikistan - Proportion of household members in different age categories



Source: CFSAM, 2021.

Figure 13: Tajikistan - Average number of days food items were consumed per week



Source: CFSAM, 2021.

Household food consumption

Households' access to food in adequate amounts and diversity was measured through the food consumption score (FCS) indicator. The FCS is a composite score based on dietary diversity, food frequency and relative nutritional importance of different food groups.[vii] Households were asked about their consumption of eight main food groups in the last seven days preceding the survey. Those food groups included cereals, pulses, meat, milk and milk products, fruits, vegetables, sugar, oil and fat.

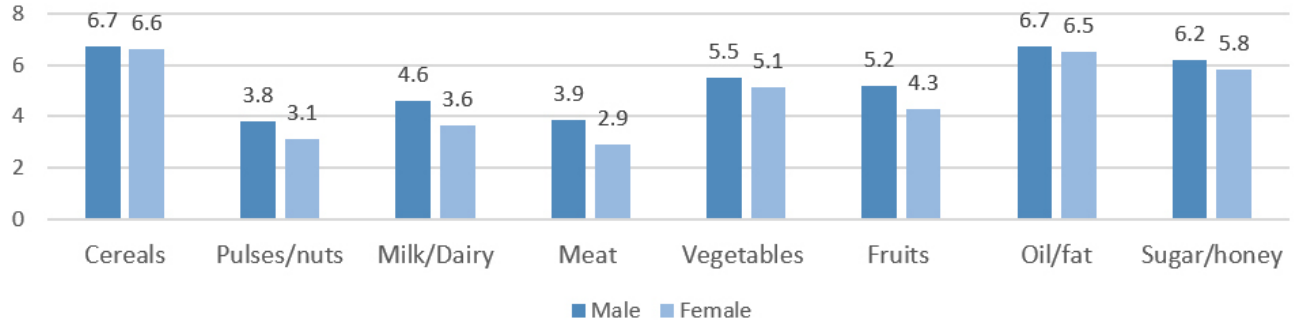
Figure 13 shows the average number of days when the food items were consumed at household level in the last seven days prior to the survey. The households reported consuming cereals and oil/fats on a daily basis. Sugar was consumed on average six days per week followed by vegetables and fruits that were consumed five to six days in a week. Furthermore, the food groups high in protein including pulses, milk/dairy, meat, fish and eggs, were consumed between four to five days in a week.

Except for meat consumption, the frequency and adequacy of food consumption was found to be similar for households residing in urban and rural areas.

Male-headed households were consuming all food groups in higher frequency compared to female-headed households (Figure 14) and the differences were more pronounced for meat, milk, pulses and fruits.

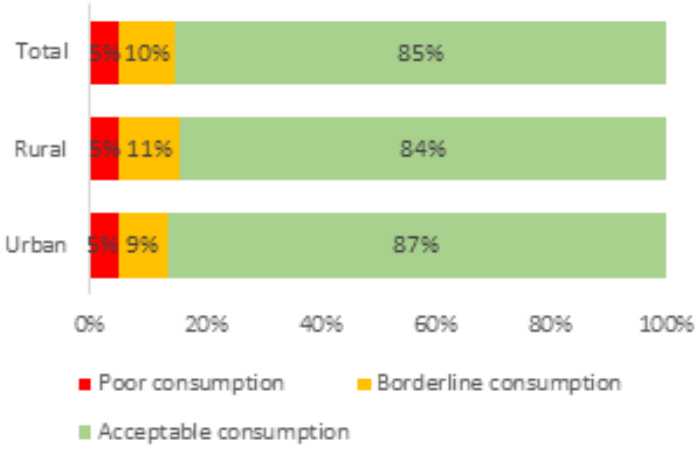
The FCS was used to classify households into one of the three consumption categories: poor consumption, borderline consumption and acceptable consumption. Overall, the majority of households had adequate consumption during the survey period, whereas 15 percent had poor or borderline consumption. As was observed from the consumption of food groups, the difference in proportion of households having an inadequate diet between urban and rural areas in not significant (Figure 15).

Figure 14: Tajikistan - Average number of days food items were consumed per week, disaggregated by gender of household head



Source: CFSAM, 2021.

Figure 15: Tajikistan - Proportion of households in different consumption groups, disaggregated by urban and rural areas

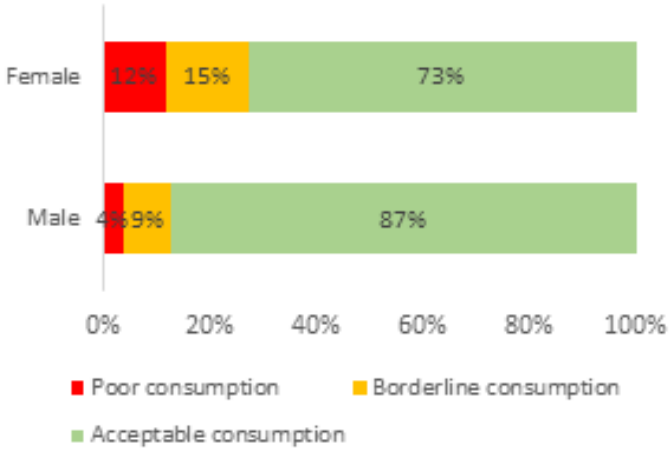


Source: CFSAM, 2021.

Substantial differences, however, were observed in food consumption between male and female-headed households. The female-headed households were more likely to have poor food consumption compared to male-headed households (Figure 16).

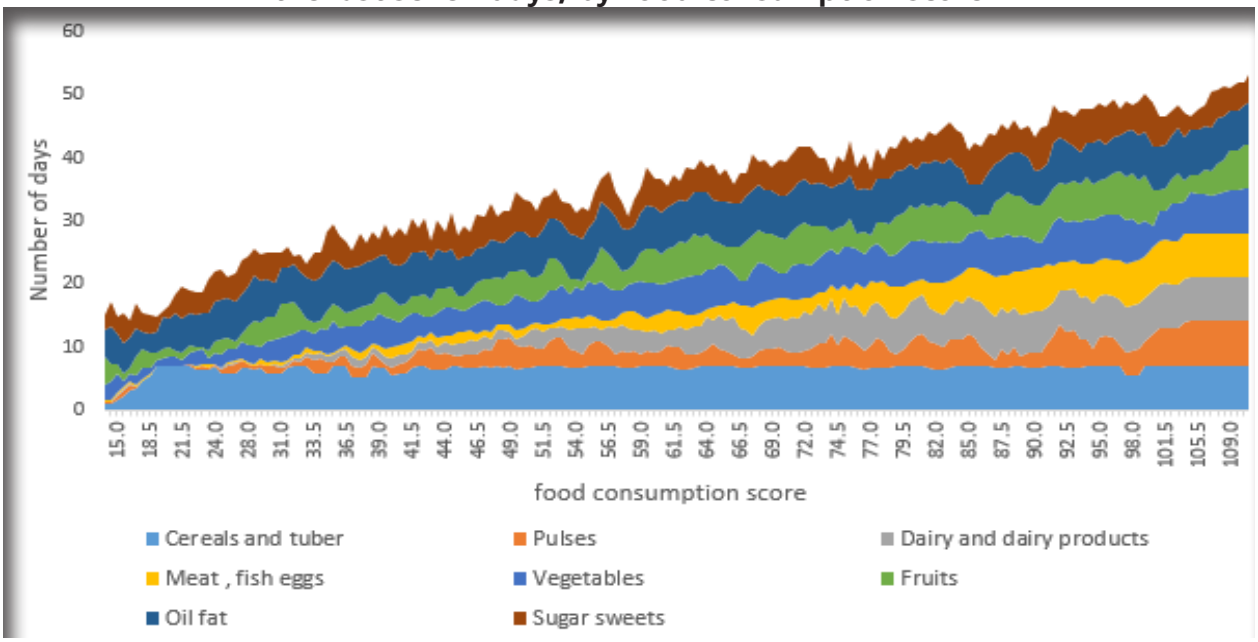
A detailed look into the diet pattern revealed that households with poor or borderline consumption are consuming less meat, pulses, milk and milk products even though their consumption of cereal, oil and sugar is similar to households with acceptable food consumption[3] (Figure 17). The foods that are lacking in the diets of inadequate consumption groups are more expensive which indicates that lack of affordability is the primary cause behind poor food consumption for households in Tajikistan.

Figure 16: Tajikistan - Proportion of households in different consumption groups, disaggregated by gender of head of household



Source: CFSAM, 2021.

Figure 17: Tajikistan - Number of days food groups were consumed in the last seven days, by food consumption score



Source: CFSAM, 2021.

[3] The threshold for poor consumption is less than 28 and for borderline consumption is 42 on the x-axis of Figure 17, so the x-axis label up to 28 represents the consumption characteristics of poor consumption households, 28.5 to 42 represents borderline consumption households and >42 represents acceptable consumption households.

Economic access to food

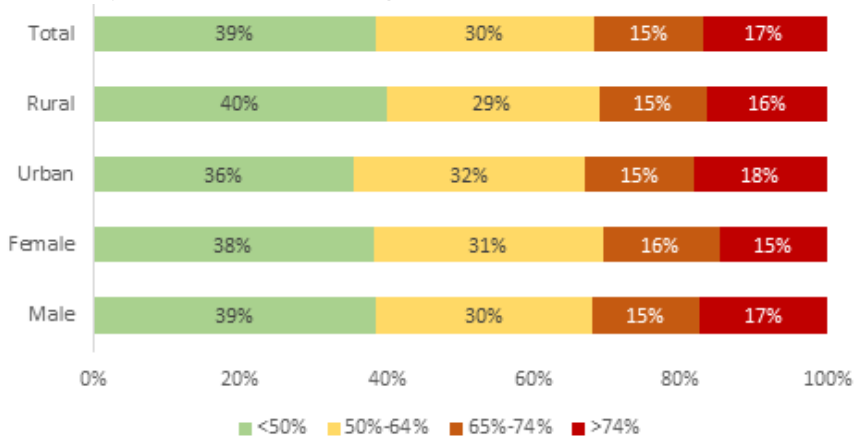
Households were also asked about their total expenditure on food and non-food items over the last 30 days preceding the survey, based on which the share of total expenditure on food was calculated. On average, it was found that households were spending 53 percent of their total expenditure on purchasing food. This meant that households were able to spend less to fulfil their other critical needs such as education and health which could have a significant impact on their general well-being. It has been demonstrated that the share of total expenditures on food is an important indicator of households' economic well-being and better access to food. This is because, when income increases, households spend more on food, but the share of expenditures on food becomes lower compared to non-food expenditures.

Almost one-third of the surveyed households were spending 65 percent or more of their total expenditures on food, this constantly puts them under stress. These households are highly susceptible to any type of shock such as price fluctuation or loss of livelihoods (crop failures, loss of employment, sickness to household members, etc.). No major differences were observed between rural and urban areas as well as by the gender of household head (Figure 18).

Shock and resilience

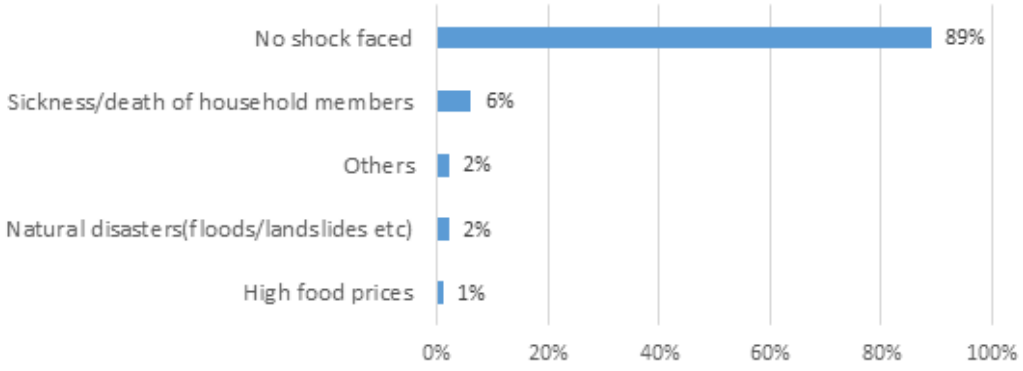
In the last three months preceding the survey, the majority of the surveyed households did not face significant shocks that contributed to the deterioration of their well-being. Eleven percent of the households reported facing different types of shocks as shown in Figure 19. Sickness or death of a

Figure 18: Tajikistan - Share of total household expenditure on food, by urban-rural and gender of household head



Source: CFSAM, 2021.

Figure 19: Tajikistan - Proportion of households facing shocks in the last three months before the survey



Source: CFSAM, 2021.

household member was reported as the main shock. Seasonality plays an important role in determining the type and frequency of shocks, especially natural disasters. In Tajikistan, floods, mudflows and avalanches represent the major of natural disasters that typically occur between February and May. Low reporting of natural disasters is the result of timing of the survey.

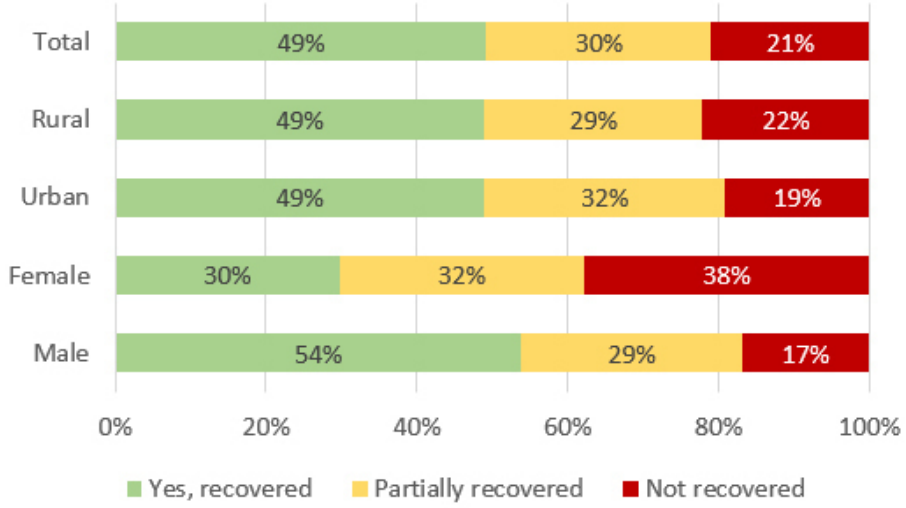
The ability of the households to recover from shocks as early as possible is a measure of their resilience. Among the households who faced shocks (11 percent), half of them were able to recover from them and resume their normal livelihood activities while one-fifth of them had not been able to recover. Significant differences were observed between male- and female-headed households as far as recovery from shocks was concerned. Thirty-eight percent of the female-headed households reported not being able to recover from shocks compared to only 17 percent of the male-headed households. (Figure 20).

During the FGDs conducted with the community, the respondents from most of the rural communities in Sughd Region highlighted that, over the past five years, floods were frequent during the rainy seasons. Lack of local employment opportunities is another major issue in the community and it results in household members leaving for other countries, mainly the Russian Federation. They have also been affected by the rise in prices of essential products. In terms of agriculture, one of the biggest problems were livestock diseases and pest attacks.

For the DRS and Khatlon regions, the FGD respondents identified drought and pest attacks as well as livestock diseases as the main reasons that hampered their agricultural livelihoods in the last five years. Loss of remittances due to the COVID-19 pandemic has negatively affected households that heavily rely on them as their source of income. Price increases for food and non-food items was also reported as one of the major problems for the households.

For GBAO Rregion, recurrence of natural disasters including floods, mudslides, and falling rocks during the rainy season has contributed to significant losses in household livelihood strategies. Price increases were also reported by the community as a major stressor.

Figure 20: Tajikistan - Proportion that recovered among the households who faced shocks, by urban/rural areas and gender of household head



Source: CFSAM, 2021.

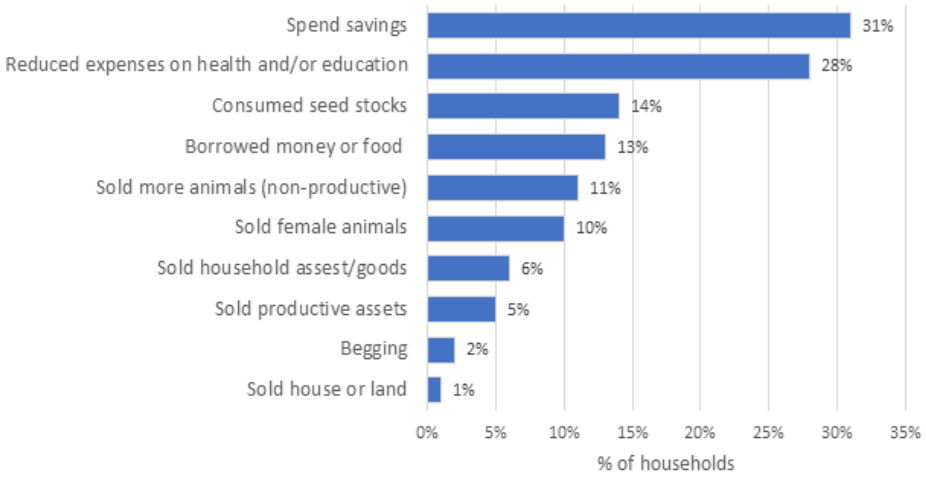
Livelihood-based coping strategies

The degree of vulnerability to food insecurity of the community can be measured by the negative coping strategies adopted by the households that normally result in the erosion of livelihood strategies with long-term consequences. For example, reducing expenditure on health and education to cope with the lack of access to adequate food has a detrimental impact on the human capital.

Overall, 63 percent of the surveyed households reported adopting one or more livelihood-based coping strategies to meet their food gaps. Figure 21 shows various livelihood-based coping strategies that were adopted by the households. Among them, almost one-third of the surveyed households had to spend their savings on food. This was the most widely adopted coping strategy, closely followed by reducing health and education expenses.

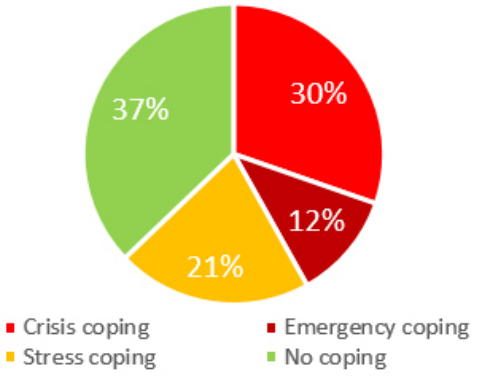
These livelihood-based coping strategies, according to their severity, were classified into stress, crisis and emergency strategies (Figure 22).[4] Results showed that 42 percent of the households were adopting crisis and emergency level coping strategies such as selling productive assets or female animals, reducing health and education expenses, selling their house or land and, in rare cases, begging. This provides further evidence that even though the majority of the households were found to have acceptable food consumption, this has mainly been achieved at the cost of loss of livelihood assets and strategies.

Figure 21: Tajikistan - Proportion of households adopting different types of livelihood-based coping strategies



Source: CFSAM, 2021.

Figure 22: Tajikistan - Proportion of households adopting livelihood-based coping strategies of varying severity levels



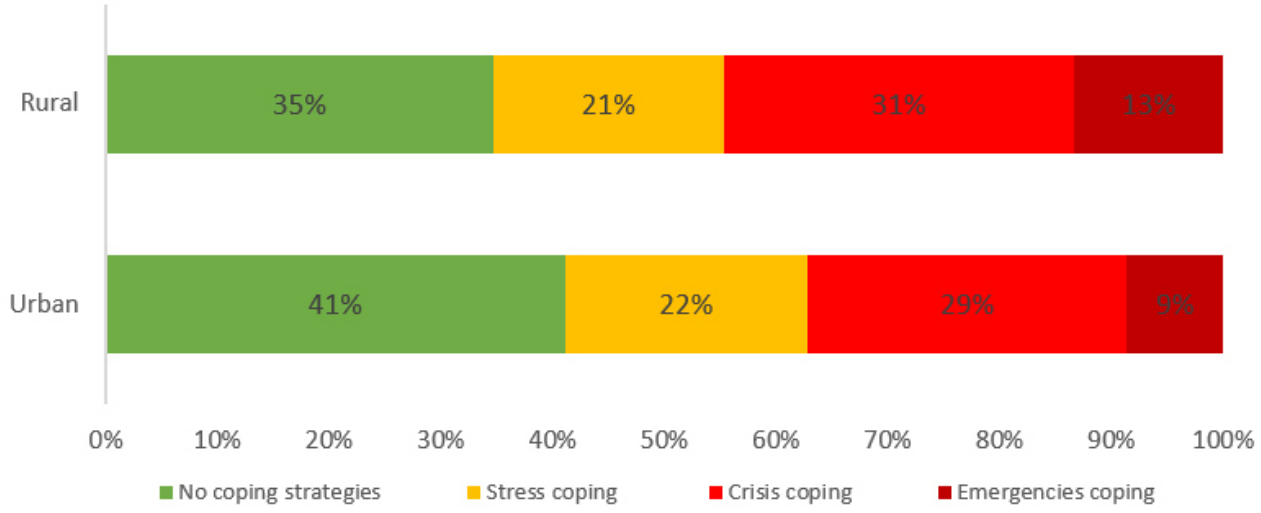
Source: CFSAM, 2021.

[4] The For more information of severity categorization, please refer to WFP CARI guidelines: https://www.wfp.org/publications/consolidated-approach-reporting-indicators-food-security-cari-guidelines.

Figure 23 shows that a slightly higher proportion of households in rural areas suffered the depletion of livelihood assets compared to the urban households. While Figure 24 shows that a higher proportion of female-headed households (48 percent) adopted crisis and emergency coping strategies compared to male-headed households (41 percent).

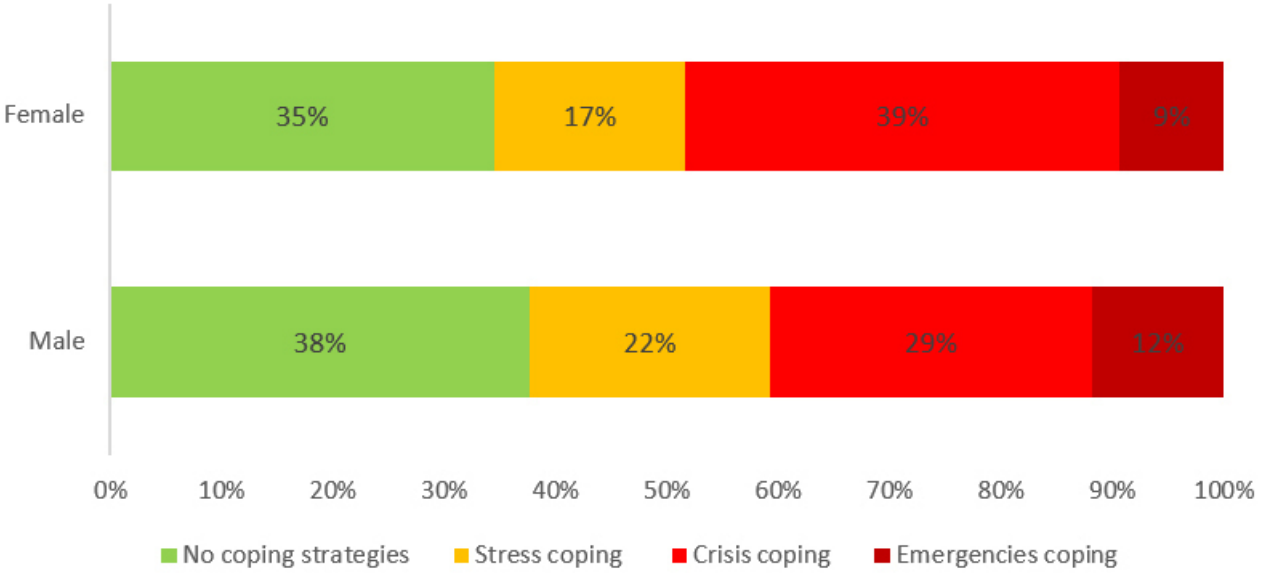
From the FGD, households of rural communities reported that the most adopted coping strategies are lowering consumption of food and saving for later through food preservation, sales of livestock, using savings for food and taking loans to allow a household member to expatriate and work in the Russian Federation.

Figure 23: Tajikistan - Proportion of households adopting livelihood-based coping strategies, disaggregated by urban and rural areas



Source: CFSAM, 2021.

Figure 24: Tajikistan - Proportion of households adopting coping livelihood-based coping strategies, disaggregated by gender of household head



Source: CFSAM, 2021.

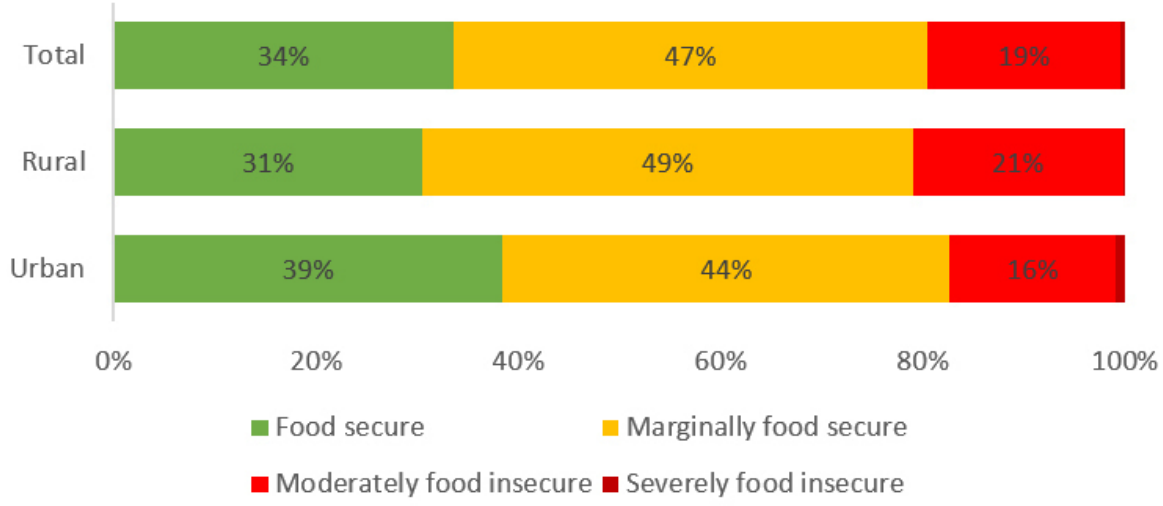
Food security situation

The overall prevalence of food insecurity among households in Tajikistan during the survey period was measured using the Consolidated Approach for Reporting Indicators for Food Security (CARI)[5] approach that is a method used to analyse and report the level of food insecurity within a population. The result of CARI is the classification of the households into one of the four food security categories: i) Food Secure; ii) Marginally food secure: iii) Moderately food insecure; iv) Severely food insecure. CARI is a composite indicator that takes into account two key domains. The "current food security status" domain employs food security indicators, which measure the adequacy of households' current food consumption through the FCS. The "coping capacity" domain employs two indicators, which measure households' economic vulnerability and asset depletion. For Tajikistan, the economic vulnerability was measured through income sources and market prices, and a Livelihood-based Coping Strategy Index (LCSI) was used as an indicator to measure asset depletion.

According to the CARI classification, Figure 25 indicates the overall food security situation in the country. Nineteen percent of the households were classified as moderately and severely food insecure. Moderate food insecurity is characterized by significant consumption gaps, or marginally able to meet the minimum food needs only with the aid of irreversible coping strategies. Severely food insecure households have often extreme food consumption gaps or have suffered significant losses of livelihood assets that will eventually lead to a food consumption gap.

A larger proportion of the households in urban areas were found to be food secure compared to the households in rural areas. Almost 40 percent of the households in urban areas were classified food secure compared to 31 percent in the rural areas.

Figure 25: Tajikistan - Proportion of households categorized into different food security status, disaggregated by urban and rural areas



Source: CFSAM, 2021.

[5] Ibid.

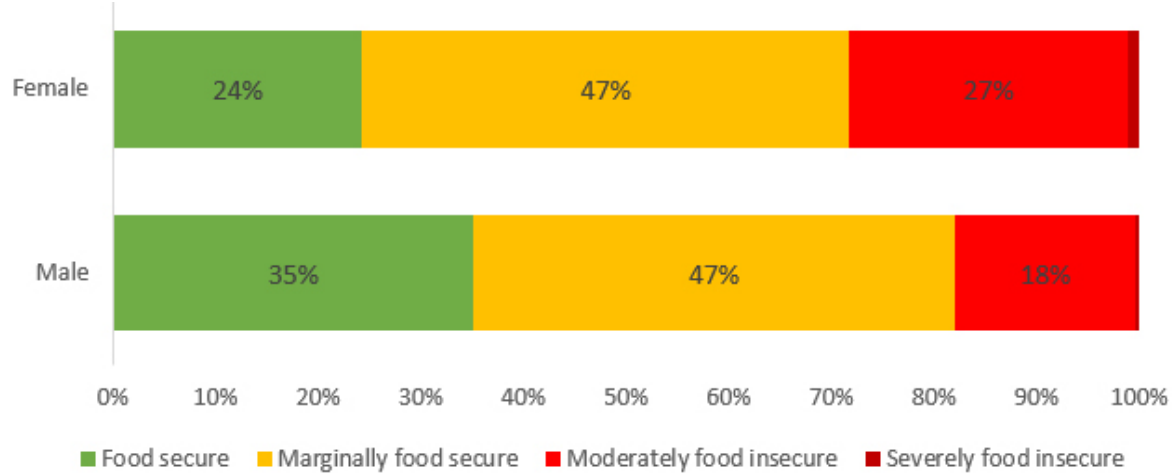
The prevalence of food insecurity was found to be higher among the female-headed households than the male-headed households. About 28 percent of the female-headed households were classified as either moderately or severely food insecure compared to 18 percent of male-headed households (Figure 26).

During the FGDs, the surveyed rural communities highlighted that seasonality plays an important role in ensuring their food security. The winter months are particularly hard as agriculture activities are limited and labour demand is lower than in the rest of the year. During these months, they rely on their food stocks. When spring begins, their food stocks are already depleted and they start facing food shortages. It is important for them to find employment in these months that is mostly available through agricultural activities. Summer and autumn months are characterized by increased agricultural activities for rural households.

For most rural communities, agricultural livelihoods provide food only to cover a few months' consumption needs, owing to insufficient land, poor agricultural practices and infrastructure, land degradation, crop and livestock diseases, and insufficient inputs. The average size of land for farming was found to be around 0.5 hectares per household and only one-third of the respondents reported that they used agriculture for commercial purposes. As a result, food security during the agricultural lean periods needed to be attained through other livelihood strategies, mainly remittances. However, these also became precarious due to the COVID-19 pandemic.

The FGD respondents reported that since the onset of the pandemic, there was disruption in labour migration flows to the Russian Federation. Households were then forced to borrow food and could not afford expensive medical supplies during illnesses. When the border was reopened, those who could find money for a ticket sent migrants abroad to work. When remittances began to arrive, households noticed improvements in their food security status and overall quality of life.

Figure 26: Tajikistan - Proportion of households categorized into different food security status, disaggregated by gender of household head



Source: CFSAM, 2021.

HOUSEHOLD LIVELIHOODS

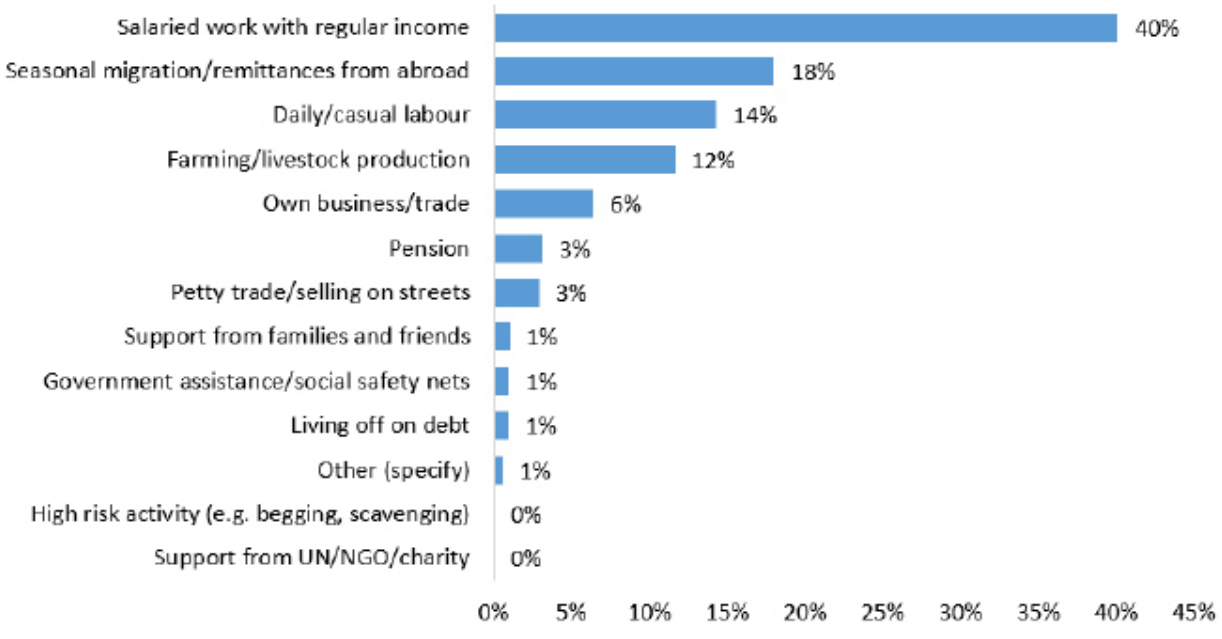
Households' livelihood strategies play a significant role in people's access to food. In general, households that are involved in sustainable livelihood activities have better physical and economic access to food which is required for a healthy and active life.

From the survey, regular salaried work was found to be the main household livelihood strategy in the country. The main source of income of 40 percent of the households was salaried work with regular income; almost one-fifth relied on seasonal migration by bringing remittances from abroad. Fourteen percent of the households were engaged in daily casual labour, while 12 percent were engaged in farming/livestock production (Figure 27).

Change in household income sources

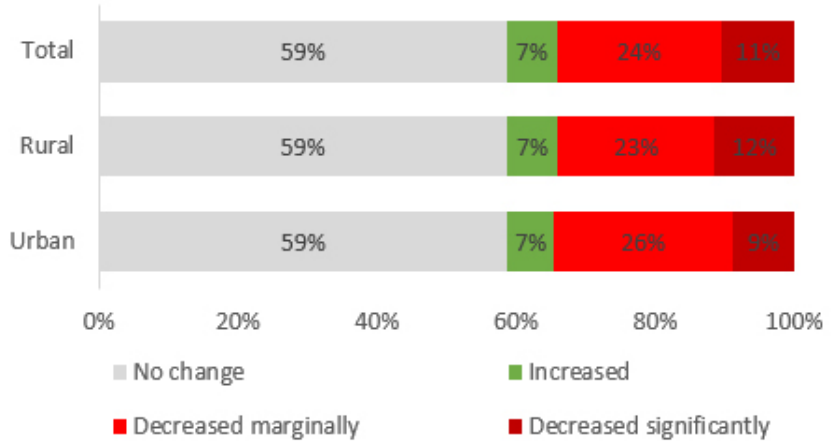
Overall, 35 percent of the households reported that their sources of income decreased compared to the same period in the previous year (Figure 28). About 60 percent stated that there was no change in their sources of income. Households in urban and rural areas, as well as male and female-headed households (Figure 29), reported income changes in similar measures.

Figure 27: Tajikistan - Households main sources of income in the last six months before the survey



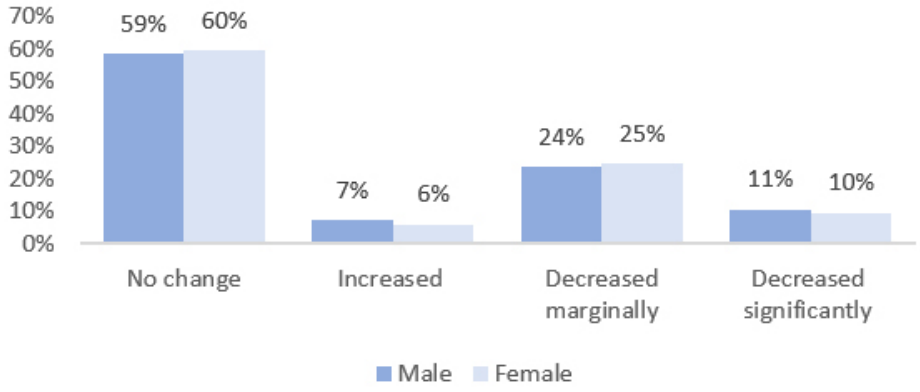
Source: CFSAM, 2021.

Figure 28: Tajikistan - Proportion of households reporting income changes, disaggregated by urban and rural areas



Source: CFSAM, 2021.

Figure 29: Tajikistan - Proportion of households reporting income changes, disaggregated by urban and rural areas



Source: CFSAM, 2021.

Figure 30: Tajikistan - Proportion of households reporting the impact of income decreases among households that suffered income losses

Source: CFSAM, 2021.

Households were also directly asked about the impact of income loss on their livelihoods (Figure 30). Although almost half of the respondents reported that there were no serious consequences, the rest of them had been facing issues due to income losses, of which 15 percent reported that they were not be able to stock up sufficient food for the winter and 12 percent had been unable to buy and eat an adequate amount of food.

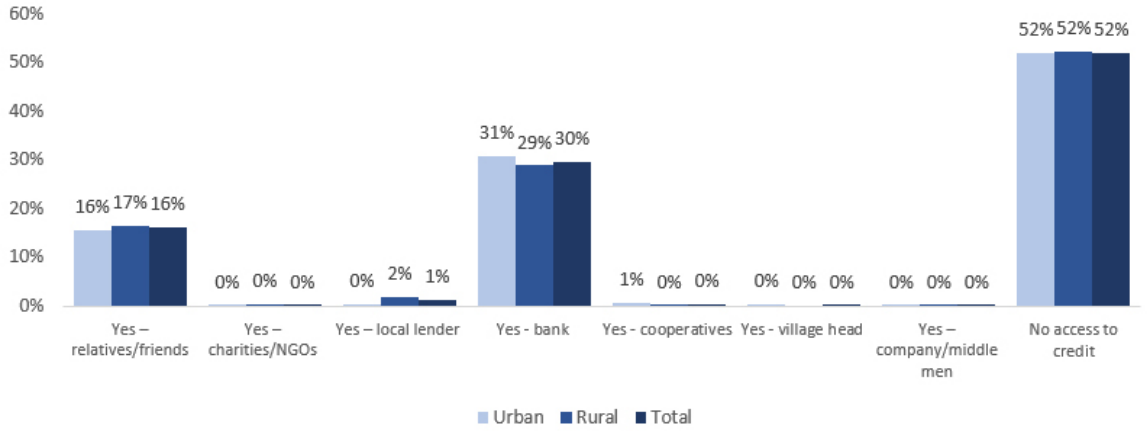
From the FGDs, most of the rural communities identified crop production, animal husbandry and remittances as the major sources of livelihoods. For some communities in the GBAO Region, development and humanitarian assistance also was a key to their livelihood strategy.

For most the households in the surveyed communities, income from agricultural activities was not enough to sustain them throughout the year. For them to generate income during agriculturally lean periods, most households would need to send at least one of their members on a seasonal labour migration. Following the outbreak of the COVID-19 pandemic, households' ability to supplement their income through remittance has declined, with a negative impact on their capacity to invest in the productive assets.

Access to credit

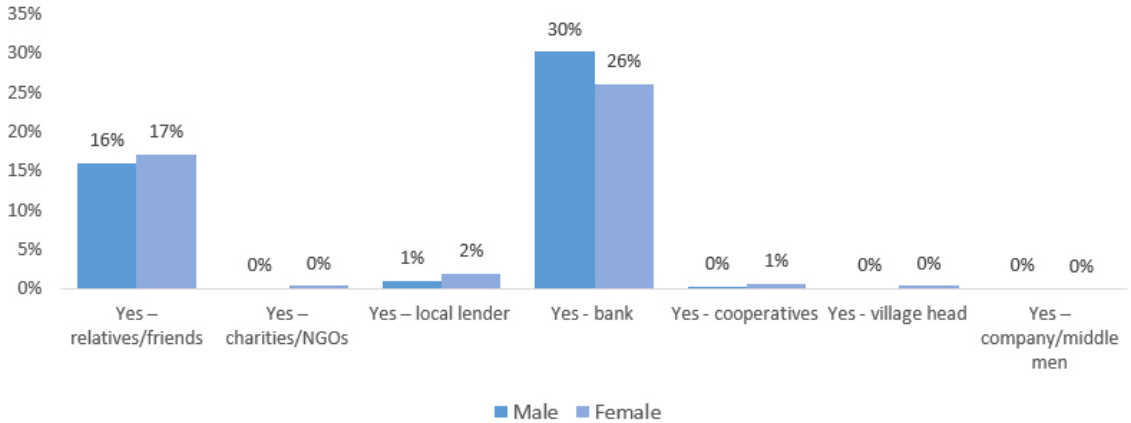
Surveyed households were asked if they had access to loans. The result of the survey indicated that only half of the households had access to various sources for borrowing money, the main of which were banks: for 30 percent of the male-headed households and 26 percent of the female-headed households (Figure 31). Sixteen percent of the households reported that they could also take credit from their friends and relatives. There was no significant difference between rural and urban households in terms of access to credit (Figure 32).

Figure 31: Tajikistan - Proportion of households reporting access to credit, disaggregated by urban and rural areas



Source: CFSAM, 2021.

Figure 32: Tajikistan - Proportion of households reporting access to credit, disaggregated by gender of household head



Source: CFSAM, 2021.

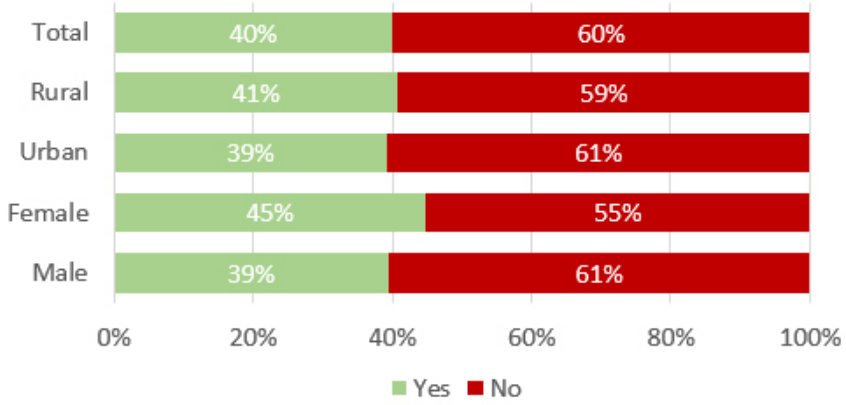
During the focus group discussions with the community, the respondents reported that, even though there was availability of banking services, getting a loan was a complex process that often required a lot of time and preparation that was why people hardly took out loans from the banks. Instead, they relied on family members and friends to help out in times of need. There were also community-based savings groups that gave access to credit to members of the groups that helped the vulnerable groups to have access to credit in case of emergencies.

Women's contribution to household income and livelihoods

The surveyed households were asked whether they had at least one-woman member engaged in income-generating activities, and 60 percent of them reported they did not (Figure 33). Women are generally more vulnerable to food access when they do not have a payable job. This was found to be similar for urban and rural areas. Compared to male-headed households, a slightly higher proportion of female-headed households reported that female members were also working to generate income.

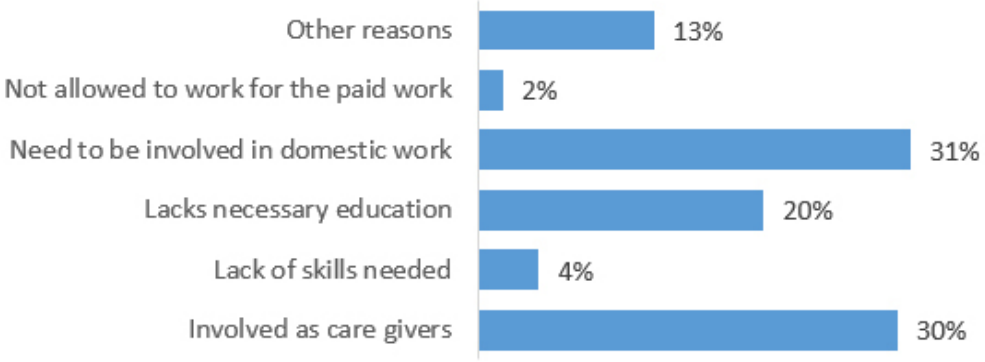
When asked about the reason for their lack of involvement in the job market, 30 percent stated that they were primarily taking care of dependent members such as children. Similar proportion of households reported that they needed to take care of domestic work such as cooking and cleaning. Furthermore, 20 percent indicated that women lacked the necessary level of education to be viable in the job market (Figure 34).

Figure 33: Tajikistan - Proportion of households reporting whether women members were also engaged in income-generating activities, by urban-rural areas and gender of household head



Source: CFSAM, 2021.

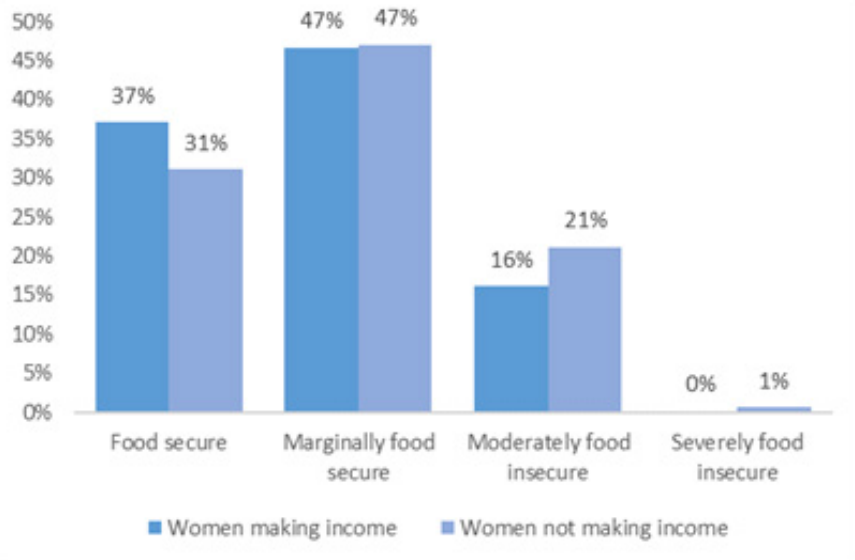
Figure 34: Tajikistan - Proportion of households reporting reasons for women not engaged in income-generating activities



Source: CFSAM, 2021.

In the households where women members were engaged in income-generating activities, the food security outcomes were better, which highlights the positive impact of women in ensuring food security for their households. Thirty-seven percent of the households where women also made income were food secure compared to 31 percent of the households where women did not make any income (Figure 35).

Figure 35: Tajikistan - Proportion of households reporting women's engagement in income-generating activities and their food security outcome



Source: CFSAM, 2021.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MIGRATION AND REMITTANCES

Remittances from seasonal and permanent migration is one of the major contributors to the household income in Tajikistan. When asked about migration outside of Tajikistan to work in 2021, 39 percent of the household reported that one or more immediate members of their family migrated outside of the country to work (Figure 36) and this proportion was slightly higher for the households in rural areas than urban areas. Households typically sent only one member to work abroad as was reported by 70 percent of the households (Figure 37).

Almost all migrants were men: 93 percent of the people. Slightly larger proportion of women migrated from urban areas compared to rural areas.

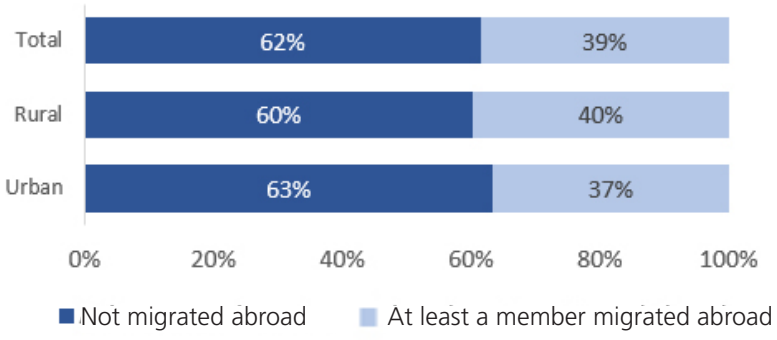
The households were also asked whether they received any remittance in 2021, and 32 percent of the surveyed households reported that they did. This is lower than the proportion of the households who migrated in 2021 (Figure 38) which suggests that some migrants were not yet able to make meaningful income.

The majority of the households who received remittances reported that the money was used to cover food needs (Figure 39). This highlights the valuable role remittances play in maintaining adequate levels of food consumption in Tajikistan.

It is also noteworthy that most of the money is spent on fulfilling the basic household needs such as food, education, housing, etc. Only 1 percent of the households reported that the money was used to invest in business. Between rural and urban households, the biggest difference in expenditure pattern was observed in education where larger proportion of urban households spent. Apart from this, the expenditures were more or less similar between urban and rural households.

The country is likely to experience a sharp reduction in remittances inflows in 2022, mainly due to the impact of international sanctions

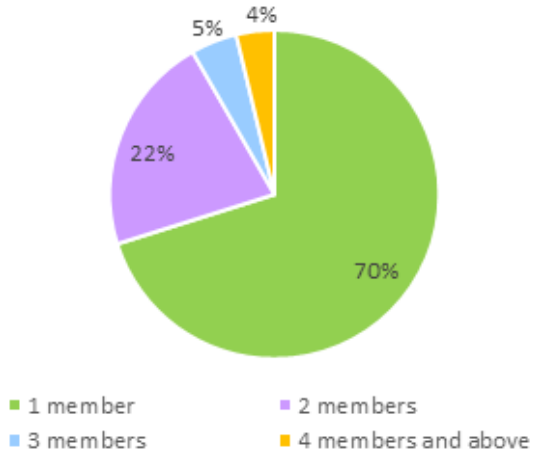
Figure 36: Tajikistan - Proportion of households reporting migration status, 2021



Source: CFSAM, 2021.

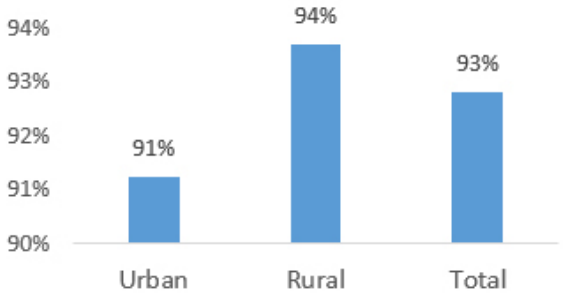
against the Russian Federation, following the outbreak of the war in Ukraine. Sanctions are expected to result in high unemployment rates and to negatively affect demand for goods and services in the Russian Federation, reducing work opportunities also for migrants. For the country, in recent years, remittances accounted for about 30 percent of the GDP and the majority of total remittances originated from the Russian Federation.

Figure 37: Tajikistan - Proportion of households reporting number of members who migrated



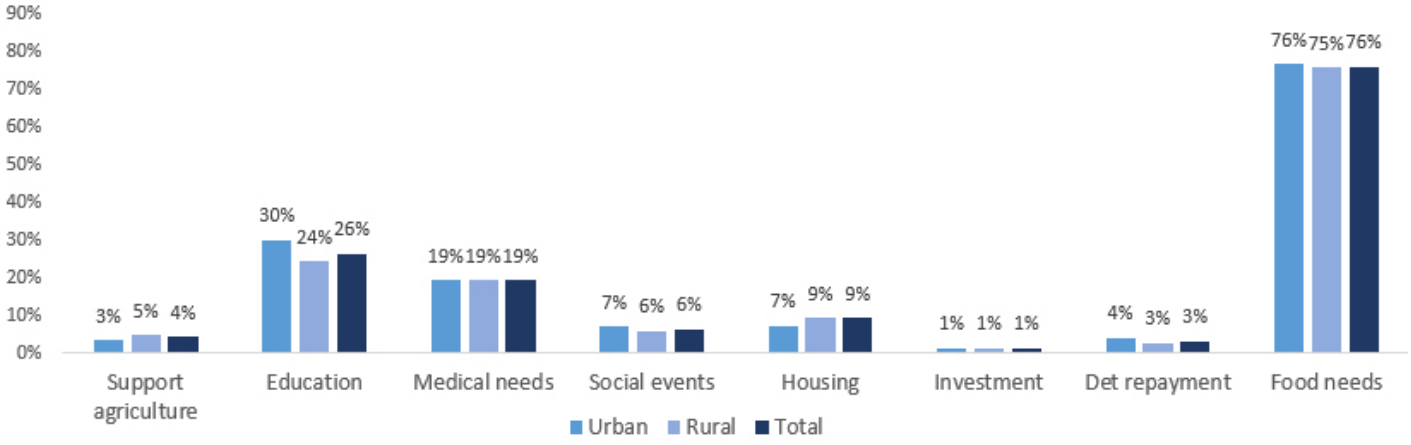
Source: CFSAM, 2021.

Figure 38: Tajikistan - Proportion of men who migrated out of total people that migrated, 2021



Source: CFSAM, 2021.

Figure 39: Tajikistan - Proportion of households reporting ways in which remittance was spent, disaggregated by urban and rural areas



Source: CFSAM, 2021.

HEALTH

The health outcomes of the households play an important role in making sure that human capital can be utilized to engage in livelihood activities. During the survey, half of the households reported that at least one member of their family got sick in the last 30 days preceding the survey. This proportion was slightly higher for rural households (53 percent) compared to urban households that was 47 percent (Figure 40).

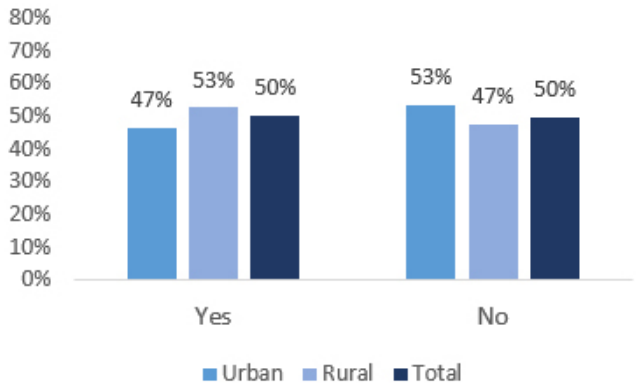
Figure 41 shows that 37 percent of the households reported that one of their children under five years of age had been sick during the reference period. In the case of children under five, the difference between urban and rural households was more pronounced. Thirty-two percent of the urban households reported child sickness compared to 40 percent of the rural households.

For the households where at least one of their members got sick, 86 percent of the households were able to receive medical care (Figure 42). A larger proportion of the households in rural areas (18 percent) were not able to receive medical care after getting sick compared to the urban households (12 percent).

For 14 percent of the households who were not able to receive any medical care after one of the members got sick, the major reason given was the lack of money, as reported by 65 percent of the households. Nine percent reported that the health facilities were far from where they lived (Figure43).

During the FGD, the surveyed communities reported that the second wave of COVID-19 caused a lesser impact on their health outcomes compared to the first one in terms of number of severe cases

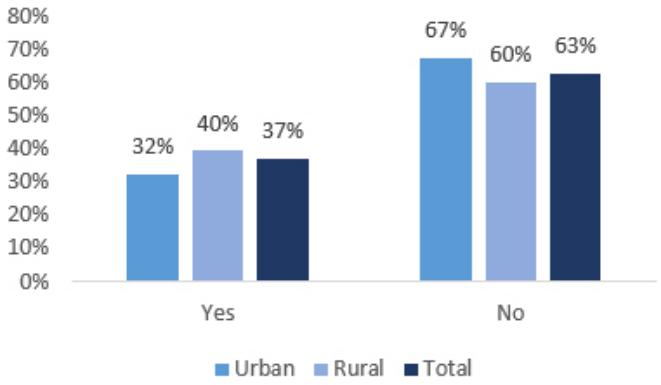
Figure 40: Tajikistan - Proportion of households reporting at least one sick household member



Source: CFSAM, 2021.

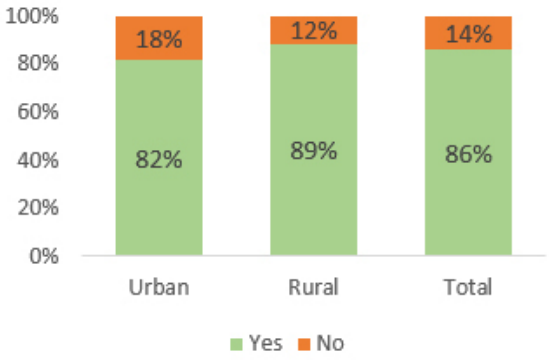
that were observed. They noted that after the first wave they were already better prepared, knew how to protect themselves in order to minimize the chances of being infected (using masks and hands disinfectants). For the communities that were more affected by the second wave, the biggest problem faced was inability to afford medical care such as going to the hospital and buying medicines. In addition, taking good care of the patient at home was also a challenge for them due to lack of money for which they took out loans that have not been repaid.

Figure 41: Tajikistan - Proportion of households reporting at least one sick child under the age of five



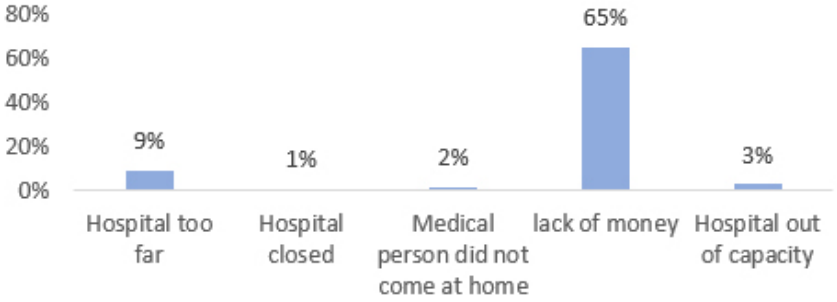
Source: CFSAM, 2021.

Figure 42: Tajikistan - Proportion of households reporting access to medical care among those who got sick



Source: CFSAM, 2021.

Figure 43: Tajikistan - Proportion of households reporting reasons for not receiving medical care



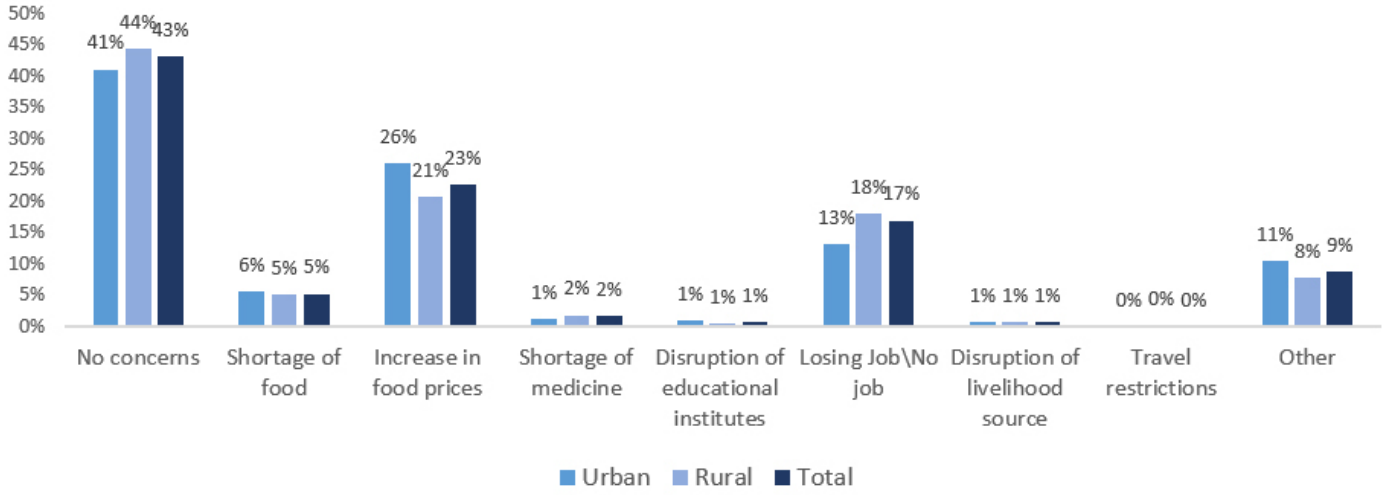
Source: CFSAM, 2021.

CONCERNS OF THE HOUSEHOLDS

The households were asked about their key concerns related to their general well-being at the current moment. Overall, 41 percent of the households said that they had no major concerns at present. This proportion was similar for urban and rural households. The most important concern for 26 percent of the households were increasing food prices, followed by the fear of losing their job or not having a job, as reported by 17 percent of the households (Figure 44).

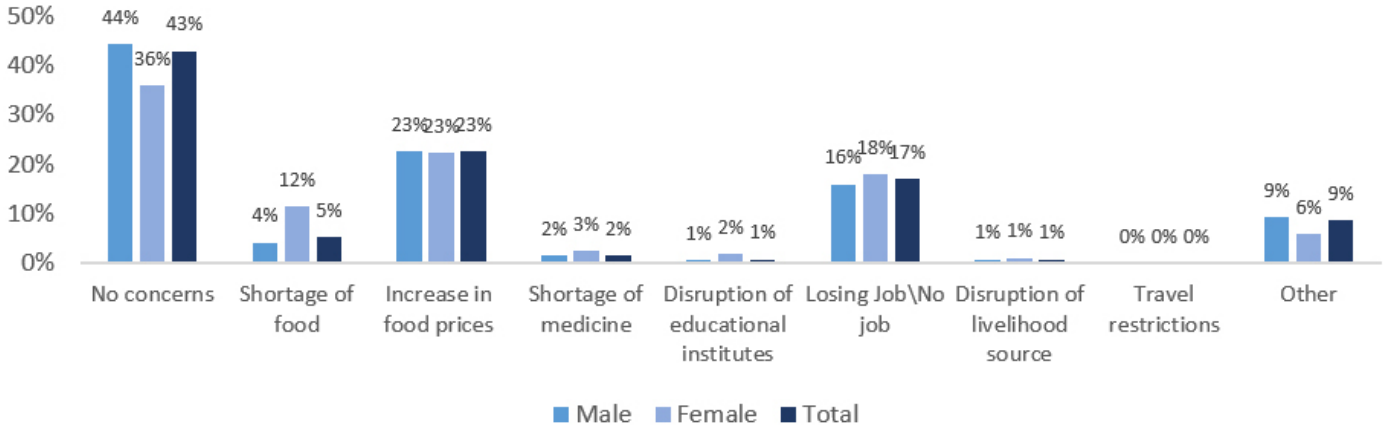
A larger proportion of female-headed households (44 percent) showed concerns with their general well-being compared to male-headed households (36 percent). Additionally, three times as many female-headed households were concerned with food shortages than male-headed households.

Figure 44: Tajikistan - Proportion of households reporting concerns about current situation related to general well-being



Source: CFSAM, 2021.

Figure 45: Tajikistan - Proportion of households reporting concerns about current situation related to general well-being, disaggregated by gender of household head



Source: CFSAM, 2021.

RECOMMENDATIONS

Agriculture

- Develop new programmes to reform agriculture and promote food security.
- With the support of the Tajik Academy of Agricultural Sciences and the Tajik Agrarian University, strengthen the capacity of the MoA to create centres for the dissemination of knowledge.
- Increase the use of local crop varieties that are more resistant to adverse weather conditions and adapted to local soil and climatic conditions.
- Promote the introduction of energy-saving and water-saving technologies (no-tillage technology).
- Promote the introduction and wide adoption of digital technologies (digitalization). Develop digital skills training programmes for farmers, including on digital monitoring of weather and climate services.
- Extend the use of organic agriculture, which will create conditions for the realization of export potential amid growing global demand for organic products.
- Actively conduct explanatory work on cooperation of small farms for more efficient use of land.
- Find an opportunity for the formation of a cluster form of organization of production, contributing to an increase in the profitability of producers' farms from processing and sales of products.
- Organize clusters for apricot, sweet cherry, grapes, as well as poultry and dairy clusters in animal husbandry for which there are prerequisites and conditions in the country.
- Create logistics centres in each region to receive the crops and other agricultural commodities produced by farmers.
- Develop refrigeration facilities for storage and profitable sale of products by farmers.
- Provide government support for the rehabilitation of irrigation systems.
- Assist farmers in the purchase of small-sized agricultural machinery for work in orchards and vineyards, as well as on slopes.

Household food security

- The household survey shows that lack of affordability is the primary cause behind poor food consumption for households in Tajikistan that prevents them from consuming an adequate diet. In this regard, activities that improve households' incomes and access to cash, including cash-based interventions and asset creation programmes

for the food-insecure communities, should be implemented.

- One-fifth of the households were classified as food insecure in the assessment conducted in August 2021. Given the fact that the recent Ukraine crisis is highly likely to impact remittances coming mainly from the Russian Federation where the majority of Tajik migrants are settled, the food security situation of households that are highly dependent on remittances will deteriorate. In order to safeguard their food consumption and livelihoods, emergency food assistance and early livelihood recovery activities should be prioritized in the coming months.

- Enabling year-round access to diverse foods such as vegetables and fruits will improve the nutritional content of households' diets, which can be achieved through the provision and use of greenhouses, orchards, fruit dryers. Additionally, nutrition sensitive programming, including the Social Behaviour Change Communication (SBCC), provision of specific nutritious commodities as well as food fortification would improve households' nutritional outcomes.

- During the FGDs, most communities reported climate-related disasters and crop and pest diseases affecting their agriculture productivity which can be mitigated by enhancing the ability of farmers to manage risks by the provision of timely and localized weather, market and agriculture-based information.

- Strengthening national social protection systems, including the targeted social assistance and the school feeding programmes, would ensure that some of the economical, climate and health-related shocks the households regularly face would be absorbed.

- Analysis of market prices in 2021 shows that prices of the main food commodities have increased continuously throughout 2021. This has resulted in the erosion of households' purchasing power coupled with reduced incomes as reported by more than one-third of the surveyed households. Hence, any ongoing or planned cash-based intervention should take into account the increased value of the minimum food basket while setting or updating the transfer value.

- Although a higher proportion of the urban households were found to be food secure compared to the rural households, food insecurity persists in urban areas. In addition, a significant proportion of the urban households were adopting livelihood-based coping strategies. More specific studies are needed to understand urban food insecurity and possible intervention mechanisms.

- Establishment of a food security monitoring system is crucial to monitor changes in households' food security situation to allow timely interventions and provide maximum relief to the vulnerable households during the most critical times.

ANNEXES

ANNEX 1

Terms of Reference of the CFSAM

The CFSAM was designed, planned and implemented by FAO and WFP, independent of external involvement and is responsible for the conclusions and recommendations of the mission and the presentation of the same, rests with the core team members assigned or contracted by FAO and WFP, and remains free from any political or institutional influence. Under the remote guidance by FAO staff abroad, the core team members prepared the draft report that was then reviewed, cleared and approved by FAO at headquarters' level.

For the CFSAM, the role of WFP is generally focused on understanding the situation from the perspective of households' access to food, affordability and its availability in the market. Therefore, the data collection process was designed to assess both the qualitative and quantitative aspects of the food situation in the country. The quantitative data collection was outsourced to a private company, Tahlil va Mashvarat, while the qualitative data collection was implemented jointly by Tahlil va Mashvarat, WFP and government staff from the MoA and the Agency of Statistics. Data collection was conducted in each of the four regions of the country, Gorno-Badakhshan Autonomous (GBAO) Region, Khatlon, Districts of Republican Subordination (DRS) and Sughd. KIIs were conducted with heads of relevant departments working with food and nutrition security, migration, employment, economic development, environmental protection, etc., heads of district and county (jamoat) governments, communities, wholesale traders and millers. More details on the number of beneficiaries and locations where the KIIs were conducted is provided in Annex 6.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FAO duties and responsibilities during the Mission were as follows:

- Consult with government officials, donor representatives, international humanitarian agencies, NGOs and traders about the prospects of the 2021 food crop production and the current food supply situation in the country.
- Collect and analyse available information concerning planted areas, yields and production forecasts for 2021 main staple crops and on the various factors that affected yields throughout the season. Satellite imagery were used to describe the evolution of the season and its impact on the condition of standing crops.
- Travel to the main cropping areas and appraise the state of the current main season crops.
- Use the collected information to estimate the output of the first and second seasons' crops production.
- Review the prevailing macroeconomic environment, collect information on factors affecting the food production and agriculture

situation. These include, but are not limited to, the relative prices of agricultural inputs and outputs, exchange rates, real interest rates, foreign exchange reserves and commercial import capacity for food.

- Collect and analyse available information on commercial food imports and exports, and food price trends.

- Estimate available food stocks held by government agencies, traders and farm households.

- Assess the food situation in the country and prepare a supply/demand balance sheet of staple foods for the 2021/22 marketing year (November/October), including anticipated commercial imports and food assistance needs, if any, at country level.

WFP duties and responsibilities during the Mission were as follows:

- Critically review all available information on the food security situation at household level.

- Review relevant information related to contextual factors of food and nutrition security.

- Examine available market data and the implications for household food security among vulnerable population groups and the degree of dependence of socioeconomic groups on food markets.

- Examine available information on the structure and functioning of domestic markets

- Carry out the assessment of household food security through remote data collection and collect additional data from key informants, such as heads of relevant heads of county (jamoats) governments, wholesale traders and millers with participation from government stakeholders; carry out FGDs with community members

- Conduct, based on available information, a general assessment about issues related to food security considering availability, access, utilization and stability.

- Debrief stakeholders from the government, donor agencies and other development agencies on the findings of the mission.

- Contribute to the preparation of a joint FAO/WFP technical report, comprising all findings and recommendations, to be issued to the international community.

ANNEX 2

Assessment methodology

Crop assessment
The crop assessment was conducted in two rounds: in July 2021 for the assessment of the first season crops and in September 2021 for the assessment of the second season crops.

Due to the spread of the COVID-19 pandemic, there were difficulties with movements and meetings with farmers, but precaution measures were taken during the interviews, social distance, masks, gloves and disinfecting materials were used during the fieldwork.

Four working groups comprising of four members in each group started working in July (ten days). These groups assessed four agricultural zones in three regions: Sughd, DRS, Khatlon-Kulob (zone), Khatlon-Bokhtar (zone) for the first season. In September (ten days), these groups assessed five agricultural zones in four regions: Sughd, DRS, Khatlon-Kulob (zone), Khatlon-Bokhtar (zone) and GBAO for the second harvesting season.

Assessments were conducted in 26 out of the 57 agriculture districts of the country. The assessments included:

- Collecting information about areas planted with all crops during the first and second cropping seasons in dehkan farms and households' plots.
- Carrying out interviews in 374 farms of all the above-mentioned categories located on the territory of 52 administrative/territorial formation of districts subordination (jamoat).
- During the farm surveys, to ensure the quality of the crop assessment of all crops, a special CFSAM checklist was used (Annex 3).
- The data from each interview entered into an Excel spreadsheet and thus created the mission's database. Qualitative indicators were calculated as a percentage of the number of respondents who answered this or that question. If in different zones there were different percentages, then the report shows the values from minimum to maximum in percentages.
- Data on the area and production of crops on dehkan farms and households' plots were obtained from farmers during face to face interviews.
- To calculate production for selected districts, the data on cultivated areas provided by the districts' departments of agriculture were supported with average yield data collected by the mission for the ready-to-harvest crops (cereals) based on the total yield data calculated for each district. Data collection mechanisms correspond to the common and, as it was mentioned, a multi-stage approach.

The National Agriculture Economist conducted desk study analyses of the obtained data from the mission members through the completion of forms, meetings and phone calls. For comparison purposes, the data on cultivated areas and agricultural production by year were obtained from the AoS and MoA.

Upon returning to the capital, Dushanbe, all FAO, the MoA and AoS working teams who participated in the assessment at the national level, responded in detail to the questions on the districts and regions they had visited. Questions were asked for each area separately. The interview format was in accordance with the recommendations of the technical notes included in the latest edition of the FAO/WFP Guidelines for CFSAMs. All production estimates were carefully verified, yield calculations were corrected taking into consideration the type of seeds, sowing timelines, timelines for fertilizers application and amounts of applied fertilizers, spread of seasonal pests and diseases, such crops productivity in neighbouring areas, historical data, after which the data was compared with that

of other independent assessments conducted in the same locations. The results of the discussions were formalized and the information obtained by the working groups was in details that allowed conducting a qualitative analysis of the factors influencing the cultivation areas and yields.

Key Informant Interviews
For the qualitative data collection, semi-structured questionnaires were designed for key informants' interviews to help assess the food security situation and two other questionnaires were also designed for interviews with wholesale traders and millers. These questionnaires focused on different aspects of food security such as:

- Staple food access, availability and affordability in the region.
- Income, employment and migration.
- General questions on COVID-19.

Households' Food Security Survey
Data collection: The quantitative data collection on households' food security levels was to be implemented by an outsourced company that was subcontracted by WFP. This data was collected through a phone survey (CATI method - Computer Assisted Telephone Interviewing) in August 2021 with household respondents from the five regions of Tajikistan including Sughd, GBAO, Khatlon, DRS and Dushanbe. The phone numbers were obtained from a phone database that included numbers from multiple telecom service providers working in Tajikistan. A total of 1 800 households were interviewed with 360 households surveyed in each region.

Questionnaire: The questionnaire covered the following topics:

- Food consumption.
- Economic access to food.
- Coping strategies.
- Livelihoods and income.
- Migration and remittances.
- Health.
- General concerns.

Limitations: Given that the survey was conducted by making telephone calls, a bias against the households without access to a telephone or living in areas without telecommunication coverage exists.

FGDs
Rural communities across Tajikistan were consulted using a semi-structured interview format to ask questions related to their access to food, livelihood strategies, shocks and hazards, migration and remittances, markets and food prices. A total of 27 community interactions were performed in the form of FGDs in 27 districts of Tajikistan. Annex 4 provides the detail on areas visited for FGDs.

ANNEX 3

Sample of checklist for use in crop assessments

- Location
- Rainfall: amount, distribution (average, 2019 and 2020).
- Irrigation: type, source, irrigated area.
- Main crops grown.
- Planting date; delays; re-seeding.
- Harvesting date, delays.
- Changes in cropping pattern (change to different crops; reasons for change).
- Areas of main crops (any change? why?)
  - 2020 main season crops:
    - Planted area (hectare).
    - Harvested area (hectare).
  - 2020 secondary season crops:
    - Expectations to plant (hectares).
- Land:
  - Farm size (any change?).
  - Land tenure system (any change?).
- Inputs: availability and cost (any change?):
  - Seeds:
    - Variety.
    - Source (own, market, FAO, other).
    - Seed rate (kg/hectare).
    - Price.
  - Fertilizers:
    - Type.
    - Type of application.
    - Quantity (kg/hectare).
    - Price.
  - Other: pesticides, herbicides.
- Mechanization: availability and cost (any change?):
  - Tractor.
  - Harvester.
  - Seeding machine.
  - Other.
- Farm labour: availability and cost (any change?):
  - Source (family, hired workers).
  - Daily salary.
- Crop problems (compared with previous year):
  - Pests: main pests, provinces affected, losses.
  - Diseases: main diseases, provinces affected, losses.
  - Insecurity
  - Marketing:
- Whom they sell, how much.
- Stocks.
- Yield expectations (tonne/hectare):
  - Comparison with previous year and with long term average.
- Roots and tubers: status compared with previous year.
- Vegetables: status compared with previous year.
- Tree crops: status compared with previous year.
- Livestock (compared with previous year):
  - Species (cattle, sheep, goats, poultry, aquaculture, etc.).
  - Size of herds (current and compared with previous year).
  - Major disease outbreaks.
  - Body conditions.
  - Veterinary support (vaccinations, etc.).
  - Feed availability and cost.
  - Pasture conditions and availability.
  - Availability of drinking water.
  - Sales, market prices and price trends.

ANNEX 4

Cereal production in 2021 by region/zone

Khatlon Region

Khatlon Region occupies the southwestern part of Tajikistan, from the Hissor ridge in the south to the Pamir in the west. The wide river valleys of the region (Nizhniy Kofarnikhon, Vakhsh, Kyzylsu rivers) are divided by mountain ranges diverging in the southwest direction from the mountain mass located in the north. Mainly cereals, cotton, grapes and flax are grown in Khatlon Region. The region is the leader in the production of livestock products (milk and meat). The western part of Khatlon, Bohtar Province, has the warmest climate in the country. Cotton and other sub-tropical crops are cultivated on large irrigated areas in the valleys of the Nizhniy Kofarnikhon and Vakhsh, in the west of the Khatlon Region. The east of the region (Kulyab) is mainly mountainous. Valleys, which are relatively small in area, are located along the Yakhsu and Kyzylsu rivers in the area of Kulyab City. The main crop grown here is cotton. The main sectors of agricultural production, in order of importance, are cotton, cereals, livestock and horticulture. Such a structure is typical for both Kulyab and Bohtar provinces.

Wheat is the main cereal produced and food crop consumed. In recent years, both collective and private dehkan farms have noticeably increased wheat planting on irrigated areas where cotton was previously cultivated. At the same time, water is supplied to the fields no more than once or twice per season. Wheat is grown in household plots, where it has been gradually replacing barley. Wheat production covers about half of the country's demand for bread. The missing quantities are imported, mainly from Kazakhstan. Wheat in 2021 occupied 86 percent, legumes occupied 3 percent and barley occupied 6 percent of the total area of cereals and legumes.

Data on the production of cereals and legumes are shown in Table A4.

Sughd Region

Sughd Region occupies the northern part of the country. Its territory includes:

- Northern Tajikistan, covering the southwestern part of the Fergana Valley of the Syrdarya River. The eastern part of the valley is located on the territory of Uzbekistan. The valley is bordered by two mountain ranges stretching from east to west, Kuramin in the north and Turkestan in the south. The rich soil moisture and natural conditions of the valley are extremely suitable for the cultivation of cotton and Mediterranean crops such as grapes, apricots and peaches.

- Zarafshan Valley, which crosses the southern part of Sughd Region from east to west, along the Zarafshan river bed. From the north, the valley is bordered by the Turkestan ridge, from the south by Zarafshan. Sughd Region takes the leading place in the production of rice, tobacco and fruits. All tobacco in Tajikistan is grown in Zarafshan Valley. The main sectors of agricultural production in order of importance are: cotton, cereals, livestock, gardening in the northern part of the region, tobacco, grain, animal husbandry and gardening, in Zarafshan Valley.

Agriculture is one of the largest sectors of the economy of Sughd Region. The agricultural sector employs about 70 percent of the economically active population.

Arable agriculture is concentrated mainly in river valleys, where about 50 percent of the land usually requires irrigation.

Households in Sughd Region mainly grow vegetables, including tomatoes, cucumbers, eggplants and potatoes, both for their own consumption and for sale. In 2021, wheat accounted for 43 percent and barley (for feed use) for 39.5 percent of the total area of cereals and legumes.

Table A4: Tajikistan - Production of cereals and legumes by zone

Region	Total cereals			(of which) wheat		
	Planted area (hectares)	Yield (tonnes/hectare)	Production (tonnes)	Planted area (hectares)	Yeld (tonnes/hectare)	Production (tonnes)
Sughd	116 782	2.59	302 465	54 937	2.70	148 330
DRS	69 708	1.71	119 201	53 969	2.30	124 129
Khatlon	190 248	3.55	674 618	163 451	3.58	585 161
GBAO	4 889	1.45	7 089	2 391	1.40	3 347

Source: CFSAM, 2021.

DRS Region

DRS are districts that were previously part of Karategin Region. The districts stretch in a long strip from east to west between the Hissor and Zarafshan ridges in the north, the Vakhsh and Darvaz ridges in the south and the western spurs of the Pamir (the Academy of Sciences ridge) in the east. Mountains form a natural barrier between the low-lying Khatlon in the south and the Zarafshan and Ferghana valleys in the north (Sughd Region). The natural landscape of central Tajikistan is the most diverse, from semi deserts with appropriate vegetation to alpine meadows and mountain pastures.

From the west (Hissor) to the east (the Hissor-Alay ridge in the eastern part of Rasht), the altitude increases rapidly. Agricultural crops are grown mainly in Hissor Valley, which stretches from Dushanbe to the Uzbek border (Tursunzade). Most of the agricultural products of the DRS, both crop and livestock, are produced in the east, in Hissor Valley, in the vicinity of Dushanbe. A significant amount of flax, grapes and vegetables are grown in Hissor Valley. Rice and cotton are also produced there, although in much smaller volumes than in Khatlon and Sughd regions. In Rasht, agriculture is confined to the long, narrow valley of the Surkhob River, flowing from east to west. To the southwest, already on the territory of Khatlon Region, Surkhob flows into the Vakhsh. The only crop grown by Rasht's households in significant quantities, both for their own consumption and for sale, is potatoes. The main sectors of agriculture are cotton growing, animal husbandry and horticulture in Hissor Valley, livestock, grain growing, potato growing and horticulture in Rasht Zone. In 2021, wheat crops occupied 75.6 percent of the total area of cereals and legumes.

GBAO Region

GBAO is located in the Pamir mountains, which occupy half of the country's territory in the east. The main factors limiting the development of agriculture in the Oblast are the lack of suitable land and high altitudes. If in the western Pamirs, there are narrow river valleys that allow for farming at altitudes of 3 700–4 200 metres, then the climate of the eastern Pamirs is the driest and coldest in the entire territory of Tajikistan. It is a cold, mountainous desert, without trees and practically without any vegetation. During the short summer season, it is only suitable for grazing on pastures with coarse grass.

Since the land reform in 1997, the following categories of farms are represented in the structure of the country's agricultural production in GBAO: Agricultural enterprises, dehkan farms and household farms that appeared as a result of the land reform.

Most of the households in the districts gained access to small plots of land (0.05 hectares), usually right next to their houses. Households' plots, orchards and vegetable gardens are the "fixed assets" of the households, they play an important role in ensuring food security and they serve as a source of food and income. Some of the products grown on the households' plots are sold in the local markets.

Wheat is the main grain and food crop. Wheat occupies 49 percent, legumes 37.3 percent and barley 13.3 percent of the total area of grain and leguminous crops. This year, due to a decrease in the planting area of the grain crops in the region, the area planted to potatoes and vegetables has increased.

The population plants grain crops mainly on the President's plots and vegetables, potatoes and legumes are cultivated on households' plots. Wheat production covers no more than half of the valley's grain needs.

ANNEX 5

Table A5: Tajikistan - Number of administrative units visited and interviewed farmers, by region (Crop assessment)

Region	Districts	*Jamoats*	Villages	First Mission	Second Mission	Total
Sughd	7	14	20/23	55	56	**111**
Khatlon	7	14	42/35	55	54	**109**
DRS	7	14	30/19	56	56	**112**
GBAO	5	10	14	0	42	**42**
Total	**26**	**52**	**92/91**	**166**	**208**	**374**

Source: CFSAM, 2021.

ANNEX 6

List of sites visited for key informant interview (KIIs) and focus group discussions (FGDs)

Region	District	Jamoat	Village	# KII	# FGD
Sughd	Bobojon Gafurov	Khistevarz	Khistevarz	4	1
	Spitamen	Uljaboev	Nov	4	1
	Sevashtich	Ghonchi	Ghonchi	4	1
	Maschoh	Buston	Fohobod	4	1
	Konibodom	Ortikov	Shurkurgon	4	1
	Isfara	Kulkent	Kulkand	4	1
	Panjakent	Khalifa Hasan	Navruz-teppa	4	1
Total				**28**	**7**
Khatlon	Khuroson	Hiloli	Gulrez	4	1
	Kobodiyon	Takhti sangin	Chirik	4	1
	Balh	Navoi	Rohi lenin	4	1
	Vahsh	Vahdat	Gulbogh	4	1
	Yovon	G. Yusufova	Navkaram	4	1
	Vose	Mirali Mahmadaliev	Gulgasht	4	1
	Muminobod	N. Nazarov	Hosobi	4	1
Total				**28**	**7**
DRS	Tursunzoda	Jura Rahmon	Sadi Sherozi	4	1
	Hisor	Durbat	Manzar	4	1
	Rudaki	Zainaboobod	Aliboy	4	1
	Bahdat	Bahor	Bahor	4	1
	Fayzobod	Buston	Sebiston	4	1
	Rasht	Kalanak	Kalanak	4	1
	Lahsh	Jirgatol	Jirgatol	4	1
Total				**28**	**7**
GBAO	Ishkashim	Usufbekov	Dasht	4	1
	Vanj	Yazgulom	Andarbak	4	1
	Shugnan	Vanqala	Vanqala	4	1
	Darvoz	Sagirdasht	Qalai Hussein	4	1
	Rushan	Basid	Basid	4	1
	Roshqala	Sezhd	Shosbuvad	4	1
Total				**24**	**6**
TOTAL				**108**	**27**


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NOTES

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This report was prepared by Rahmon Shukurov, Elena Conte, Cristina Coslet and Mario Zappacosta (FAO) and Mariko Kawabata, Arshia Khan and Suhaily Mamadraimov (WFP) under the responsibility of the FAO and WFP secretariats with information from official and other sources. Since conditions may change rapidly, please contact the undersigned for further information, if required:

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ISBN 978-92-5-136168-9 ISSN 2707-2479

9 789251 361689

CB9996EN/1/05.22