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SPECIAL REPORT

2023 FAO/WFP CROP AND FOOD SECURITY ASSESSMENT MISSION (CFSAM) TO THE REPUBLIC OF TAJIKISTAN

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ABBREVIATIONS

AfH	Agency for Hydrometeorology under the Committee of Environmental Protection
ALRI	Agency for Land Reclamation and Irrigation
AoS	Agency on Statistics under the President of the Republic of Tajikistan
ASSADP	Agri-food System and Sustainable Agriculture Development Programme
CFSAM	Crop and Food Security Assessment Mission
CIT	Italian locust
COVID-19	Coronavirus disease 2019
DAI	Development Alternatives Incorporated
DMA	Moroccan locust
DRS	Districts of Republican Subordination
FAO	Food and Agriculture Organization of the United Nations
FSMS	Food Security Monitoring System
GBAO	Gorno-Badakhshan Autonomous Oblast
GDP	gross domestic product
GIEWS	Global Information and Early Warning System on Food and Agriculture
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
ISTA	International Seed Testing Association
kg	kilogram
kwh	kilowatt-hours
MoA	Ministry of Agriculture
masl	metres above sea level
NDS	National Development Strategy
NDVI	Normalized Difference Vegetation Index
NGO	non-governmental organization
OSCE	Organization for Security and Cooperation in Europe
TJS	somoni
USAID	United States Agency for International Development
USD	United States dollar
VAT	value added tax
WB	World Bank
WFP	World Food Programme
WUAs	Water User Associations

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HIGHLIGHTS

- Crops and pasture benefited from favourable rainfall and irrigation conditions in 2022/23, while access to farming inputs improved compared to the previous year and the impact of natural hazards on field crops remained low.

- The aggregate 2023 cereal production is forecast at 1.39 million tonnes, about 19 percent above the past five-year average. Wheat production achieved an estimated 1.05 million tonnes, about 22 percent above the average and the highest on record. Barley production is estimated at 169 900 tonnes, 21 percent above the average.

- Potato production in 2023 is estimated at 1.08 million tonnes, about 6 percent above the past five-year average. Pulses cultivated area is limited, but production is expected to increase by over 5 percent compared to the average, with an estimated production of 30 200 tonnes.

- Cotton production in 2023 is estimated at 386 500 tonnes, about 2 percent above the average, but 4.5 percent lower than in 2022, due to a reduction of cultivated area and high damages by pests. The price of cotton is expected to be substantially lower than last year, which will affect *dehkan* farmers' income.

- Production of pomegranate, almonds, grapes, citrus, figs and grapes has been severely affected by winter frost, with some orchards fully destroyed, thus affecting even future production. Apricot, apple and pear orchards were not affected by winter frost and their production is expected to be well above average.

- The national average price of wheat flour and wheat products decreased slightly between January and July 2023, with higher values in the region of Dushanbe. The declines was the result of favourable cereal production.

- The price of potatoes increased by 50 percent compared to the second quarter of 2023. Farmers normally store one-third of the potato harvest in traditional silos, where losses could be up to 50 percent due to poor conditions of the structures.

- With an estimated utilization of 2.7 million tonnes of cereals and potatoes (in cereal equivalent), the import requirements for the 2023/24 marketing year (July/June) are estimated at 987 000 tonnes of wheat, about 5 percent below the past five-year average. The estimated food deficit is expected to be fully covered by commercial imports.

- Within an overall favourable situation at national level, according the a World Food Programme (WFP) analysis carried out in August 2023, about 1.56 million people were facing acute food insecurity, nearly 50 000 of them were severely food insecure. This represents an improvement compared to the

same period last year, with a reduction in acute food insecurity from 20 to 16 percent, and a stabilization in the situation since early 2023. Pockets of acute food insecurity were heterogeneously distributed across the country, with the highest prevalence and number of food insecure in Khatlon Region.

- Food consumption has also improved over the last year, with a reduction in the prevalence of households with insufficient food consumption from 11 to 8 percent. Nationwide, 750 000 people are estimated to have insufficient food consumption, with nearly 110 000 of them having poor food consumption. Meeting micronutrient requirements remains challenging, especially for iron.

- Improvements are also seen in the severity of the coping strategies that households resort to. The proportion of households employing emergency livelihood coping strategies has decreased by more than half compared with the same period last year, from 21 to 9 percent. However, resorting to livelihood coping strategies, such as reducing expenses on health or education, spending savings or borrowing money, is an extended practice in the country and it has increased over the last year, from 68 to 82 percent of households, driven by the increment in the crisis coping strategies, such as reducing expenses on health, that has almost doubled over the last year.

- Despite the slowdown in food inflation over the last year, the share of household expenditures on food has increased over the last two years. By August, almost half of the population, 4.7 million people, spent more than 65 percent of their monthly budgets on food, which limits household capacity to cover non-food essential needs, such as health and education.

- Half of the interviewed households relies on irregular income sources as primary means of livelihood, mainly on remittances and daily casual labour. While almost all interviewed households received remittances in the last 12 months, irregular income sources were more common in the Districts of Republican Subordination (DRS) and Khatlon.

- Economic access to food appears as the main driver of food insecurity, as indicated by the high share of food expenditures in households' budgets, the frequency of irregular sources of income and the elevated percentage of households resorting to livelihood coping strategies. These strategies to cope with the limited budget to cover food needs compromise households' future productivity and resilience.

- The mission identified measures to address the most pressing structural challenges for the agricultural sector in view of the effort to improve national food security and strengthen the resilience of the agricultural sector, in line with the National Development Strategy.

- Recommendations include the scaling up of livelihood support interventions and the continuation of food and/or cash transfers to the most vulnerable. Constant monitoring of households' food security is strongly recommended given the international context and high dependency of Tajik households' food security on remittances and irregular income sources.

OVERVIEW

At the request of the government, a joint FAO/WFP Crop and Food Security Assessment Mission (CFSAM) visited the country from 24 June to 14 July 2023 to estimate the 2023 crop production, forecast cereal import requirements for the 2023/24 marketing year (July/June) and (to add later WFP's goal). The mission identified measures to address some of the most pressing structural challenges to the agricultural sector in view of improving national food security and strengthening the resilience of the agricultural sector in line with the National Development Strategy.

The mission held extensive meetings to discuss the status of the agricultural sector and the 2023 production prospects with staff of various relevant government institutions, in particular the Ministry of Agriculture (MoA), the Agency on Statistics (AoS) under the President of the Republic of Tajikistan, the Agency for Hydrometeorology (AfH) under the Committee of Environmental Protection and the Agency for Land Reclamation and Irrigation (ALRI). In addition, the mission held consultations with staff of the United States Agency for International Development (USAID)/Development Alternatives Incorporated (DAI) and the International Food Policy Research Institute (IFPRI).

Organized in three teams, FAO staff, accompanied by national representatives from the MoA and the AoS, visited 43 districts in the three main crop producing regions of the country.[1] The Gorno-Badakhshan Autonomous Oblast (GBAO) was not covered by the mission as the overall contribution to the food supply is minimal. The districts visited were selected with the aim to cover the existing diversity of crops, livestock and agroclimatic conditions. Experts from MoA and AoS joined the field teams along with three national agronomist consultants. At district level, the mission held meetings with staff of MoA and AoS departments as well as with *jamoat* administration and statistic officers in a few locations. The mission visited crop and livestock *dehkan* farms, household backyard producers and enterprises in different agroclimatic zones. Field observations were conducted along transect roads at subdistrict level. The mission travelled to summer and all-year-round pasturelands and held discussions with transhumant and resident herders. Local wholesale and retail markets were visited in Dushanbe and at district level.

In 2023, agriculture benefited from favourable rainfall and irrigation conditions, while farming inputs, fertilizer in particular, have been more accessible to farmers compared to the previous year as prices on the local markets decreased by about 40 percent. The cold 2022/23 winter generally had a beneficial effect on field crops as it reduced the outbreaks of various pests, by killing wintering eggs or larvae. However, the mission observed that pest and disease outbreaks

[1] The mission held detailed meetings with staff of MoA and AoS departments in two regions (Sughd and Khatlon) and 22 districts:
Team 1: Bobojon Gafurov, Konibodom, Zafarobod, Mastchoh, Devashtich, Panjakent and Kuhistoni Mastchoh districts.
Team 2: Tursunzoda, Rudaki, Rasht, Lakhsh, Fayzobod, Yovon, Khuroson and Vahdat districts.
Team 3: Sangvor, Kushoniyon, Vakhsh, Balkhi, Kubodiyon, Vose and Khovaling districts.

was significant on crops where rotation is insufficient, namely potatoes and cotton. The locust population were kept under control by timely operations carried out by MoA. Natural hazards incidence on field crops remained low in 2023.

Aggregate 2023 cereal production, including wheat, barley, rice and potatoes (in cereal equivalents), is forecast at 1.39 million tonnes, about 19 percent above the past five-year average. Wheat production achieved an estimated 1.05 million tonnes, about 22 percent above the average and the highest on record. Barley production is estimated at 169 900 tonnes, 21 percent above the average. Paddy production is forecast at an average level of 65 800 tonnes. Maize production is about 8 percent above the average, with a production estimated at 104 700 tonnes. Potato production is estimated 1.08 million tonnes, about 6 percent above the past five-year average. Pulses cultivated area is limited (only 18 000 hectares), but production is expected to increase by over 5 percent compared to the average, with an estimated production of 30 200 tonnes.

Cotton production is estimated at 386 500 tonnes, about 2 percent above the average, but 4.5 percent less than in 2022, due to a reduction of cultivated area and high damages by pests. The price of cotton has steadily decreased since last year and it is expected at very low levels at harvest time in September, with a significant negative impact on *dehkan* farmers' income.

The production of fruits and grapes has been severely affected by winter frost. Fruit crops suffering most damages are pomegranate, almonds, grapes, citrus and figs. The loss of harvest ranges from 20 to 100 percent depending on the tree species and location of the farm. In some cases, the trees' cambium and sapwood froze, leaving branches or entire trees dead in the spring. The production of pomegranates and, to a lesser extent, citrus and almonds will be affected also for the coming years. Apricot, apple and pear orchards were not affected by winter frost and their production is expected to be above average.

Favourable rainfall since the autumn of 2022 and constant access to veterinary services, resulted in better-than-average conditions of livestock and pasture. The number of cattle, sheep and goats, and horses have steadily increased over the past five years. The mission anticipates that cattle as well as the sheep and goat population will continue to increase in 2023 by 2 and 3 percent, respectively. The total population of cattle is forecast at 2.6 million, while the population of sheep and goats is expected to reach 6.5 million heads by the end of 2023. Horses are expected to slightly decrease by 2 percent as the popularity of the *buzkashi* game and traction horses are declining. Poultry is expected to increase by 2 percent as enterprise farms are responding to increased local market demand.

The mission identified a major bottleneck in the livestock sector related to the lack of access to pasture and animal feed by most household farmers. The mission also found issues related to timing of livestock migrations to summer pastureland management that could be addressed by improving information exchanges between MoA and AfH.

With an estimated utilization of 2.7 million tonnes of cereals and potatoes (in cereal equivalent), the anticipated import requirements for the 2023/24 marketing year (July/June) are estimated at 987 000 tonnes of wheat, 70 000 tonnes of rice and 4 000 tonnes of potatoes. This represents a 5 percent decrease of wheat imports compared to the past five-year average. Wheat import forecasts represent 49 percent of the total anticipated wheat utilization, while rice imports represent 64 percent of the total rice utilization. The expected food deficit is expected to be fully covered by commercial imports.

To understand the households' food security situation, the 7th round of the WFP Remote Food Security Monitoring System (FSMS) was carried out in July/August 2023 through telephone interviews that reached 1 650 households across the country. Results are representative for the four regions of the country, plus Dushanbe.[2]

[2] Although the sample was drawn using a structured random selection technique, bias cannot ruled out due to inequalities in mobile phone ownership along lines of wealth and gender. The sample size is statistically representative for each region at minimum with a margin of error of 7 percent at a 95 percent confidence level.

Pockets of food insecurity remain in the country, with 1.56 million people facing acute food insecurity, and nearly 50 000 of them severely food insecure. This represents an improvement compared to the same period last year, with a reduction in acute food insecurity from 20 to 16 percent, and a stabilization since early 2023. Acute food insecurity is heterogeneously distributed across the country, with the highest prevalence and number of food insecure in Khatlon Region. Some signs of deterioration reflected on the reduction of food secure households and the parallel increase of the marginally food secure groups, should be closely monitored.

Food consumption has also improved over the last year, with a reduction in the prevalence of households with insufficient food consumption from 11 to 8 percent. Nationwide, 750 000 people have insufficient food consumption, with nearly 110 000 of them having poor food consumption. Meeting micronutrient requirements remains challenging, especially for iron.

More than half of the population (59 percent) resorted to food consumption related coping strategies, with the highest percentage in Khatlon (67 percent). Consuming less preferred food was the most common strategy, followed by limiting portion size (23 percent), borrowing food or rely on friends and relatives. Reducing the number of meals or restricting adult consumption in order for children to eat was reported by 16 percent of households.

A similar percentage of households (59 percent) resorted to crisis or emergency coping strategies to cope with the lack of food or money to buy it. Improvements are observed in the severity of the livelihood coping strategies that households resorted to. The proportion of households employing emergency livelihood coping strategies has reduced by more than half compared with the same time last year, from 21 to 9 percent. However, resorting to any livelihood coping strategies, such as reducing expenses in health or education, spending savings or borrowing money, has increased over the last year, from 68 to 82 percent of households. Those strategies classified as "crisis", such as reducing expenses in health, has almost duplicated in the last year, from 27 to 50 percent of households applying them.

Almost half of the population, 4.7 million people, spend more than 65 percent of their monthly budget on food, which limits household capacity to cover non-food essential needs, such as health and education. Despite the slowdown of food inflation over the last year, the share of household expenditure on food has consistently increased across the country over the last two-year period. Half of the households borrowed money in the 12 months prior the survey, mainly to buy food, non-food items and cover health needs, indicating the challenges faced by households to cover basic needs. Half of the credits were sourced from banks and credit institutions, followed by family and relatives, and traders or shopkeepers, these last ones significantly more common in rural than in urban areas.

Households' economic access to food appears as the main driver of food insecurity, as indicated by the high percentages of households resorting to livelihood coping strategies, with a high food expenditure share and borrowing money to cover basic needs, mainly food. These strategies to cope with the limited budget to cover food needs compromise households' future productivity and resilience.

The monthly income of 27 percent of the households reduced compared to the previous year, limiting households' access to food and non-food needs. There were no major variations in income reduction across the regions. However, Khatlon had a slightly higher proportion of households reporting a reduction in income levels (29 percent).

Half of the households rely on irregular income sources as main livelihood, mainly on remittances and daily casual labour. Irregular income sources were more common in DRS and Khatlon, where the dependency on remittances as the main income source (31 percent) was more than three times higher than in Dushanbe (9 percent). Countrywide, half of the households (48 percent) had at least one immediate member working abroad, which represents the highest proportion since the first FSMS round in 2021. Almost every household (91 percent) in the country received remittances in the last 12 months and confirming the importance of this source of income in the country, particularly in rural areas.

Half of the households (48 percent) reported to have major concerns, being food access and availability (20 percent) the most frequently reported, followed by financial worries (12 percent) and health (9 percent). When asked about the assistance received, 9 percent of the households reported having received some sort of assistance in the three months prior the survey, mainly cash and food. Female-headed households, that represent 18 percent of all households in the country, are more likely to be food insecure, to resort to crisis or emergency coping strategies and to have high or very high food expenditure shares, limiting their capacity to cover non-food needs and compromising their future productivity. However, the magnitude of the food security differences by gender of household could be partly hidden due to the significant higher proportion of female-headed households in Dushanbe (25 percent) compared to other regions (15 percent). Further gender analysis by region is recommended.

The mission's recommendations are aligned with the National Development Strategy[i] and the Agri-food System and Sustainable Agriculture Development Programme (ASSADP) for the period up to 2030 and focus on a) building a national seed system; b) promoting sustainable climate resilient agriculture to address barriers to sustainable crop intensification; c) addressing the livestock-feed nexus that constraints animal husbandry intensification and sustainable pastureland management; d) providing financial support and inputs to replant orchards that have been most affected by winter frost; e) rethinking the agriculture statistic system in order to provide accurate and timely data on area cultivated, yield and production, as well as key factors of production for main field crops.

Recommendations include the continuation of food and/or cash transfers to the most vulnerable with particular attention to Khatlon and the scaling up of livelihood support interventions to reduce dependency on remittances and improve economic access to food. Continuous monitoring of households' food security is strongly recommended given the international context and high dependency of Tajik households' food security on remittances and irregular income sources.

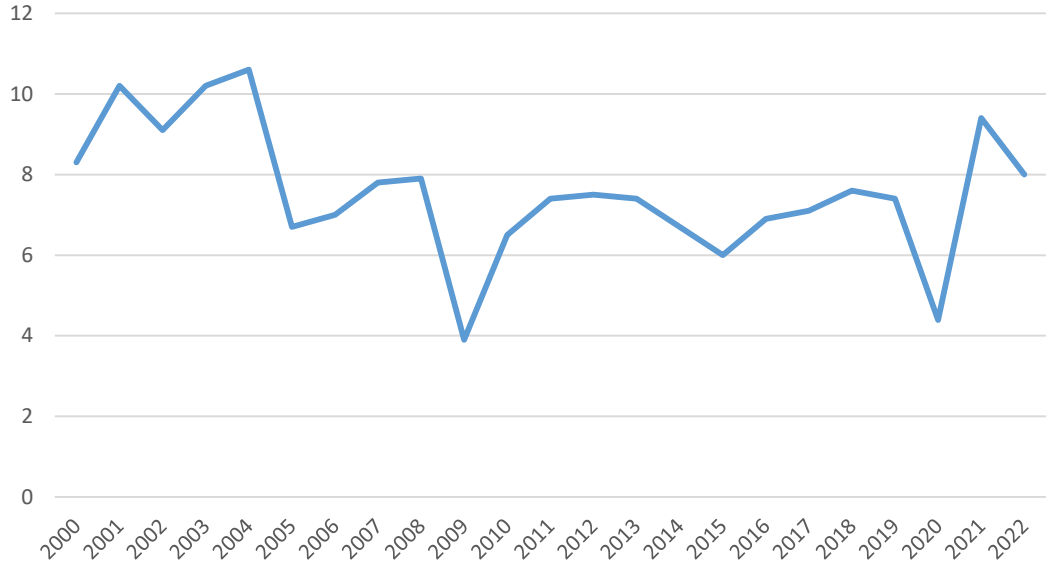
SOCIOECONOMIC CONTEXT

Macroeconomic situation

Tajikistan is a landlocked country in Central Asia. It borders Uzbekistan to the west, Kyrgyzstan to the north, China to the east and Afghanistan to the south. The country had a strong economic growth for the past 20 years, leading to improved living standards, with the poverty rate falling from 32 percent in 2009 to 13.4 percent in 2022 (at the international poverty line of USD 3.65/day; 2017 Purchasing Power Parity).[ii] Yet, Tajikistan remains among the poorest countries in Europe and Central Asia.

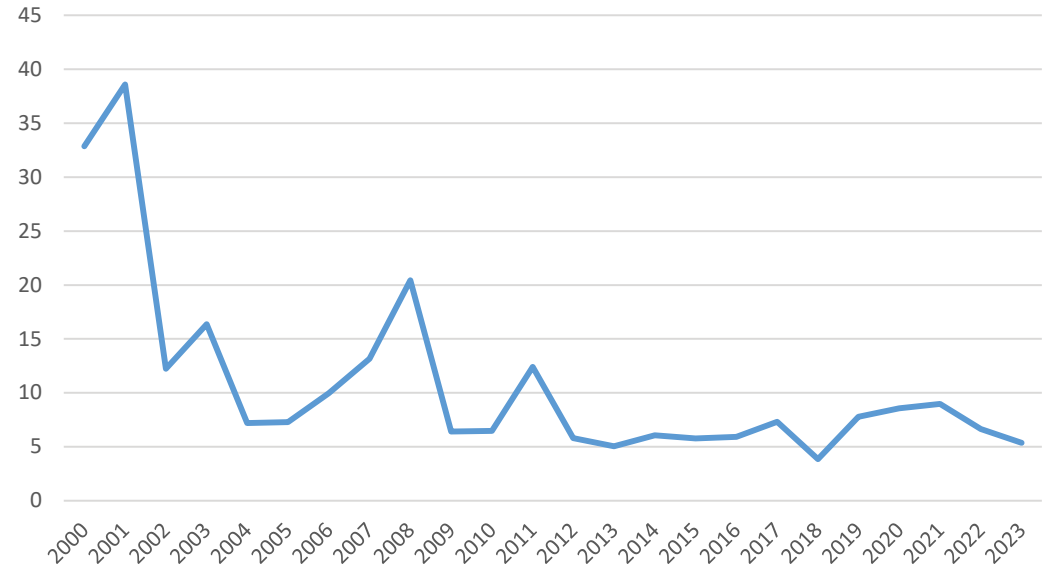
The country experienced a significant slowdown in growth in conjunction with the outbreak of the COVID-19 pandemic but retained a gross domestic product (GDP) growth rate above 4 percent in 2020. GDP growth recovered to 9.4 percent in 2021 and it was at 8 percent in 2022 (Figure 1),[iii] driven by the strong labour demand by the Russian Federation that, combined with the appreciation of the Russian rouble, resulted in substantial remittance inflows. This positive shock fueled households' consumption.[iv]

Figure 1: Tajikistan – Gross domestic product (GDP) growth (constant prices, national currency)



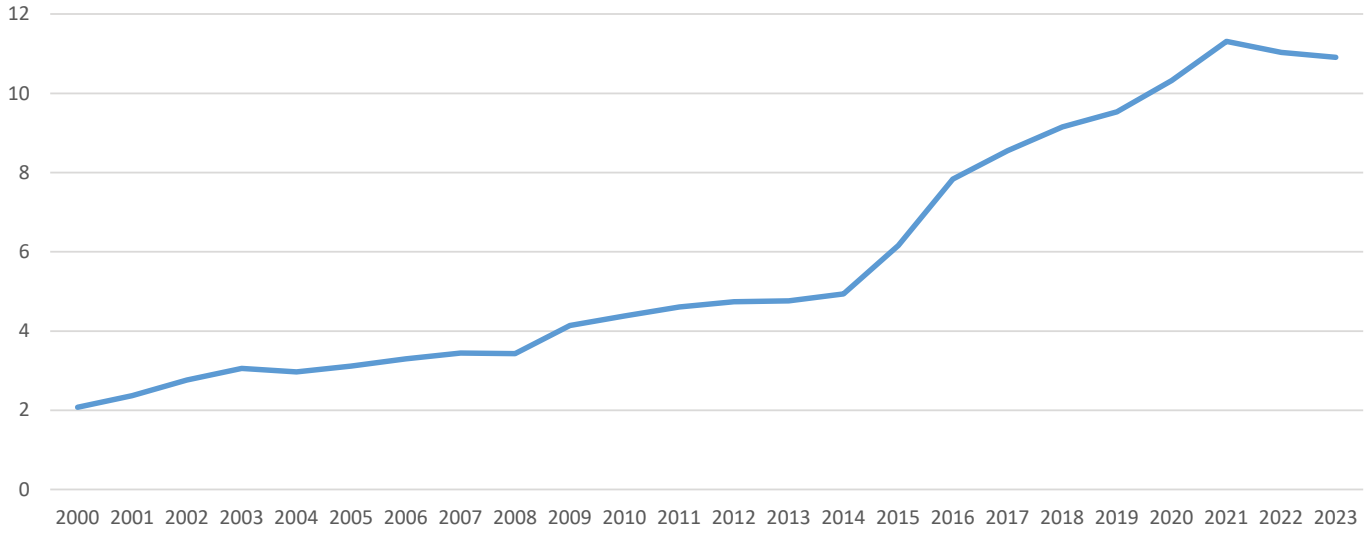
Source: Authors' own elaboration based on the data provided by the International Monetary Fund (IMF) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan, 2023.

Figure 2: Tajikistan – Inflation (average consumer prices, percent change)



Source: Authors' own elaboration based on the data provided by the International Monetary Fund (IMF) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan, 2023.

Figure 3: Tajikistan – Official exchange rate (TJS/USD, period average)



Source: Authors' own elaboration based on the data provided by the International Monetary Fund (IMF) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan, 2023.

The International Monetary Fund (IMF) forecasts the GDP growth to decelerate to around 5 percent in 2023 (Figure 2).[v] Annual inflation was at 4.2 percent in 2022.[vi] The somoni (TJS) has appreciated against the United States dollar over 2022 and 2023 (Figure 3), which helped curb external price pressure.

The national economy remains heavily reliant on remittances, which originate primarily from the Russian Federation and nearly doubled since 2020, reaching an all-time high in 2022 and accounting for 50.9 percent of the GDP.[vii] Remittances contribute to boost households' consumption and investment as well as the overall country's economic growth.

However, remittances can also have adverse effects on the national economy as they can fuel inflation, appreciate national currency against the United States dollar (thus reducing competitiveness in external markets) and leave the national economy vulnerable to external pressures and shocks.[viii]

Administration

The territory of the country is divided into the following administrative-territorial units: Sughd Region, Khatlon Region, Gorno-Badakhshan Autonomous Oblast (GBAO), 62 districts, 18 cities, 57 settlements and 370 rural administrative units (*jamoati dehot*). The Districts of Republican Subordination (DRS) include 13 districts in the central part of Tajikistan. The capital, Dushanbe, has a separate administrative status and is divided into four districts.

Population

The country's population by mid-2023 is estimated at 10.12 million, out of which around 775 000 people are living and working abroad.[ix] Population growth was above 2 percent from 2008 to 2020 and it is estimated by the AoS at 1.4 percent in 2023.[x] Tajikistan is the least urbanized country in Central Asia. About 74 percent of the population lives in rural areas[xi] and the vast majority is engaged in agricultural activities. The average population density is 71 people/km^2. However, due to its mountainous terrain, people congregate in valleys where population density is nearly 1 200 people/km^2 of arable land, one of the highest ratios of people to arable land in the world. As of June 2023, the country hosted 9 441 refugees and asylum seekers, nearly entirely from neighbouring Afghanistan.[xii]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AGRICULTURE

General

Agriculture contributed to 24.6 percent of the country's total GDP in 2022[xiii] and is the backbone of the rural economy. The sector employs more than 60 percent of the population.[xiv] The share of crop production accounted for 72 percent and animal husbandry 28 percent of the gross agricultural output.[xv] The national industry depends significantly on agricultural products. The production value of the food industry accounted for 28 percent of the total manufacturing industry in 2010.[3, xvi] Nearly two-thirds of existing industrial enterprises are involved in agribusiness.[xvii]

Agricultural commodities, especially cotton, vegetable, wheat flour, canned food, dried fruits and nuts, are an important part of the country's total exports. Cotton fibre alone accounted for 9 percent of the total export value in 2022.[xviii] Imports of grains, wheat flour as well as meat, poultry, eggs, rice, buckwheat, sugar and vegetable oil compensate for the agricultural production deficit to cover domestic consumption needs. The country imported about 60 percent of its cereal needs and 80 percent of vegetable oil in 2021, but it is nearly self-sufficient in meat and milk products, self-sufficient in potatoes, vegetables and fruits (exports greater than imports).[xix] Grain and wheat flour accounted for 6.3 percent of the total imports' value in 2022 (half the amount of petroleum products)[xx] with nearly 1 million tonnes costing an estimated USD 330 million.[xxi]

Climate and river basins

The climate is continental, but the country's mountainous terrain creates diverse climate zones ranging from arid deserts and steppes to polar tundra in the high elevations. The average annual precipitation amounts vary greatly, ranging from less than 100 mm in the southeast and Eastern Pamir high mountain desert and up to 2 400 mm on the

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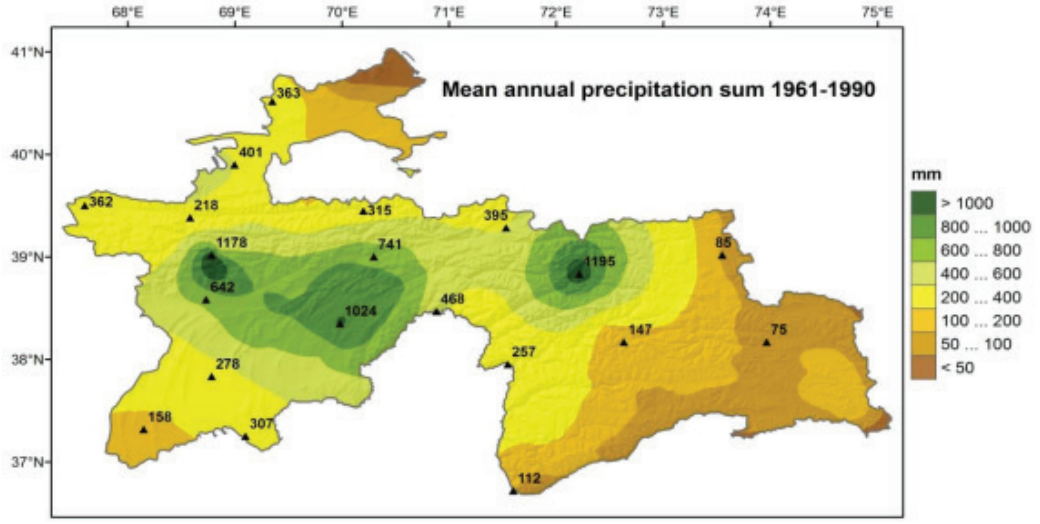
Fedchenko glacier in the centre. Moreover, there are three distinctive regions with relatively high precipitation amounts compared to the rest of the country (Map 1). The driest parts of the country are the eastern mountain areas, the southern lowland and the Ferghana Valley mostly receiving less than 200 mm of precipitation annually (Map 1).

Precipitation mostly occurs during the winter, between September and April. The average temperature is 16–17°C and the absolute maximum temperature recorded is 48°C in July; absolute minimum is minus 49°C in January. The average daily temperature is about 7°C in the winter and 18°C in the summer. Evapotranspiration varies from 300 mm/year to 1 200 mm/year, for stony soils and can be as much as 1 500 mm/year.[xxii]

About half of the national territory is located at 3 000 metres above sea level (masl), with mountains covering 93 percent of the country. The Pamir Mountains, located in the eastern part of the country, are part of the Himalayan chain and among the highest and most inaccessible mountains in the world. The highest elevation of the country is the peak of Ismoil

[3] Data breakdown by sector is not available after 2010.

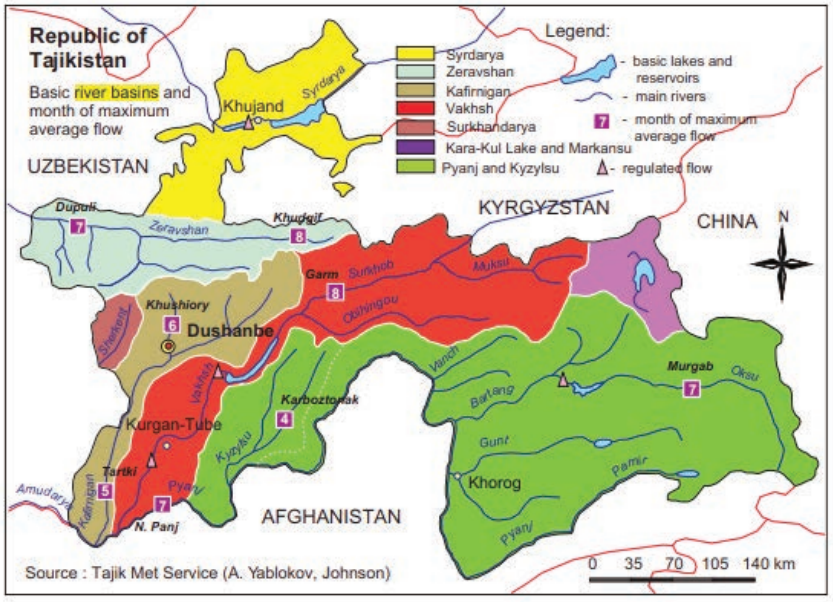
Map 1: Tajikistan – Mean annual precipitation, 1961–1990



Disclaimer: The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, are a or of its authorities, or concerning the delimitation of its frontiers and boundaries.

Source: OSCE. 2019. *The Role of Water User Associations in Improving the Water for Energy Nexus.* Agricultural Water Management in Tajikistan. Organization for Security and Cooperation in Europe (OSCE). 6 March 2019. https://www.osce.org/programme-office-in-dushanbe/413228.

Map 2: Tajikistan – Main river basins



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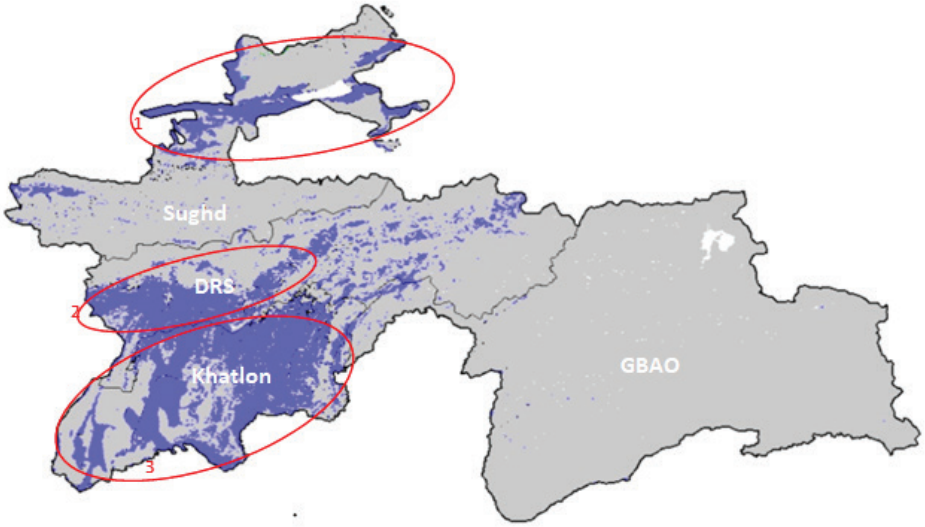
Source: Ministry for Nature Protection of the Republic Tajikistan. 2003. *National Action Plan of the Republic Tajikistan for Climate Change Mitigation.* Dushanbe, Tajik Met Service, December 2003. - 234 p. https://faolex.fao.org/docs/pdf/taj167334.pdf.

Somoni (7 495 masl). These mountain ranges constitute a global biodiversity hotspot where fruit-and-nut forests harbour the wild ancestors of numerous types of apples, pears, pistachios, almonds and cherries.

The country is the main glacier centre of Central Asia. Glaciers cover more than 8 000 km² , about 6 percent of the national territory, and they are mainly situated in the Pamir Mountains. They regulate river flows and climate, and are essential to the agricultural sector. The largest glacier is the Fedchenko glacier which length exceeds 70 km. Rivers are the main sources of fresh water, replenishing the Aral Sea and providing water for irrigation and power generation. The largest rivers systems are Pyanj, Vakhsh, Syrdarya, Zeravshan,

Map 3: Tajikistan – Main cropping areas



Note: Legends: 1. Ferghana valley, 2. Hissor valley and 3. Khatlon lowland.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, are a or of its authorities, or concerning the delimitation of its frontiers and boundaries.

Source: Authors' own elaboration based on the map from FAO/GIEWS Earth Observation. https://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&code=TJK. 2023.

Kafirnigan, Bartang (Map 2). In total, there are 947 rivers with the length of more than 10 km and about 1 300 lakes, 80 percent of them are situated at an altitude of 3 000 metres. Most of the water resources are formed in the basins of Pyanj and Vakhsh rivers. During the flood season, when snow melts intensively and heavy rainfall occurs (April–August), the rivers carry much suspended solids. The supply of water for irrigation is abundant and only suffers difficulties in drought years.

Cropping systems and crop calendar

Given the mountainous geography, the total arable land area is estimated at 847 000 hectares, only 6 percent of the national territory.[xxiii] Agriculture is mostly practiced in plains situated in lowland areas. There are three main agriculture production areas in the country (Map 3):

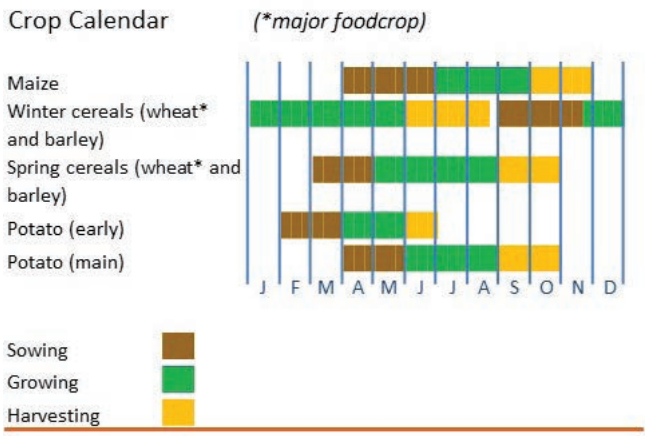
1. The Ferghana Valley in the north of the country along the Syr Darya River.
2. The Hissor Valley between Vahdat east of Dushanbe and Tursunzoda towns bordering Uzbekistan in the west.
3. The broad Khatlon lowlands in the southwest, broadly extending from Khovaling District in the east to the border with Uzbekistan in the west.

The contribution of GBAO to the national agriculture output is marginal.

The national agriculture comprises two broad cropping systems: irrigated and rainfed. In irrigated lowland, the major crops are cotton, fodder crops (alfalfa and maize for silage), wheat and orchards (apricots, pomegranates, almonds as well as vineyard, apples and stone fruits in mid-elevation). About 85 percent of crop production is from irrigated land. In rainfed land (low and higher land), cereals (wheat, barley, rye), legumes (peas, chickpeas, vetches, lentils) and oil crops (flax, safflower) as well as some fruit trees and vineyards are cultivated. In upland valley floors, wheat, barley, potatoes, alfalfa and horticulture crops are cultivated along with rainfed and irrigated pastures. About 77 percent of all wheat is planted in the autumn, while barley is mostly planted in the spring (63 percent).[xxiv] Rainfed agriculture in Tajikistan is risky due low and variable precipitation and, therefore, outputs vary substantially from one year to the other. Yields of cereal crops grown on irrigated land are two to four times higher than those cultivated on rainfed land. Unfortunately, the national statistics do not provide a breakdown of rainfed and irrigated production data.

Crops are cultivated at an elevation ranging from 300 to more than 3 000 masl. As a result, crop planting activities are continuously occurring

Figure 4: Tajikistan – Crop calendar



Source: Authors' own elaboration, FAO/Global Information and Early Warning System on Food and Agriculture (GIEWS), 2023.

from October to end-July, while harvesting takes place from February to November. According to AoS, there are three cropping seasons defined by the period of planting: Autumn (October to December), Spring (January to March) and Summer (from April onward). During the autumn season, the main crops planted include wheat, barley, pulses and oil crops. In the spring, the main crops are cotton and maize as well as wheat and barley in higher elevations. The summer season includes cotton, rice, maize for silage, sorghum, soybeans and beans. Potatoes can be planted in any of the three seasons, but in higher elevation, potatoes are planted in the spring. Vegetables can be planted throughout the year. Figure 4 presents a simplified crop calendar covering major food crops in the main producing areas.

Irrigation

In 2021, the area equipped for irrigation was 745 000 hectares,[xxv] out of which 74 percent was cultivated (548 000 hectares). Irrigation water is delivered by pumping stations to 62 percent of all irrigated land.[xxvi] These irrigation systems, built in the Former Soviet Union period, consist of four, five and up to six stages of pumping in a "cascade system". The main irrigated crop is cotton, accounting for 173 770 hectares in 2021, with two-thirds planted in Khatlon Region and one-third in Sughd Region. According to AoS, a cotton crop requires on average 10 000 m³ of irrigation water per hectare.[xxvii]

The agricultural sector is accountable for a significant proportion of the total national electricity bill. In 2015, agriculture was the third largest energy consumer in the country, accounting for 15 percent of the total annual energy consumption. In the summer, the share of agriculture energy consumption peaks to 20 percent. [xxviii]

Large agricultural fields in the south of the country have not been in use for many years because of salinization and swamping. Drainage infrastructures are often clogged with silt and debris, while drainages have never been established in some irrigation systems. The low irrigation efficiency results also in high water losses. Both combined factors cause the increase of ground water levels. Due to the deterioration of irrigation drainage networks and pumps as well as increasing soil salinity, the irrigated arable area has decreased over the past decades, despite rehabilitation efforts expanded by the Agency for Land Reclamation and Irrigation (ALRI). In 1991, the area of irrigated cultivated land was 612 500 hectares, while it declined to 566 250 hectares in 2022 (Table 1). The total area salinized and waterlogged by irrigation was estimated at 32 000 hectares in 2022.[xxix]

The need to effectively manage water systems led to the introduction of Water User Associations (WUAs) in the late 1990s, following the implementation of the first phase of Land Reforms in 1998–2000. WUAs were introduced as non-profit organizations

Table 1: Tajikistan – Total irrigated land ploughed, 1991 and 2019–2022

	1991	2019	2020	2021	2022	Percentage
Enterprise and *dehkan* farms	559 205	463 188	463 209	463 419	462 298	81.6
Household/backyard farms	53 346	103 659	103 922	103 308	103 952	18.4
Total	**612 551**	**566 847**	**567 131**	**566 727**	**566 250**	**100.0**

Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

operated by groups of water users who withdraw their irrigational water from an area covered by one or more distributary canals. Water users include ordinary cultivators of land, individual members of lease-holding farms, cooperatives, owners of private land and owners of home garden plots.

ALRI established a Support Unit to assist a total of 361 WUAs. Organizational capacity as well as technical and accounting skills are the main competencies that require consolidation. Several international and national non-governmental organizations (NGOs) provide training and technical assistance to increase the capacity of WUAs. A water fee system has been in place since 1996 for the supply of irrigation water services from state water management organizations. The fee encompasses the costs associated with the water provision from the main canal or pumping stations to farms within on-farm irrigation system. The fee is paid by farmers through collection in their respective WUA.[4] The collected fees go into an ALRI account to cover operational costs and reparation expenditures of on-farm irrigation and drainage systems. According to the Organization for Economic Cooperation and Development (OSCE),[xxx] the water fee is two to six times less than required to ensure adequate operation and maintenance of the irrigation and drainage systems, especially for pump irrigation. The same report concludes that some lift irrigation systems are not economically viable under current energy costs and economic conditions.

Farm structures

During the land reform, *kolkhoz* (collective farms) and *sovkhoz* (state [Former Soviet Union] farms) were privatized and divided into small private (*dehkan*) farms. Consequently, the agricultural sector is structured around three types of producers:

1. **Agricultural enterprises.** These are former state farms taken over by companies, but also include agricultural cooperatives, collective farms and state farms. While they account only for about 0.3 percent of all producing units, they operate 14.4 percent of the total agricultural land (124 000 hectares).[xxxi] In 2021, the agricultural enterprises registered were 4 890,[xxxii] each of them cultivating on average 25 hectares of land. They contribute to about one-fourth of cotton production and about 10 percent of wheat and barley outputs, but play a minor role in fruits and vegetable production (Table 2). These enterprises hold two-thirds of poultry heads, mainly layers, but very few cattle, sheep and goats (Table 12).[xxxiii]

2. ***Dehkan* farms.** These are individual farms generally resulting from workers' access to collective land (*kolkhoz*). *Dehkan* farms are independent economic entities, based on a family or some individuals who produce jointly on collective land. The *dehkan* farmers received a land lease certificate.[5] As the grant of the property on lease does not transfer the right of ownership, trade of land use certificates is restricted.[xxxiv] However, an informal market reportedly exists.[6]

[4] In addition to water fees, farmers pay membership fees to water user associations for the operation and maintenance of on-farm irrigation systems.

[5] In addition to water fees, farmers pay membership fees to water user associations for the operation and maintenance of on-farm irrigation systems.

[6] Rental cost for irrigated land reportedly is in the range of TJS 6 000 to TJS 7 000/hectare/year and TJS 3 000 to TJS 3 500/hectare for rainfed land. Source: USAID/DAI.

This category of land remains the most restricted in terms of crop choice by farmers. About 167 000 *dehkan* farms were registered in 2021,[xxxv] each operating on average 3.4 hectares of agricultural land. While they account for about 10 percent of all producing units, about two-thirds of all agricultural land is operated by *dehkan* farms (567 200 hectares). Only 12 percent of the land cultivated is irrigated, while 88 percent is rainfed. They contribute to three-quarters of cotton and nearly two-thirds of wheat and barley outputs, while producing more than half of the fruits, vegetables and potatoes (Table 2). *Dehkan* farms play a minor role in livestock production (Table 12). *Dehkan* farms and agricultural enterprises account for 11.5 percent of all farming units, but they operate 80.2 percent of the agricultural land.

3. **Household backyard farms.** Most the families in rural areas and small towns have access to small plots (0.08–0.20 hectares) of land, usually adjacent to their homes. The number of household backyard farms is estimated at 1.3 million, accounting for 88 percent of all farming units. With an average land size as little as 0.13 hectares, household farms operate only on 170 500 hectares, just about 20 percent of the total agricultural land.[7] By contrast, their contribution to national agriculture output is significant as they hold over 93 percent of cattle and 83 percent of sheep and goats and produce about 95 percent of milk (Table 12). They also contribute to more than half of maize production (mostly used as feed) and are responsible of about 40–45 percent of the national fruits and vegetables production.[xxxvi] Outputs from these small plots are oriented toward both self-consumption and sales to local markets. Household farms play an essential role in achieving national household food security (Figure 5).

Table 2: Tajikistan - Share of total crop production by type of farm, 2021 (percent)

	Agriculture land	Wheat	Barley	Maize	Potatoes	Fruits	Vegetables	Cotton
Enterprises	14.4	10.4	11.0	4.2	12.1	3.4	4.6	24.1
Dehkan farms	65.8	64.8	66.0	44.1	58.8	51.4	53.8	74.9
Household farms	19.8	24.8	23.0	51.7	29.0	45.2	41.6	0.0

Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

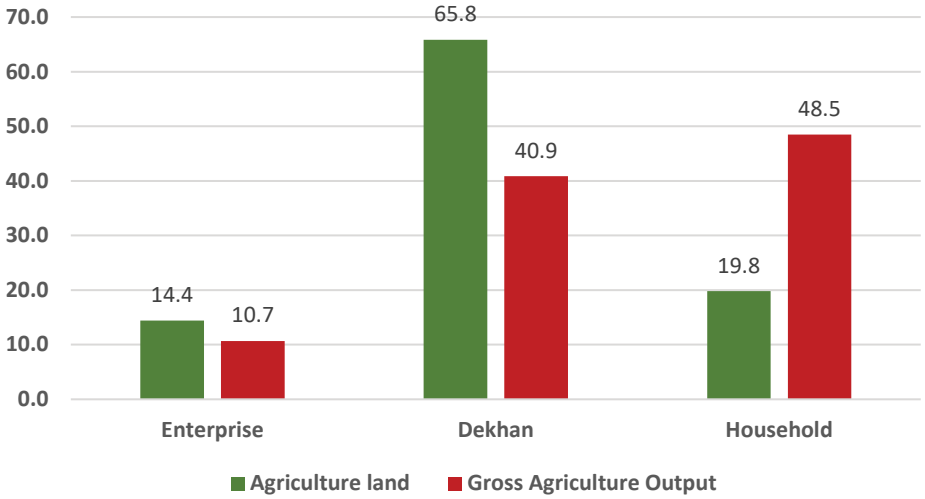
Table 3: Tajikistan – Share of irrigated and rainfed cropped area by type of farm, 2021

	Irrigated	Rainfed
Enterprises	23.8	76.2
Dehkan farms	12.4	87.6
Household farms	63.8	36.2

Source: AoS. 2022. *Allocation of agricultural land in 2011–2019, 2011–2021*. Cited 25 June 2023. https://www.stat.tj/en/tables-real-sector.

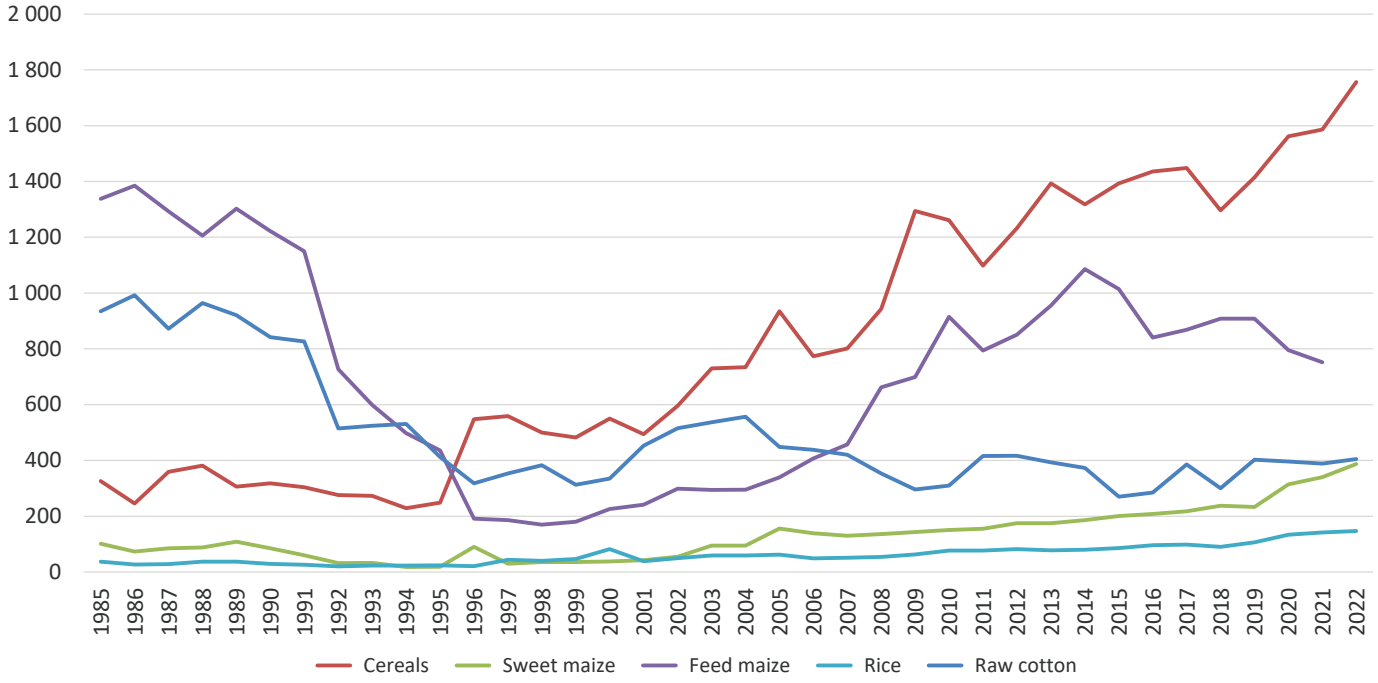
[7] Between 1995 and 1997, 75 000 hectares of small agriculture plots were temporarily transferred to individual households (without the right to build housing and other household facilities) for use as basic extensions of their private garden. This was implemented under a Presidential Decree (9 October 1995).

Figure 5: Tajikistan – Proportion share in agriculture land and gross agriculture output by type of farm, 2021



Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

Figure 6: Tajikistan – Cereals, sweet maize, feed maize, rice and raw cotton production, 1985–2022 ('000 tonnes)



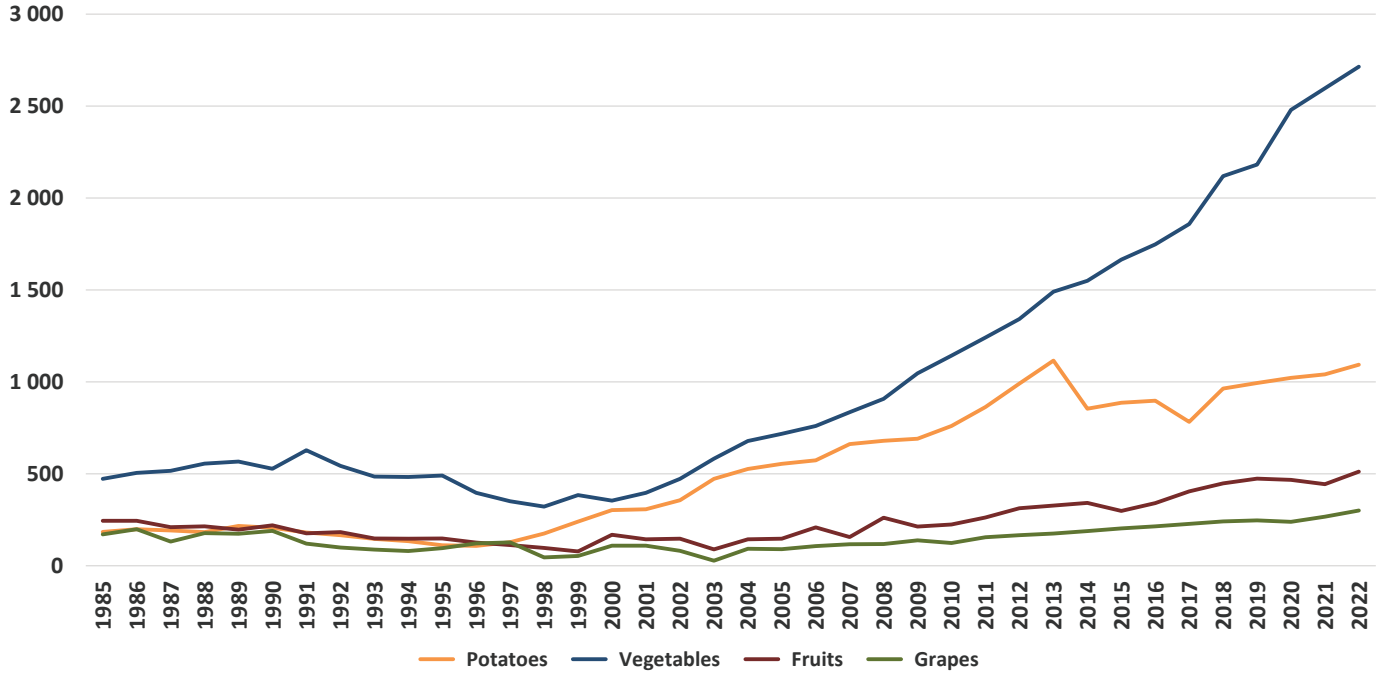
Source: AoS. 2022. *Production and yields of major agricultural crops, 1985–2021/22*. Agency of Statistics under president of the Republic of Tajikistan. Cited 25 June 2023. https://www.stat.tj/en/tables-real-sector.

Long-term production trends

Figures 6 and 7 illustrate the decline in agricultural production that occurred in the early 1990s and its recovery that followed the late 1990s' land reforms.

While rice and cotton never recovered to previous levels, the production of vegetables, potatoes and cereals have expanded steadily over the past 25 years. Yet, despite a significant potential, fruits and grape production increases remain limited.

Figure 7: Tajikistan – Potatoes, vegetables, fruits and grapes production, 1985–2022 ('000 tonnes)



Source: AoS. 2022. *Production and yields of major agricultural crops, 1985–2021/22*. Agency of Statistics under president of the Republic of Tajikistan. Cited 25 June 2023. https://www.stat.tj/en/tables-real-sector.

Livestock and pasture

The livestock sector significantly contributes to the national economy with nearly 7 percent of the GDP and it is an important source of income for rural communities as most cattle and small ruminants are owned by household farms (Table 12). The ruminant population is about 9 million heads, with 2.5 million cattle and 6.5 million sheep and goats. The livestock sector provides the main source of protein for the population, in the form of meat, milk and milk products as well as eggs.

Natural pastures occupy about 2.8 million hectares,[xxxvii] covering 20 percent of the national territory. Pastures play an important role in animal husbandry, while serving as habitats for many species of flora and fauna. They also represent a valuable gene pool for the selection and introduction of new sorts of fodder. Herbal cover of pastures conserves and increases soil fertility, preserves the soil from erosion and enriches the atmosphere with oxygen. Healthy pastures are essential in regulating surface runoff, thus reducing some climate risks such as floods and mudflows, particularly in foothills and mountainous areas.

Low-herb savannoides and desert autumn-winter-spring pastures are situated within the valleys and foothills in southern and northern areas of the country. Tall-herb savannoides prevail in mid-mountainous regions and have a very high productivity. Pasture productivity is closely associated with average rainfall amounts. The area of most important winter pastures and hayfields decreased due to land reclamation and its use as arable rain-feed lands. Many pasturelands on mountain slopes have been ploughed and now are used for the cultivation of cereals, where wash out of soils varies from 70 to 4 000 tonnes/hectare.[xxxviii]

According to a review of the livestock and animal feed nexus, farmers face severe shortages of feed in the winter, coinciding with the critical lambing period.[xxxix]

Forest

The country's forest area is about 421 000 hectares, 3 percent of the total land area.[xxxx] Hawthorn forests occupy an essential part of national forests. Pistachio forests are well adapted to hot and dry climate, and concentrated in southern parts of the country on altitudes from 600 to 1 400 masl. Walnut forests

grow in central areas of the country at altitudes from 1 000 to 2 000 masl and demand fertile soil and favourable climatic conditions. Juniper forests are major national forests and spread on elevations ranging from 1 500 to 3 200 masl. The distribution of poplars, willows, birches, sea-buckthorns and other types of groves is fragmented.

Gender

Women do not participate in agriculture on an equal footing with men. They experience substantial challenges, including the constraints of rigid gender roles in rural communities, limited access to financial resources, a lower level of knowledge about the legal requirements of running a farming enterprise, and dependence on men to navigate the various networks that are involved in the production and marketing of agricultural products.[xxxxi] Yet, due to rising labour migration, mostly among young and middle-aged men from rural areas, women are increasingly engaged in the management of *dehkan* farms both *de jure* and (more commonly) *de facto*.[xxxxii] Women's *de facto* role in farm management, related to the absence of men due to labour migration, is not captured in official statistics. It is common practice for men to remain the legal head of *dehkan* farms, even when they are absent from the country, while women are mainly involved into the day-to-day farm management. Moreover, while men often migrate to find work, women tend to accept low-paid agricultural jobs. Women are commonly hired into informal groups or brigades. Women's tasks are largely restricted to field labour, such as weeding, sowing, transplanting and harvesting, whereas the selection of seeds, fertilizers and plant protection materials is controlled by men. Women generally receive very low payments, often only in-kind such as cotton stalks or mulberry branches that can be used as household fuel.[xxxxiii] In 2014, only about 13 percent of *dehkan* farms were managed by women.

Climate risks

The country faces relatively high risk of disasters, ranking 117th out of 191 countries in the 2023 Index for Risk Management (INFORM).[xxxxiv] This risk is driven most significantly by exposure to drought, for which the country ranks 9th in the world. Risk is also enhanced by moderate levels of flood exposure and relatively low levels of coping capacity.[xxxxv] The country experiences multiple natural hazards such as floods, mudflows, landslides, avalanches and earthquakes every year.

Drought. Two primary types of droughts usually affect the country: a) meteorological droughts, usually associated with a precipitation deficit, and b) hydrological droughts, usually associated with a deficit in surface and subsurface water flows. At present, the country faces an annual median probability of severe meteorological drought of around 3 percent.[xxxxvi] The smoothing effect of the glacier and snow meltwater contribution to runoff has historically provided some protection against hydrological drought. Hydrological drought occurs more frequently in small river basins which do not originate from glaciers capped mountains.

Floods and mudflows. Riverine floods tend to occur either in the spring following heavy rainfalls or in the summer during snowmelt. Heavy rains during the snowmelt periods can further exacerbate riverine flooding. High intensity extreme rainfall events in steep terrains and narrow valleys triggers localized flash flooding every year. In high altitude (above 2 000 masl), floods can also be the result of temporary lake bursts.

Mudflows carry a high content of rocks, stones and other debris, and can cause severe damages to infrastructures. The territories with greatest mudflow activity are the basins of the Vakhsh, Obihingou, Kyzylsu, Pyanj and Zeravshan rivers, where about 70–100 mudflows occur annually. The greatest mudflow activity is usually observed in April (35 percent all mudflows) and in May (28 percent all mudflows). A mudflow in Faizobod District killed 117 cattle heads this spring. In the foothills and mid-mountains, mudflows occur in the spring, whereas in the high mountains they happen mainly in the summer. Intense precipitation is the dominant reason of mudflow occurrence.[xxxxvii]

Bank protection dykes and mud torrent discharge channels have been constructed to protect social and economic infrastructures. Dams and reservoirs play an important role in protecting property and infrastructures from floods and mud torrents.

Hail. Hailstones frequently cause damage to agriculture. The centre of most hail events is located along the Hisor range, primarily in the foothills. The number of days with hail per year increases with the altitude. At the same time, the maximum reoccurrence of hail ranges from 0.7–1 day in lowland areas to 4–8 days in high altitudes. The Hisor Valley is known for the large frequency of hail events, which ranges on average from 1.9–3.5 days per year. In 1961–1990, the number of days with hailstone in lowland and foothill areas decreased by 60–80 percent.

AGRICULTURAL PRODUCTION IN 2023

Rainfall and climatic conditions

The Agency for Hydrometeorology (AfH) under the Committee of Environmental Protection carries out climate and agrometeorological monitoring. Currently, the monitoring of key parametres is undertaken through a network of 98 meteorological and agromet stations. AfH operates on a commercial basis and has established a marketing centre that provides historical data and analysis. The agromet stations are staffed with observers who conduct phenological and crop development monitoring on wheat, cotton, potatoes, alfalfa, maize and fruit trees. With the support of the academia, AfH produces a decadal agromet bulletin. The agromet parameters analysed are listed on the AoS website[xxxxviii] and include stages of crop development as well as forecasting on soil moisture reserves on rainfed land, agrometeorological conditions for the spring season and crop yield forecasting. Amongst other services, AoS also provides short-term and long-term hydrometeorological forecasts. Overall, the AoS plays a critical role in building a national food security/early warning information system and strengthening agricultural resilience.

However, the lack of commercial demand by farmers and government institutions is the main constraint raised by the head of AoS. Currently, the agromet bulletin is shared with the President and Prime Minister offices and relevant regional authorities. Other government agencies and ministries can request the data. International agencies must request agrometeorological products via the Ministry of Foreign Affairs.

Generally, the country has benefited from above-average rainfall amounts in the autumn 2022, with an unusual peak of precipitation in early November. Above-average rainfall in February (Figure 8) increased soil moisture reserves, particularly on rainfed land, creating favourable conditions for

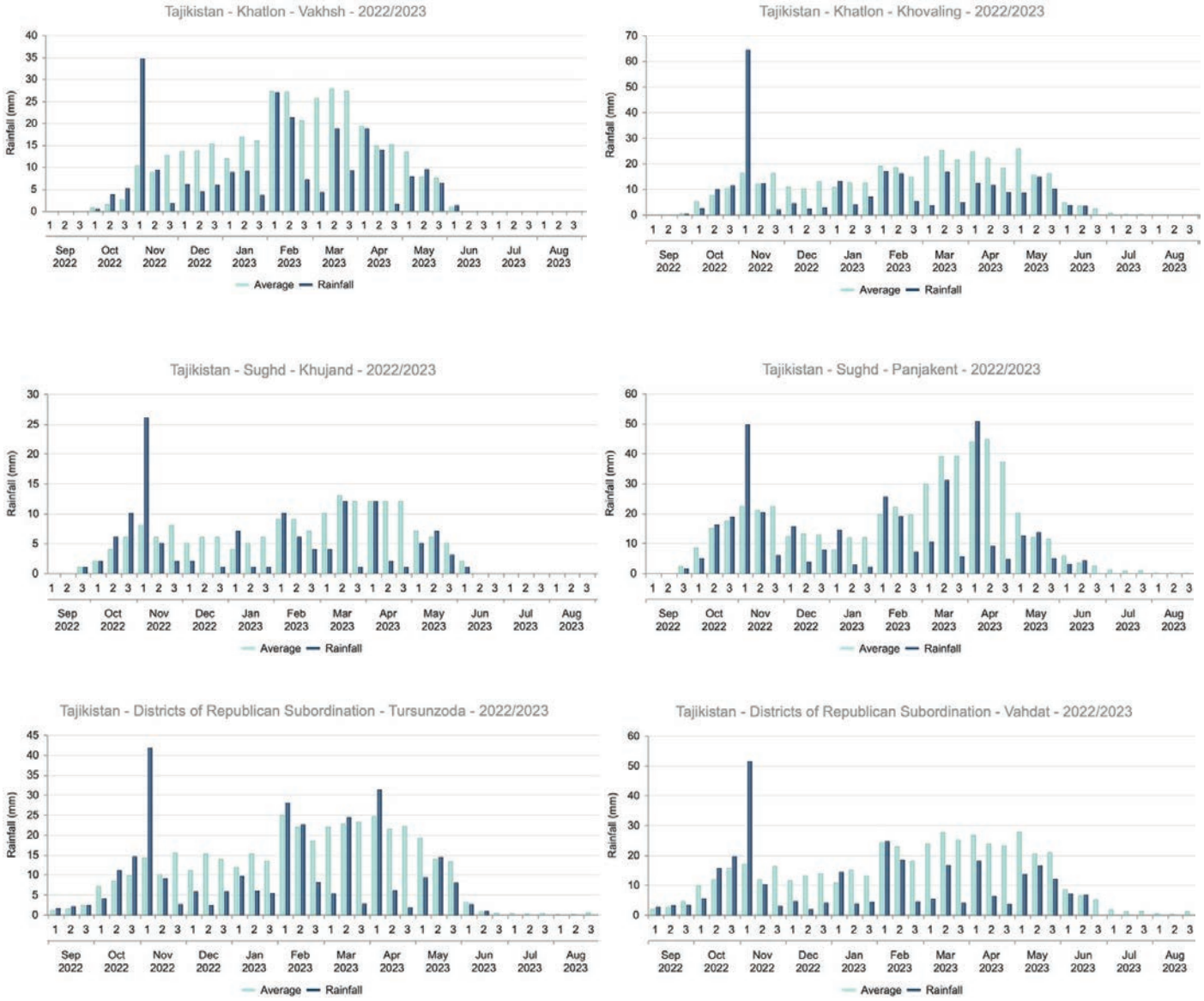
land preparation, especially in the Khatlon and DRS regions. As some of the rainfed cultivation takes place by ploughing pastureland, the increases are not fully captured by the national statistical system.

Rainfall during the first two decades of February sensibly improved vegetation conditions (Map 4) which was above average in most parts of the country. However, autumn and winter precipitation fell in the form of snow at higher elevations, followed by cold weather. This caused a sudden and particularly low Normalized Difference Vegetation Index (NDVI) from November onward throughout the winter months in those elevations, contrasting sharply with the situation in lower elevations.

Temperatures in January and February 2023 were unusually cold, dropping below -25°C in Hisor Valley (on 8–9 January 2023) and resulting in widespread frost damages to fruit trees in DRS and Khalton regions, and to a lesser extent, in Sughd Region.

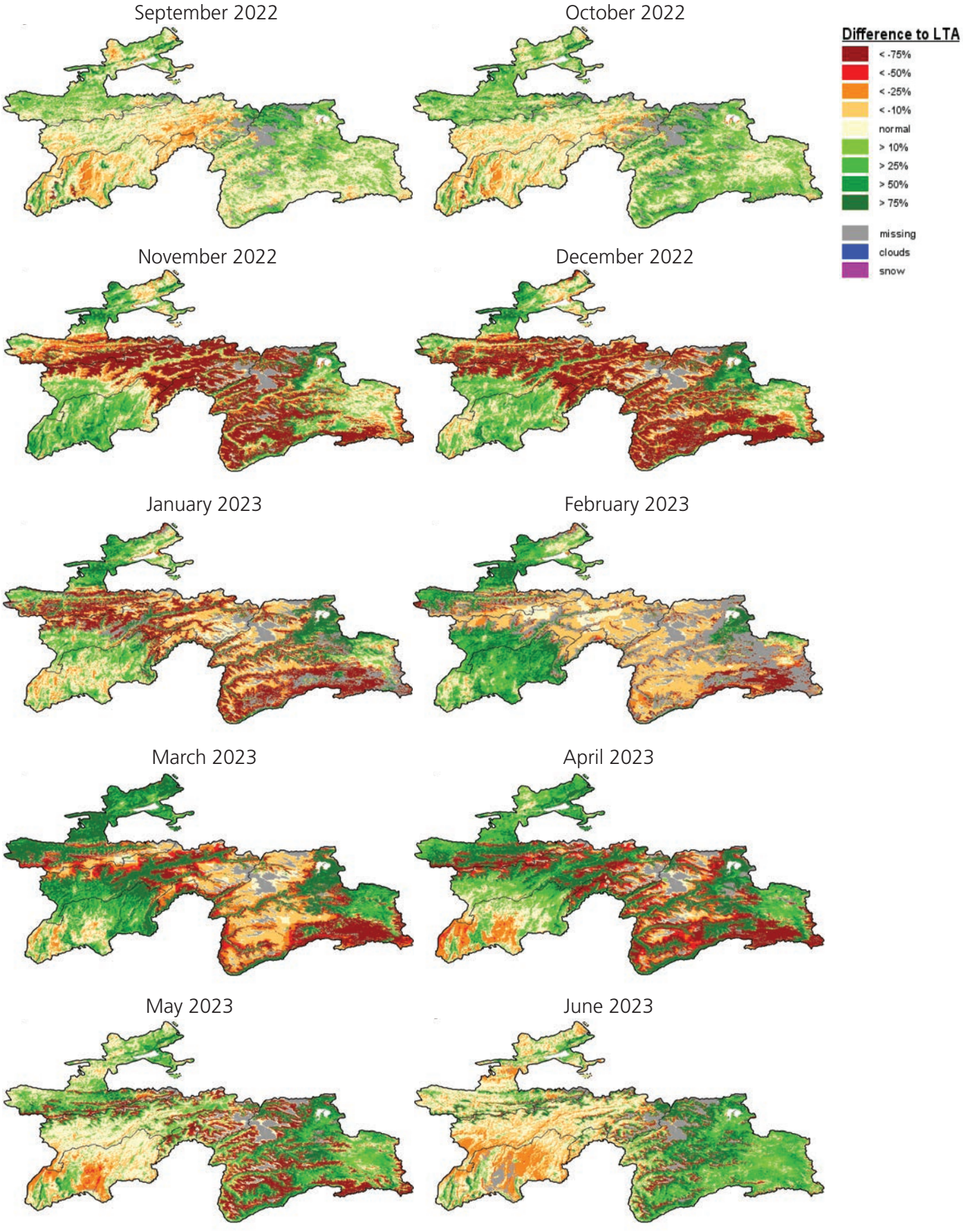
In lower lands of Khatlon and Sughd regions as well as in valley floors in DRS, the 2022 autumn rainfall generally resulted in an above-average NVDI, indicating good pasture conditions and favourable winterization of cereal crops.

Figure 8: Tajikistan – Rainfall estimates, September 2022–June 2023



Source: WFP. 2023. Vulnerability Analysis and Mapping (VAM) of World Food Programme (WFP) - Seasonal Explorer https://dataviz.vam.wfp.org/.

Map 4: Tajikistan – Normalized Difference Vegetation Index (NDVI), September 2022–June 2023



Source: FAO. 2023. FAO/Global Information and Early Warning System on Food and Agriculture (GIEWS) Earth Observation. https://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&code=TJK. 2023.

Precipitation amounts were below average from March onward throughout the spring of 2023. Gradually, this resulted in lower NDVI as of April onward in the southern part of Khatlon Region, suggesting an earlier-than-average drying of pastures. Loess soil in the country can store significant quantity of water in its lower layers, allowing rainfed crops to complete its cycle. In May, vegetation became totally dry in locust breeding areas in the pasture zone of Khatlon, but in the north it was still green.

In high elevations, vegetation conditions were below average until May. Late melting of snow improved pasture biomass conditions in summer pasturelands.

In Sughd Region, vegetation conditions remained generally above average throughout the spring. However, average rainfall is much lower in Sughd and is insufficient for rainfed crops cultivation in much of the northern part of the region. Here, soils also have a lower water retention capacity compared to the Loess in the south. As a result, pastures generally yield less biomass than in the south and rainfed crops, cultivated only on the mountain slopes, are sensitive to dry spells.

Seeds

Planting material is largely imported, through either trading companies or individual traders. In some instances, farmers reported crop germination and early growth failures due to poor quality or inadaptability of imported seeds. From 2009 to 2011, the seed testing central laboratory in Dushanbe was accredited according to the International Seed Testing Association(ISTA) rules. Currently, the laboratory building is largely degraded and most of the equipment is out of order or obsolete. The laboratory cannot perform seed testing according to international standards. Capacity to check the quality of imported seed is, therefore, not available. A new laboratory is reportedly under construction and should be finalized at the end of 2023. A new process for seeking ISTA accreditation could start when a new seed testing department will be installed in the central laboratory of the Food Security Agency.[xxxxix]

Regarding wheat, mainly from domestic production, farmers mostly procure uncertified and untreated seeds from the local markets. Maize seeds for grain production are largely certified hybrid cultivars imported from China (mainland). For maize silage, farmers usually keep their own seeds or procure them from the local market. For cotton, farmers use seeds either from cotton ginning factories or imported from Türkiye, China (mainland), Uzbekistan or supplied by Syngenta AG. For potatoes, most producers use tubers from the previous harvest as seeds. Some uncertified ware potatoes are imported from Pakistan and used as seeds. The practice of cutting potato tubers, without disinfectants, to reduce the seeding rate, is widespread.

The MoA seed department estimates that the country produces between 0.5 to 5.0 percent of its requirements in 91 seed farms. The list of authorized seed farms is sanctioned by the Decree 611, dated 19 December 2018. The seed department neither keeps records of the production of certified or uncertified seeds by authorized farms nor of the quantity of seeds sold on the local markets. MoA imports elite and super-elite seeds and provides them free of charge to seed farms for multiplication. According to MoA, seed farmers are free to sell seeds obtained from elite and super-elite material on the local market. In accordance with the budget allocated from the Ministry of Finance, MoA recovers some seeds from the seed farms on a revolving principle. In 2018, the MoA seed certification authority was transferred to the Food Security Agency. The seed farms visited by the mission were largely inactive and did not have basic storage, equipment, tools and knowledge to undertake seed production. With the support of development partners, MoA plans to conduct a full review of seed farm performance in view of delivering the necessary equipment (e.g., seed cleaners) and training package.

The mission observed that different cereal varieties are frequently mixed in the same field. As the production of straw is nearly as important as grains (see section on factors affecting yields below), the use of high-yielding wheat varieties may not be a better solution to farmers, as high-yielding wheat is often less weed competitive than landraces. Therefore, in the current context, obtaining certified high-yielding wheat seeds is not farmers' priority. In higher elevation (>2 000 masl), the mission noted a lack of adapted cereal varieties available on the local market.

Fertilizers

All fertilizers used in the country are imported.[8, xxxxx] The Levakant fertilizer plant, near Bokhtar, has remained closed since 2008. A new fertilizer mixing plant established by TALCO Chemical was inaugurated in November 2022 in Yovon District of Khatlon Region. Although currently the raw material is imported, there are plans to source it from a local mine located in Panjakent District In Sughd Province. However, at the time of the mission, locally mixed/produced fertilizers were not found on the local market.

Table 4 shows that fertilizer application rates have generally increased over the past years. Farmers reported to have increased fertilizer application rates in 2023 compared to 2022, particularly on cereals. On the local markets, prices of fertilizers remain high, but have decreased by 40 to 50 percent compared to one year before, improving access by farmers.

Fuel and price of farm mechanization

The price of diesel in main crop production areas of Khatlon (Bokthar market) and Sughd (Khujand market) regions doubled between January 2021 and March 2022 (TJS 6.4/litre). It reached a peak in July 2022 at TJS 13.3/litre. From August 2022 onward, the price of diesel has constantly decreased until July 2023, up to TJS 10.5/litre (Figure 9). At the time of land preparation for spring crops in March 2023, diesel price was 10 percent below the level of 12 months before, but it was still relatively high.

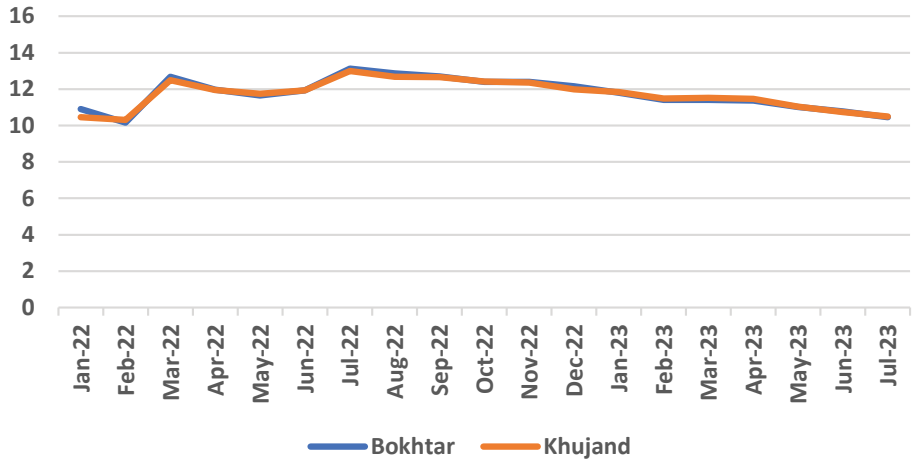
Data collated by the mission in the field indicates that the price of farm mechanization services (land preparation and harvesting) have slightly increased compared to the previous year, mainly due to high labour and maintenance costs.

Table 4: Tajikistan – Average fertilizer application, 2018–2022 (kg/hectare of pure nutrients)

	2018	2019	2020	2021	2022
Cereals	86	98	90	97	113
Potatoes	232	165	171	246	295
Vegetables	136	181	173	165	174
Cotton	150	186	161	168	169

Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

Figure 9: Tajikistan – Diesel price in Bokhtar and Khujand, January 2022–July 2023 (TJS/litre)



Source: Authors' own elaboration, World Food Programme (WFP), 2023.

[8] National fertilizer production dropped in the 1990s, from 83 500 tonnes in 1991 down to 4 600 tonnes in 1999. By 2010, no national production of fertilizers was recorded.

Agriculture energy tariffs and irrigation

The electricity for the agricultural sector is provided at a subsidized rate to farmers. The tariff for irrigation water pumping remains lower than for all other sectors. However, there is tariff differentiation between winter and summer periods in order to limit electricity consumption in the winter when power shortages occur. In the winter, electricity is provided at the household consumption rate, while in the summer a subsidy of approximately 65 percent is applied. Between 2022 and 2023, the agriculture electricity tariffs have increased by nearly 37 percent (Table 5).

The increase in agriculture energy tariffs was, however, not transmitted to the irrigation costs of the systems operated by ALRI. Since 1996,[9] irrigation fees have remained unchanged at 2 dirams/m^3 of water (including VAT).[xxxxxi] The irrigation system does not allow to account for the volume of water used by farmers on their fields. Therefore, it is applied a flat irrigation fee per hectare that varies only with crops and not with the quantity of water used (Table 6). As a result, farmers do not have any incentive to optimize the utilization of irrigation water. The mission observed overuse of irrigation water on some farmers' fields, which contributes to soil salinization and water logging.

Overall, irrigation conditions have been favourable in 2023, owing to sufficient rainfall amounts and river flows from all river basins. However, the irrigation systems face several structural challenges. Irrigation water is delivered by 798 electric pumping stations to 62 percent of all irrigated land.[xxxxxii] The pumps have been installed between the 1960s and 1980s and require constant maintenance and repair in order to

Table 5: Tajikistan – Energy tariffs for irrigation water pumping

	2018 to July 2022 (dirams/kwh)	August 2022 to July 2023 (dirams/kwh)	Changes (percent)
Vegetation period (1 April to 30 September)	6.73	9.20	36.7
Winter period (1 October to 31 March)	19.37	26.51	36.9

Sources: Authors' own elaboration based on the data provided by the ALRI to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan, 2023.

Table 6: Tajikistan – Irrigation water requirement and irrigation cost, by crop

Crop	Water requirement/hectare (m^3)	Irrigation cost/hectare and season (TJS)
Rice	37 000	740
Alfalfa	12 500	250
Vegetables	12 000	240
Cotton	10 000	200
Orchards	9 500	190
Maize (first growing season)	9 000	180
Maize (second growing season)	7 800	156
Other fodder crops	6 500	120
Potatoes	6 500	130
Maize for silage (second growing season)	3 500	70
Cereal (winter)	2 200	44

Sources: Authors' own elaboration based on the data provided by the ALRI to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan, 2023.

[9] 1.77 dirams/m^3.

be operational. Replacing failed pumps and repairing damaged canals in time is a continuous challenges to ALRI. In 2023, the total area of irrigated land that could not be cultivated due to non-functional irrigation systems is estimated at 12 000 hectares. In Sughd Region, where irrigation is no longer functional, farmers are investing in drilling their own wells, fetching water as deep as 200 metres. In Zafarobod District, 550 hectares of irrigated land is no longer cultivated as the local irrigation system is not functioning. The district authorities registered over 1 000 new wells during the past years, each irrigating between 5 and 15 hectares. Farmers reported that the water table is lowering as the number of private wells is increasing, leaving many pumps dry.

In areas irrigated by pumps, the mission observed that planting of spring and summer crops were delayed in some areas due to failure and repair of electric pumps. This affected yields of summer crops and cotton in particular, but wheat was also negatively impacted in some locations. In Konibodom District, most of the irrigated land is located at the end of the 270 km long Ferghana Canal, which takes its source of water in Kyrgyzstan. Local authorities reported trans-border issues on water distribution along this major irrigation canal, affecting crop yields. These important constraints to crop production have remained constant and unsolved over the past several years.

Pests and diseases

The cold 2022/23 winter generally had a beneficial effect on field crops as it reduced the population of various pests, by killing wintering eggs or larvae. In general, the impact on crops of pests in 2023 was lower than in previous years, as reported by local authorities and farmers. However, the mission observed that pests and diseases caused more damages on crops where rotation is insufficient, namely potatoes and cotton. Table 7 lists the main pests and diseases observed during the field work. To cope with a generally increasing pressure of pests and diseases, the import of pesticides has tripled between 2018 and 2022 (Figure 10).

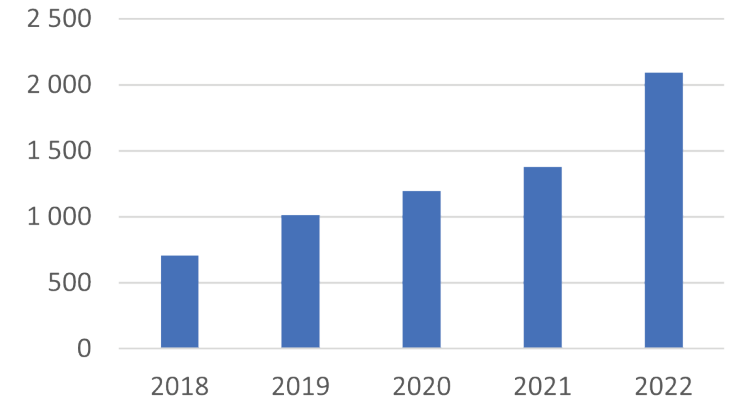
The Moroccan Locust (Dociostaurusmaroccanus, DMA) and the Italian Locust (Calliptamusitalicus, CIT) are both present in the country and their populations were not affected by the 2022/23 cold winter. DMA is a major threat to crops and is concentrated in the southern part of the country and in part of DRS, while CIT is present in Sughd Region. In April 2023, the natural vegetation dried in DMA breeding areas of pasture zones of Khatlon, limiting DMA hopper development, but triggering migrations. Invasions by DMA swarms into cropping areas from dried-out pastures were reported in Panj, Farkhor, Hamadoni, Jayhun and Vakhsh districts. Since early 2023, the MoA capacity in locust control was enhanced with equipment delivered by FAO. Control operations by MoA were carried out on 129 000 hectares since the start of 2022/23 campaign, with an increase of 25 percent if compared with the previous year. In order to prevent severe damages, some areas were treated twice. The MoA did not report crop losses at central, regional or district levels, where the mission conducted field visits. However, some CIT hoppers were observed by the mission in Devastitch District in Sughd Region.

Table 7: Tajikistan – Main pests observed during the CFSAM field work

Crop	Main pests observed
Cereals	Loose smut, common bunt, yellow rust, locust
Potatoes	Colorado beetle, wire worms, potato tuber moth, aphids, potato blight
Maize	Maize smut
Fruits	Apple: aphids (all), codling moth (apples, walnuts, apricots), cherry fruit fly, moniliasis (apricots), apple scab, shot-hole blight (apricots), wood canker (peaches, cherries, apples),
Melon	Melon fly
Cotton	Spider mite, various worms and caterpillars
Alfalfa	Egyptian alfalfa weevil

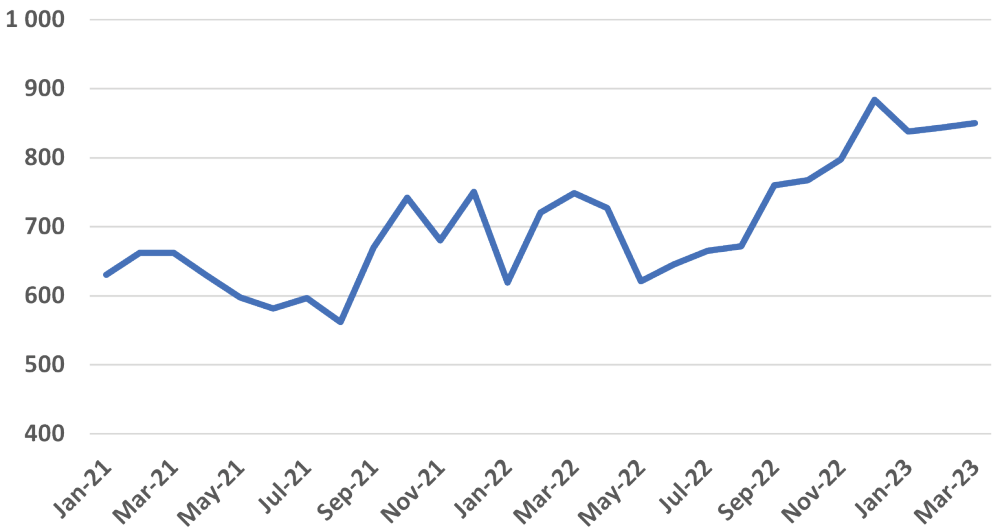
Sources: Authors' own elaboration based on the data collected during the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan (forecast), 2023.

Figure 10: Tajikistan – Imports of pesticides (tonnes)



Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

Figure 11: Tajikistan – Monthly wage in the agricultural sector (TJS/month)



Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

Agriculture labour

Agriculture labour wages increased by 14 percent compared to the previous year (March 2022–March 2023), mainly due to a slight contraction of labour availability in agriculture following migration of rural people in search of job opportunities.

Area planted in 2023

The area planted is estimated by AoS. Disaggregated data by rainfed and irrigated land are not available.[10] The methodology is based on self-reporting by farmers, but the data collection mechanism differs depending on the farmers' category. Most of the 4 890 registered agricultural enterprises provide

[10] The data collection formats on area planted do not distinguish between irrigated and rainfed land.

monthly report updates through an online portal, while the estimates of the area planted by *dehkan* farms are updated twice a year by filling three forms. An online portal is also available for *dehkan* farmers willing to report electronically, but its use is currently low. In addition, 10 percent of all *dehkan* farms shall provide reports on a monthly basis to the district AoS office. For household/backyard farms, the area planted is estimated on the basis of a sample survey covering 5 percent of all farms, conducted twice a year. Considering there is approximately 1.3 million household/backyard farms, the total sample size is about 65 000 for each round. The sample is distributed across the 379 rural *jamoat*. The selection of households to be sampled varies across districts. In some districts, the sample is drawn from a household/backyard farms list kept by the district statistic office, while in others, the household/backyard farm registry is kept at *jamoat* level. In some *jamoat*, the sampling is reportedly done by selecting farms every other 20 houses, as per the house street numbers. In addition to the sample survey, in order to estimate small crops such as vegetables, data are reportedly collected from all household/backyard farms (census), once a year, at the same time of the annual livestock census. To undertake these tasks, some *jamoat* have a dedicated AoS officer, while in many instances, the tasks are shared amongst the *jamoat* staff. Data entry is mostly done at district level by regular staff. For the sample surveys and the census, *jamoat* staffs received one or more electronic tablets. Although the agriculture statistic system is comprehensive in design, discussions held by the mission with district AoS and *jamoat* offices suggest that the amount of work required to implement the agriculture statistic methodology is overwhelming.

The mission reviewed and adopted the planted area estimated by AoS, but wheat and barley area planted was adjusted by the mission to account for an increased in rainfed cultivation on pastureland. Table 8 compares estimates of the 2023 planted area with the five-year average for the main annual crops. The total cereal planted area is estimated at 394 000 hectares, a 7.2 percent increase compared to the past five-year average. Expansion in rainfed wheat cultivation accounts for most of the increase, while observations from Khalton Region suggest that there was a slight decrease in irrigated wheat cultivation compared to the previous year. In total, an estimated 290 800 hectares of irrigated and rainfed wheat has been planted in 2023, about 8.9 percent more than the past five-year average. Area planted with barley was 2.3 percent above the average and the increase was mostly in rainfed areas. Paddy has remained at near-average levels, despite the high prices of rice on the local markets.

Planted area with maize for grain, mainly used as animal feed, is estimated at 18 500 hectares, about 8 percent above the average. Planted area with potatoes is estimated at 68 600 hectares,

Table 8: Tajikistan – Cereals, pulses, potatoes and cotton planted area and changes compared to the past five-year average, 2018–2023 ('000 hectares)

Area planted	2018	2019	2020	2021	2022	Five-year average	2023[1/]	Percent change
Wheat	255.5	264.0	269.6	274.8	271.1	267.0	290.8	8.9
Barley	72.3	71.8	71.1	69.9	68.2	70.7	72.3	2.3
Maize (grain)	15.9	17.0	17.4	17.6	17.9	17.2	18.5	8.0
Paddy	11.8	12.4	13.0	12.7	12.9	12.6	12.4	-1.1
Total cereals	**355.6**	**365.1**	**371.1**	**375.1**	**370.0**	**367.4**	**394.0**	**7.2**
Potatoes	49.6	51.8	52.7	57.2	56.1	53.5	58.6	9.5
Pulses	17.0	16.3	17.2	17.3	17.5	17.1	18.0	5.3
Cotton	185.8	185.7	185.4	173.8	181.5	182.4	175.7	-3.7

Note: Figures computed from unrounded data.

[1/] Wheat and barley area planted was adjusted by the FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to account for an increased in rainfed cultivation on pastureland.

Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

about 9.5 percent above the past five-year average. According to official data, cotton planted areas is estimated 175 700 hectares, 3.7 percent below the average.

Compared to 2022, the area planted with vegetables in 2023 has increased by 4.7 percent and it is estimated at 73 300 hectares, reflecting good market prospects for these crops. Onion accounts for most of the increase, boosted by high prices last year. Table A1a in Annex 1 presents the changes in planted area with vegetables between 2022 and 2023.

Crop yields in 2023

Crop yields and production are estimated by AoS, following a similar methodology as for the area planted. The *dehkan* and household/backyard farms data collected in June cover yields and production of autumn and spring crops, while the data collected in December cover for yields and production of summer crops. AoS does not conduct field measurements (crop cuttings) and exclusively relies on yields and production reported by farmers.

At district level, the mission evaluated the autumn and spring cereals (wheat, barley, maize) and pulses at harvesting time while the growth of summer crops (maize, rice, cotton) and spring cereals (wheat, barley) in higher elevations were observed at vegetative stages. The harvest for summer crops and spring crops in higher elevations will occur between August and November 2023. To forecast crop yields for these crops, the mission assumed that the availability of irrigation water remains favourable with normal melting of snow and glaciers during the summer, while field crops are not affected by unusual natural hazards or pest outbreaks.

Floods, mudflows and hailstorm incidences have been lower than average this year. Yet, specific locations where affected. In Rudaki, a mudflow event damaged 51 hectares of crops, while in Sangvor, 28 hectares of crop land was affected by flood. A hailstorm damaged 7 hectares of cotton crops in Rasht District (Khatlon Region).

In 2023, rainfall was generally favourable in terms of amounts and distribution, benefiting yields of rainfed crops that were reported to be above average by both farmers and local authorities. However, in Devastitch and Panjakent districts, rainfall amounts have been below average, leading to a reduction of 50 to 65 percent of yields compared to last year.

For potatoes, the main factors affecting yields are the lack of crop rotation, pests and diseases, poor-quality planting material, improper seed tuber sprouting and cutting of seed tubers without the use of disinfectants at planting. These factors are unresolved farming practices that affected yields in 2023 as well as in the previous five years.

The national 2023 average yield for wheat and barley is estimated at 3.6 and 2.4 tonnes/hectare respectively, about 12.1 and 9.6 percent, respectively, above the past five-year average, reflecting improved rainfall and access to agriculture inputs, in particular fertilizers. Maize, paddy and pulses yield is forecast at a near-average level, reflecting favourable conditions on the supply of seeds, irrigation and the application of fertilizers. Despite the improved access to fertilizers, yields of potatoes are expected at a slightly below-average level, due to high pressure of pests and diseases induced by lack of crop rotations. Cotton yield is forecast at 2.2 tonnes/hectare,[11, xxxxxiii] about 4.8 percent above the average, due to improved access to seeds, fertilizers and pesticides, while the impact of pests and diseases remains high due to the lack of crop rotations (Table 9).

Table A1b in Annex 1 presents the changes between 2022 and 2023.

Production estimates of main crops in 2023

Aggregate 2023 cereal production is forecast at 1.39 million tonnes, about 19 percent above the past five-year average. Wheat production achieved an estimated 1.05 million tonnes, about 22 percent above the average and the highest on record. Barley production is estimated at 169 900 tonnes,

[11] The share of fine-fibre cotton production is only 0.1 percent.

Table 9: Tajikistan – Cereals, pulses, potatoes and cotton yields and changes compared to the past five-year average, 2018–2023 (tonnes/hectare)

Yields	2018	2019	2020	2021	2022	Five-year average	2023	Percent change
Wheat	3.1	3.2	3.2	3.2	3.5	3.2	3.6	12.1
Barley	2.2	2.2	2.2	1.9	2.3	2.1	2.4	9.6
Maize (grain)	5.7	5.7	5.5	5.6	5.8	5.6	5.6	0.0
Paddy	5.1	5.1	5.4	5.5	5.5	5.3	5.3	0.0
Potatoes	19.3	19.1	18.7	18.1	19.5	19.0	18.5	-2.4
Pulses	1.6	1.7	1.6	1.7	1.8	1.7	1.7	0.0
Cotton	1.7	2.2	2.1	2.2	2.3	2.1	2.2	4.8

Note: Figures computed from unrounded data (forecast).
Source: Authors' own elaboration based on data provided by the Agency on Statistics under the President of the Republic of Tajikistan (AoS) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan (forecast), 2023.

Table 10: Tajikistan – Cereals, pulses, potatoes and cotton production and changes compared to the past five-year average, 2018–2023 ('000 tonnes)

Area planted[1/]	2018	2019	2020	2021	2022	Five-year average	2023	Percent change
Wheat	779.0	836.9	864.1	876.2	934.3	858.1	1 046.7	22.0
Barley	108.8	154.2	153.9	129.6	157.0	140.7	169.9	20.8
Maize (grain)	90.1	96.5	95.7	98.8	103.5	96.9	104.7	8.0
Paddy	60.0	62.6	70.1	69.6	70.9	66.6	65.8	-1.2
Total cereals	**1 037.8**	**1 150.2**	**1 183.8**	**1 174.2**	**1 265.7**	**1 162.3**	**1 387.1**	**19.3**
Potatoes	964.6	994.4	1 022.5	1 041.3	1 094.4	1 023.4	1 083.5	5.9
Pulses	27.4	28.2	27.8	29.2	30.7	28.6	30.2	5.3
Cotton	300.3	403.0	396.0	388.8	404.7	378.6	386.5	2.1

Note: Figures computed from unrounded data.
[1/] Time series for maize, rice and pulses was adjusted by the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan. Milling rate is estimated at 60 percent.
Source: Authors' own elaboration based on data provided by the Agency on Statistics under the President of the Republic of Tajikistan (AoS) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan (forecast), 2023.

21 percent above the average. Paddy production is forecast at a near-average level of 65 800 tonnes. Maize production is estimated at 104 700 tonnes, about 8 percent above the average. Production of potatoes is estimated at 1.08 million tonnes, about 5.9 percent above the past five-year average. Production of pulses is estimated at 30 200 tonnes, 5.3 percent above the average (Table 10).

Cotton production is estimated at 386 500 tonnes, over 2 percent above the average, but 4.5 percent less than the 2022 output, due to a reduction of cultivated area and higher pest pressures. The price of cotton has steadily decreased from TJS 12–14/kg in 2021, to TJS 9–10/kg in 2022 and it is expected at between TJS 8 and TJS 4/kg during harvest in the autumn of 2023, negatively affecting *dehkan* farmers' income.

Table A1c in Annex 1 presents the changes between 2022 and 2023.

Livestock and pasture

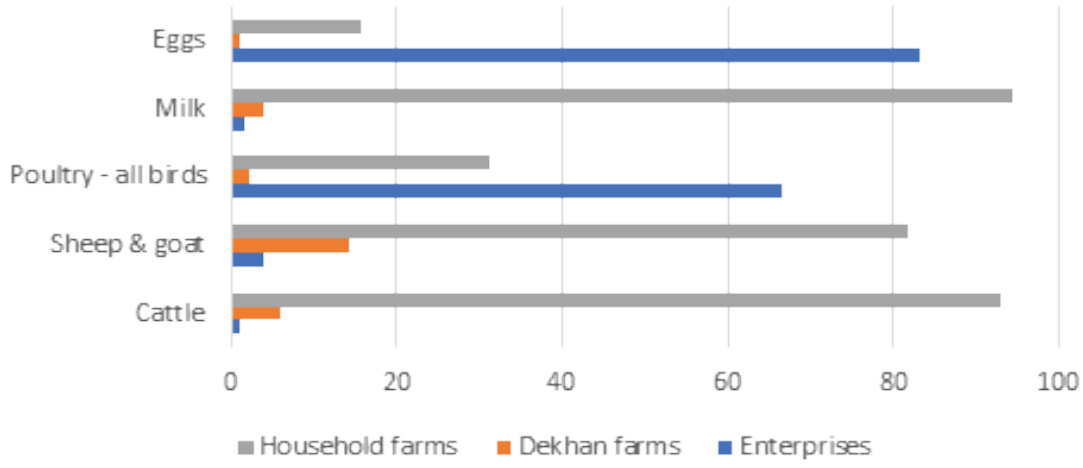
The number of livestock is estimated by AoS, using a similar self-reporting approach as for crop estimates for both agricultural enterprises and *dehkan* farms. To estimate the livestock population at household level, a full headcount is conducted during the first two weeks of each year when the entire local administration is mobilized in visiting households.

The main structural issue affecting the livestock sector is the lack of access to pasture by most livestock owners. According to AoS, 93 percent of the cattle and 82 percent of sheep and goats are owned by household farms (Figure 12) who, according to AoS, do not own or manage any pastureland. By contrast, *dehkan* farms manage about two-thirds of total pasture land and own only about 6 percent of cattle and 14 percent of sheep and goats, while enterprise farms manage about one-third of all pastures and own only 1 percent of cattle and 4 percent of sheep and goats.

As a result, household farms own the vast majority of livestock and they graze on marginal lands, including along roads, foot paths, irrigation and drainage canals as well as on crop residues and weeds after harvest in agreement with *dehkan* farmers. Grazing is also taking place on degraded or fragile rangeland areas which has not been allocated to private *dehkan* or enterprise farms. Typically, these lands include areas surrounding water points, erosion gullies or very steep terrain, where often severe overgrazing is observed. As livestock are returning to their stabling every evening, the grazing perimeter for most livestock is limited to a couple of kilometres around rural settlements. These grazing opportunities are insufficient to adequately feed the vast majority of livestock. Therefore, household farms procure fodder and feed on the local market, creating an opportunity for *dehkan* farmers to grow fodder crops to be sold on markets, such as alfalfa on irrigated land. As MoA and local authorities are advising farmers to plant more irrigated cotton and wheat, instead of alfalfa, the price for fodder is rapidly increasing. The mission observed that the price of alfalfa was TJS 30–35/bale, with an increase by 50–75 percent compared to previous year.

On the other hand, farmers who own large pastures own often a very limited number of animals. As they own or can hire farming equipment, pastureland tend to be ploughed and used to cultivate rainfed crops, particularly when rains are favourable. *Dehkan* farmers harvest hay mostly to be sold to the local markets. Pastures far from settlements are typically under-grazed and underutilized. In some instances, the mission observed the burning of biomass from underutilized pasturelands.

Figure 12: Tajikistan – Proportion of the total livestock heads by type of farm, 2021 (percent)



Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

Table 11: Tajikistan – Pastureland operated by enterprise, *dehkan* and household farms, 2021

	Acreage ('000 hectares)	Percentage
Enterprises	925.1	32.9
Dehkan farms	1 889.7	67.1
Household farms	0.0	0.0
Total	**2 814.8**	**100.0**

Source: Authors' own elaboration based on data from the Agency on Statistics under the President of the Republic of Tajikistan (AoS). 2023.

Another important factor affecting livestock productivity, particularly milk production, is the low potential of cattle breed. But, farmers prefer to not use highly productive livestock breed as indigenous breed are more adapted to seasonal shortage of fodder supply.

The mission visited the summer pastureland (*aylok*) where sheep and goats from lowlands graze typically from May to end of August. The pastureland on the mountain tops of Sangvar and surrounding districts is allocated to enterprises and state farms from different districts of Khatlon Region (locally referred as government pastures). Pastures on mid-elevation mountains are allocated to the resident population. From Khatlon Region, it takes two to four weeks of continuous travel on foot to reach the summer pasturelands. Migration corridors are established annually with the support of local authorities. MoA issues an order every spring, to request regional authorities to facilitate the migration of livestock. The last order was issued on 6 April 2023. By the end of August, livestock usually undertake their return journey to Khatlon Region. Donkeys are used to carry the personal goods as well as food for the shepherd family. Schools and medical services are not available for accompanying children. Each visited *aylok* contains between 1 000 to 3 500 heads of sheep and goats and one enterprise or state farm can operate several *aylok*.

Despite above-average rainfall amounts and snowfall during 2022/23 winter and spring, the mission observed poor pasture conditions in all visited *aylok*. Lack of grass was reported by herders, while sheep and goats were feeding on less preferred plants. The main reason is that snow melted late and the start of pasture growth was delayed by two to three weeks compared to past years. When livestock arrived from Khatlon Region in early/mid-May, a good part of the pastures was still covered with snow. High summer pasture was, therefore, overgrazed from the start of the season before grass had time to produce significant biomass. By contrast, pastures on mid-elevation mountains managed by the resident population in Sangvor District did not show signs of overgrazing in 2023. Although livestock in summer pasture were generally in good conditions at the time of the mission, standing feed stocks were running low with much less rainfall in perspective during the summer months. The mission, therefore, anticipates that livestock condition in some high summer pasturelands may deteriorate until August.

The mission observed that most livestock in Khatlon Region, owned by household farms, does not migrate to summer pasturelands as it requires a substantial level of organization, authorization and expenses. Therefore, concerns over summer pastureland conditions in 2023 relate primarily to livestock owned by enterprise and state farms.

The number of cattle, sheep and goats, and horses has steadily increased over the past five years (Table 12). The cattle as well as sheep and goats population is anticipated to continue to increase in 2023 by 2 and 3 percent, respectively. The total population of cattle is forecast at 2.6 million, while the population of sheep and goats is expected to reach 6.5 million by the end of the year. Horses are expected to slightly decrease by 2 percent as the popularity of the buzkashi game and traction horses are declining. Poultry is expected to increase by 2 percent as enterprise farms are responding to increased demand.

Table 12: Tajikistan – Number of livestock, 2018–2023 and changes compared to 2022 ('000 heads)

	2018	2019	2020	2021	2022	2023	Percent change
Cattle	2 328.0	2 362.0	2 391.0	2 468.0	2 554.0	2 605.0	2.0
Sheep and goats	5 620.0	5 686.0	5 798.0	6 052.0	6 317.0	6 507.0	3.0
Horses	81.0	81.0	83.0	84.0	86.0	84.0	-2.0
Poultry (all birds)	6 637.0	9 037.0	9 783.0	11 118.0	11 286.0	11 510.0	2.0
Potatoes	964.6	994.4	1 022.5	1 041.3	1 094.4	1 023.4	1 083.5
Pulses	27.4	28.2	27.8	29.2	30.7	28.6	30.2
Cotton	300.3	403.0	396.0	388.8	404.7	378.6	386.5

Note: Figures computed from unrounded data.
Source: Authors' own elaboration based on data provided by the Agency on Statistics under the President of the Republic of Tajikistan (AoS) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan (forecast), 2023.

Fruits

The country combines some of the best agronomic factors for pome and stone fruits, characterized by dry summers and cool winters, with large differences in temperatures between day and night which enhances fruit quality. The country lies at the centre of origin and diversity of an impressive array of fruit crops like pistachios, apricots, apples, pears, quinces, almonds, vine grapes, walnuts, plums, cherries, figs and pomegranates.[xxxxxiv] Overall, here is a wide genetic variability in fruit size, shape, colour, maturity time and quality.

Most of the fruit orchards are extensive, based on traditional seedlings and used for intercropping alfalfa, hay, potatoes or vegetables. High yielding intensive orchards are the exception. In 2021, an estimated 160 000 hectares of orchards, including citrus, were cultivated, but only 110 100 hectares, or about 60 percent, were at fruiting age.[xxxxxv] Yields observed by the mission on most visited orchards were very low, mainly due to inadequate control of pests and diseases and pruning practices. This often results in a poor presentation of most of the produced fruits. A large share of fruits is sold into markets immediately after harvesting, due to the lack of processing and storage facilities.[xxxxxvi] As a result, the country imports fruits from China (mainland), eastern Europe, Pakistan, India and Türkiye to cover the domestic demand for products with higher shelf presentation and outside the harvesting season. Raisins and dried apricots are produced mainly in Sughd Region for the national market and to be exported.

In 2023, orchards have been severely affected by the cold winter, when temperatures dropped below -25°C in mid-elevation (Hisor Valley), resulting in widespread frost damages on fruit trees in DRS and Khalton regions and, to a lesser extent, in Sughd Region. Wine fruiting buds were frozen, wiping a large portion of the 2023 harvest. For some vineyards and fruit trees, such as pomegranates, almonds, citrus and figs, the trees' cambium and sapwood froze, leaving branches or entire trees dead in the spring. As a result, the production of pomegranates and, to a lesser extent, citrus and almonds will be affected also in coming years. The loss of harvest ranges from 20 to 100 percent, depending on the tree species and location of the farm. Some districts have established a commission to estimate the extent of damages by winter frost in view of waving land taxes of affected orchards.[12]

Apricot, apple and pear orchards were not affected by winter frost and their production is expected to be above average. The 2023 harvest of apricots is expected to be particularly abundant in Sughd Region.

[12] In Vahdat, the mission observed that about 25 hectares of orchards have been affected by a hailstorm in May 2023.

FOOD SUPPLY/DEMAND SITUATION

Market analysis

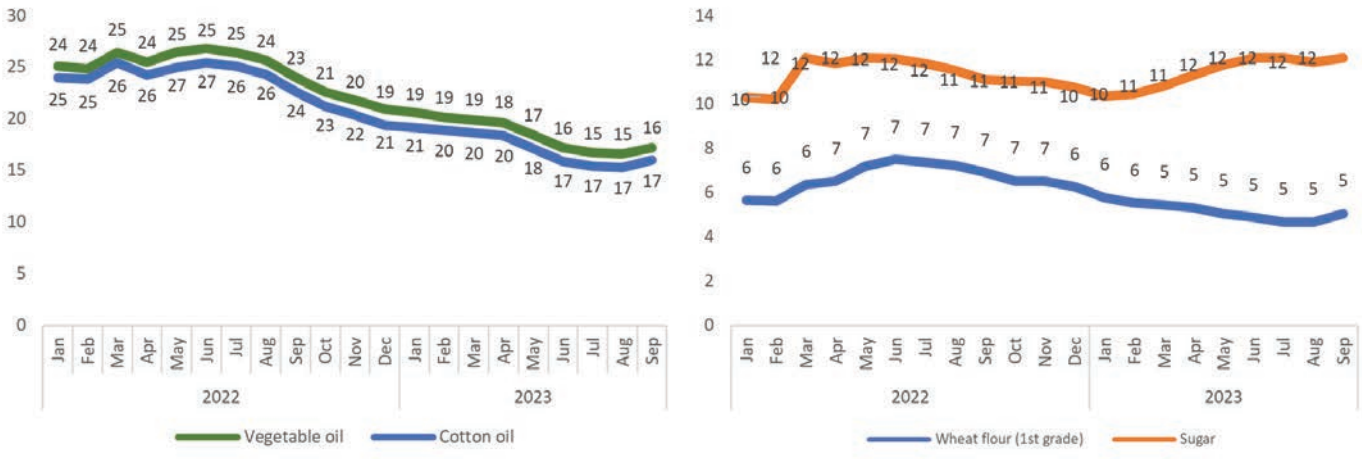
Prices of national and imported food commodities slightly increased during the last year. However, agriculture input prices, such as fertilizers, pesticides, machineries and fuel decreased in 2023 due to the high quantity of imports from the Russian Federation and Uzbekistan. Similarly, seed prices are below those of last year, due to the high contribution of the MoA helping farmers providing good quality seeds. In addition, cost of labour was high in 2023, due to a high flow of former workers migrated to the Russian Federation.

Prices of some key commodities had a decreasing trend from mid-2022 to August 2023. This is the case of wheat flour (first grade), the main staple food in the country, as well as vegetable oil and cotton.[xxxxxvii]

Wheat products are the predominant staple food in both rural and urban areas. National production covers 40 percent of domestic consumption needs, while the remaining 60 percent is covered by imported wheat, mostly from Kazakhstan. The national average price of wheat flour (first grade) declined from TJS 7.5/kg in June 2022 to TJS 5/kg one year later, reaching prices even lower than in January 2022.

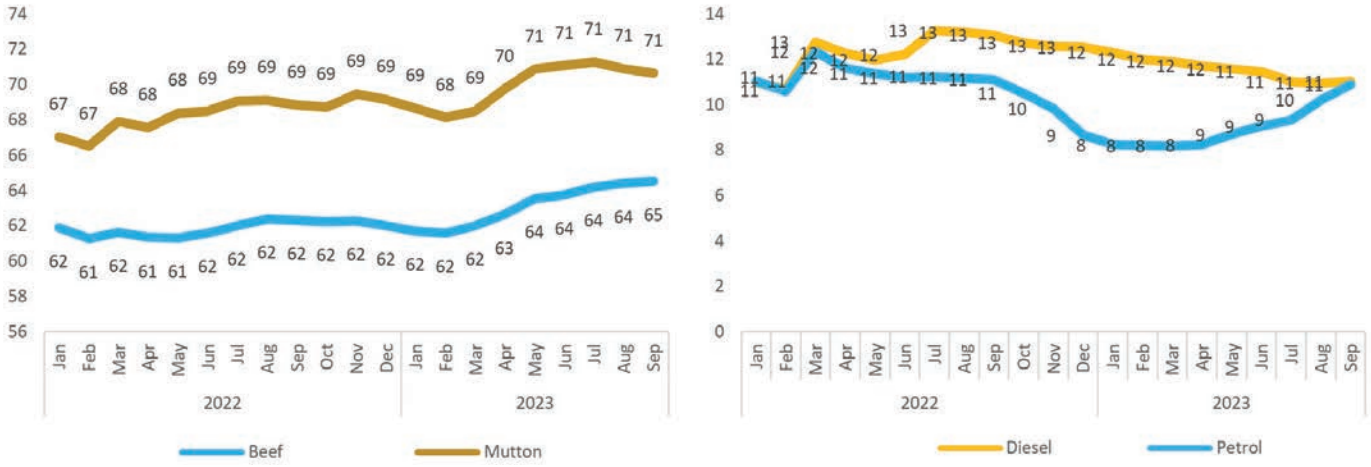
The average prices of cotton and vegetable oils also decreased by around 36 percent since the highest price peak in June 2022. The average prices of fuel

Figure 13: Tajikistan – Average monthly prices of vegetable oil, cotton oil, wheat flour and sugar



Source: Authors' own elaboration World Food Programme (WFP), based on data collected during the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan. 2023.

Figure 14: Tajikistan – Average monthly prices of beef, mutton, diesel and petrol



Source: Authors' own elaboration World Food Programme (WFP), based on data collected during the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan. 2023.

stabilized after the initial spikes in March 2022 for petrol (TJS 12/litre) and in June 2022 for diesel (TJS 13/litre).

On the contrary, the August price of sugar was similar to the same time last year, while meat prices were higher than in August 2022. The national average retail price of beef meat increased steady throughout 2023, from TJS 62/kg in February 2023 to TJS 65/kg in September. Food inflation was also driven by the increased prices of staple vegetables, such as cabbage, carrots and tomatoes.

Potatoes, another staple food, are mostly produced in Sughd and Khatlon regions. Prices of potatoes showed a seasonal increase between April and October 2022, increasing sharply before the main harvest and then decreasing with the new planting season. During the marketing year 2022/23, the price of potatoes reached TJS 5.2/kg, increasing by 50 percent compared to April 2022. In the district of Mastcho-e Kohi, farmers store one-third of the potato harvest in traditional storages, mostly for household consumption. The traditional storages used are very basic and often constitute of a hole in the ground without ventilation. In some cases, potatoes are stored in a simple room build next to the house, often with insufficient ventilation and thin walls that do not protect potatoes from harsh winter temperatures. Typical losses in these storages are as high as 35 percent and, during cold winters, they can increase up to 50 percent of the stored potatoes. There is a need to promote improved underground potato storages to reduce post-harvest losses and benefit from higher marketing prices in spring.

Food supply/demand balance sheet

The national cereal and potatoes supply/demand balance for the 2023/24 marketing year (July/June) is summarized in Table 13. It considers wheat, barley, rice (in milled terms), maize plus potatoes (in cereal equivalent).

In drawing up the national food crop balance, the following assumptions were made:

1. **Population** of the country as of mid-2024 is projected at about 10.32 million people, using a 2 percent annual growth rate as recommended by AoS. As about 775 000 people are estimated to live and work abroad, the population is projected at 9.55 million.

2. **Food production** of cereals and potatoes (in cereal equivalent) is estimated at 1.63 million tonnes.

3. **Food use** consumption is estimated at 2.07 million tonnes of cereals and potatoes, using a per capita average annual consumption of about 206 kg of cereals and potatoes, which

includes 181 kg of wheat, 11 kg of rice, 3 kg of maize consumed fresh, 1 kg of barley and 20 kg of potatoes (in cereal equivalent).

4. **Seed requirements** are estimated at 113 000 tonnes, assuming a similar area planted in 2023/24 as in 2022/23 and using an average seed rate of 200 kg/hectare for wheat, 150 kg/hectare for barley, 25 kg/hectare for maize, 108 kg/hectare for paddy (in rice equivalent), 725 kg/hectare for potatoes (in cereal equivalent).

5. **Feed use** is estimated at 364 000 tonnes, which includes most of the maize and barley outputs as well as 15 percent of wheat production (as bran when milled into flour).

6. **Stocks** are estimated at 125 000 tonnes of cereal equivalents (opening stocks). Stocks are expected to remain the same at the end of the 2023/24 marketing year and, therefore, no stock drawdown is anticipated.

7. **Post-harvest losses**, including handling and storage losses and other uses are estimated using a rate of 8.6 percent for cereals[xxxxxviii] and 12 percent for potatoes. Losses of potatoes in 2023 have been higher than average due to winter frost. In some mountainous locations, where winter was particularly harsh, farmers reported losses of up to 50 percent of the potatoes kept in traditional storages.

The anticipated commercial imports for the 2023/24 marketing year (July/June) is estimated at 987 000 tonnes of wheat, 70 000 tonnes of rice and 4 000 tonnes of potatoes (in cereal equivalent). Regarding wheat, import requirements in the 2023/24 marketing year (July/June) are about 5 percent below the past five-year average, mainly due to the above-average output harvested in 2023. The estimated food deficit is expected to be fully covered by commercial imports.

Table 13: Tajikistan – Food supply/demand balance sheet, July 2023–June 2024 ('000 tonnes)

	Wheat	Barley	Maize	Rice[1/]	Potatoes[2/]	Total
Total Availability	**1 047**	**170**	**105**	**39**	**271**	**1 632**
Stock drowdown	0	0	0	0	0	0
Production	1 047	170	105	39	271	1 632
Total Utilization	**2 033**	**170**	**105**	**110**	**275**	**2 692**
Food use	1 728	10	29	105	194	2 065
Seed requirements	58	11	1	1	42	113
Feed use	157	135	67	-	6	364
Losses	90	15	9	3	33	150
Food deficit	**987**	**0**	**0**	**70**	**4**	**1 061**
Anticipated commercial exports	**987**	**0**	**0**	**70**	**4**	**1 061**

Note: Figures may not add up due to rounding.
[1/] Milled equivalent at a milling rate of 60 percent.
[2/] In cereal equivalent.
Source: Authors' own elaboration World Food Programme (WFP), based on data collected during the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan. 2023.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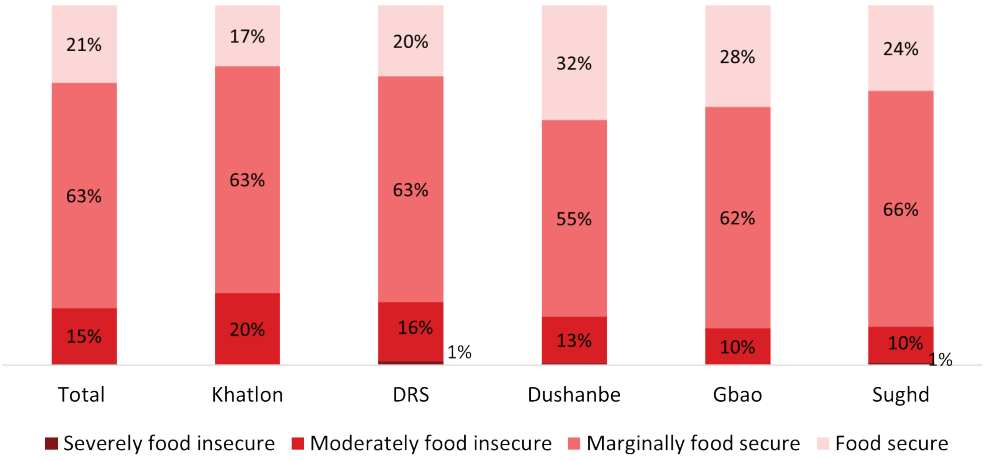
HOUSEHOLD FOOD SECURITY

Based on the household survey carried out on August 2023, 16 percent of households (1.56 million people) are estimated to face acute food insecurity,[13] out of which nearly 50 000 are severely acute food insecure. However, acute food insecurity varies among regions across the country. Khatlon has the highest proportion of acute food insecure households (20 percent), followed by DRS, while food insecurity was lowest in GBAO (10 percent). Most of the population (55–65 percent) are classified as marginally acute food secure as they apply coping strategies to adequately cover their food needs. Countrywide, one-fifth of the households (21 percent) are food secure, with the highest percentage found in Dushanbe (32 percent).

The proportion of food insecurity in rural areas (17 percent is higher than in urban contexts (13 percent), where households are more likely to be food secure. In rural areas, the average household size is slightly higher than the national average of six members, and the proportion of household heads aging 60 years or above (39 percent) is significantly higher than in urban areas (28 percent).

The analysis by gender of household head shows that the percentage of food secure households is lower among those headed by women (18 percent) compared to households headed by

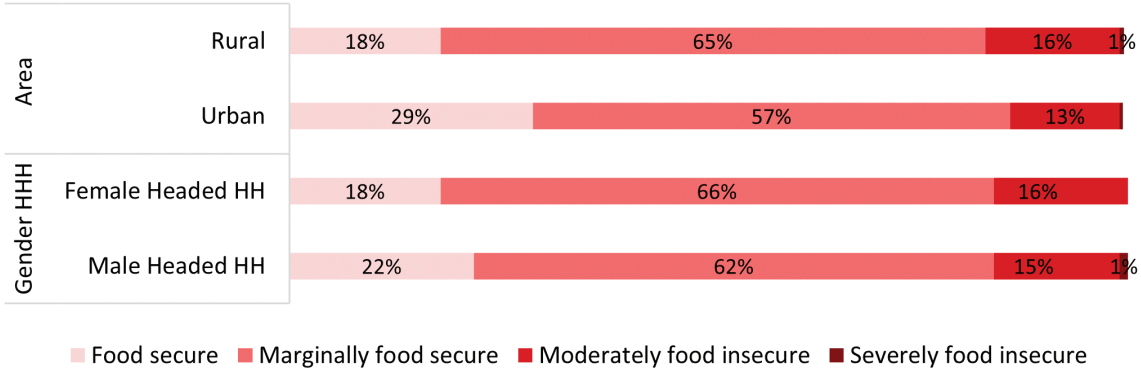
Figure 15: Tajikistan – Proportion of households categorized into different food security status, disaggregated by region



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

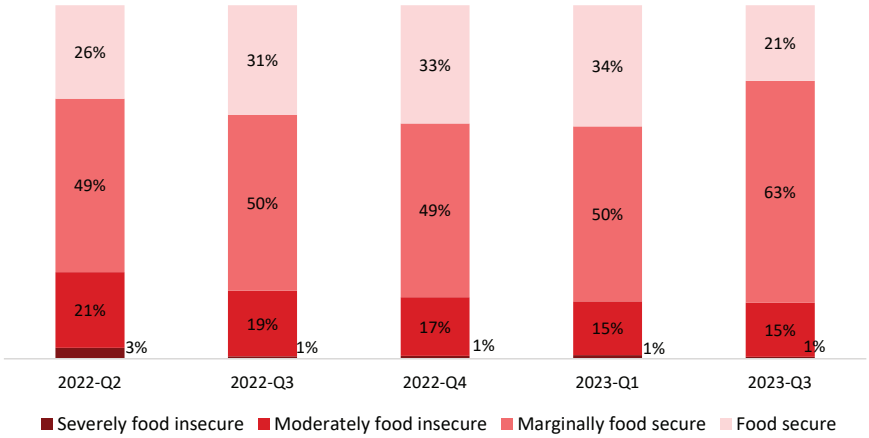
[13] According to the United Nations Committee on World Food Security, food security is defined as meaning that all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their food preferences and dietary needs for an active and healthy life. Food security has been estimated based on the Consolidated Approach for Reporting Indicators of Food Security adapted for remote surveys (rCARI).

Figure 16: Tajikistan – Proportion of households categorized into different food security status, disaggregated by area and gender of household head



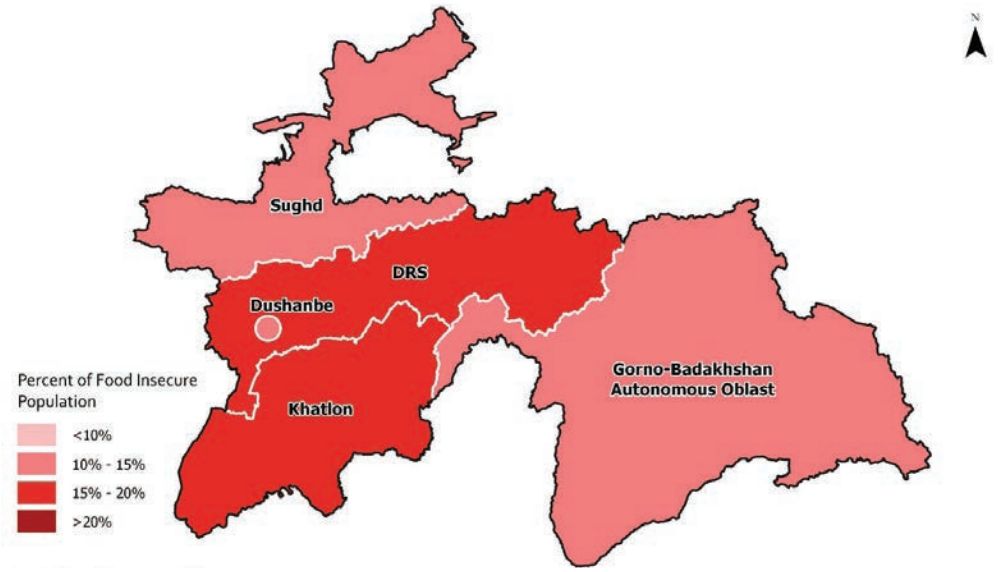
Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 17: Tajikistan – Proportion of households categorized into different food security status, disaggregated by study period



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Map 5: Tajikistan – Proportion of households categorized as food insecure, disaggregated by region, July–August 2023



Disclaimer: The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, are a or of its authorities, or concerning the delimitation of its frontiers and boundaries.

Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023

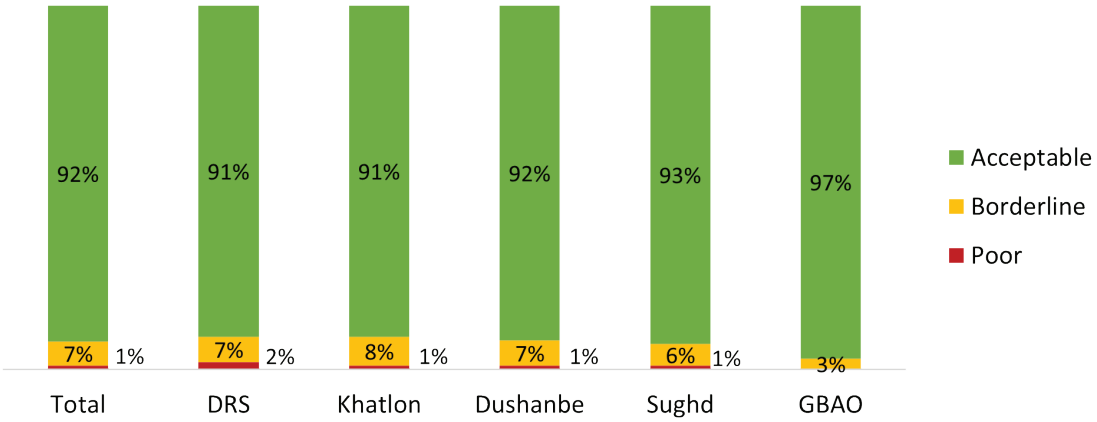
men (22 percent). The fact that the proportion of female-headed households is significantly higher in urban areas (24 percent) than in rural (14 percent), could be underestimating the vulnerability of rural households headed by women.

Compared to previous rounds of the FSMS, acute food insecurity seems to have stabilized at 16 percent after the progressive improvement observed since Q2-2022 (24 percent). On the other hand, the percentage of food secure households is the lowest since Q2-2022, which could be indicative of some food security deterioration in specific traditional food secure sectors of the population.

Household food consumption

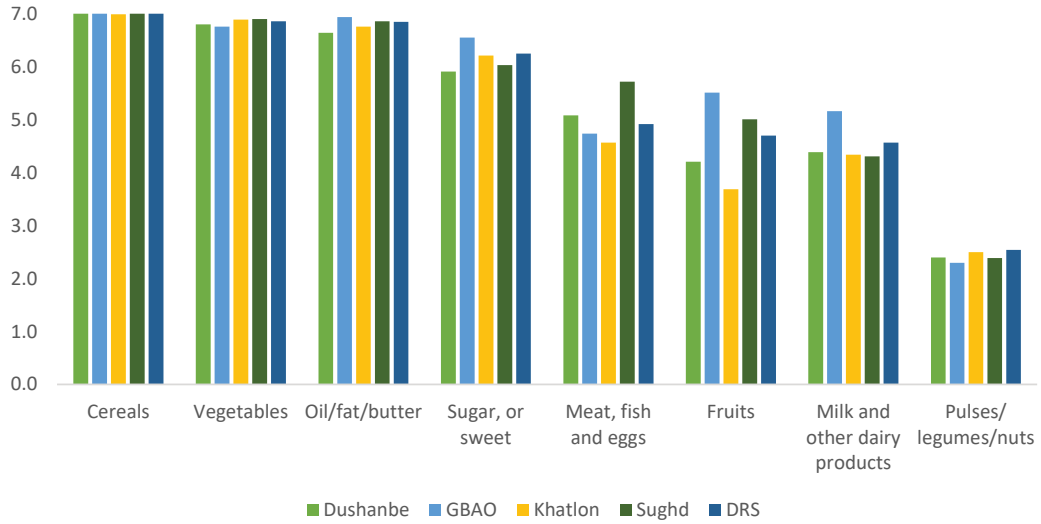
The analysis of the Food Consumption Score (FCS)[14, xxxxxix] indicates that 750 000 people, 7.6 percent of Tajik households, had inadequate food consumption at national level, of which 110 000 people were classified with poor food consumption. Figure 18 shows that the regional variability is low, with percentages of households with insufficient food consumption ranging from 7 to 9 percent, except for GBAO (3 percent). Figure 19 shows the average number of days each food group[15] consumed at household level in the seven days prior to the survey. Households reported consuming cereals, oil/fats and vegetables almost

Figure 18: Tajikistan – Proportion of households in different consumption groups, disaggregated by region



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 19: Tajikistan – Average number of days food items were consumed per week, by region



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

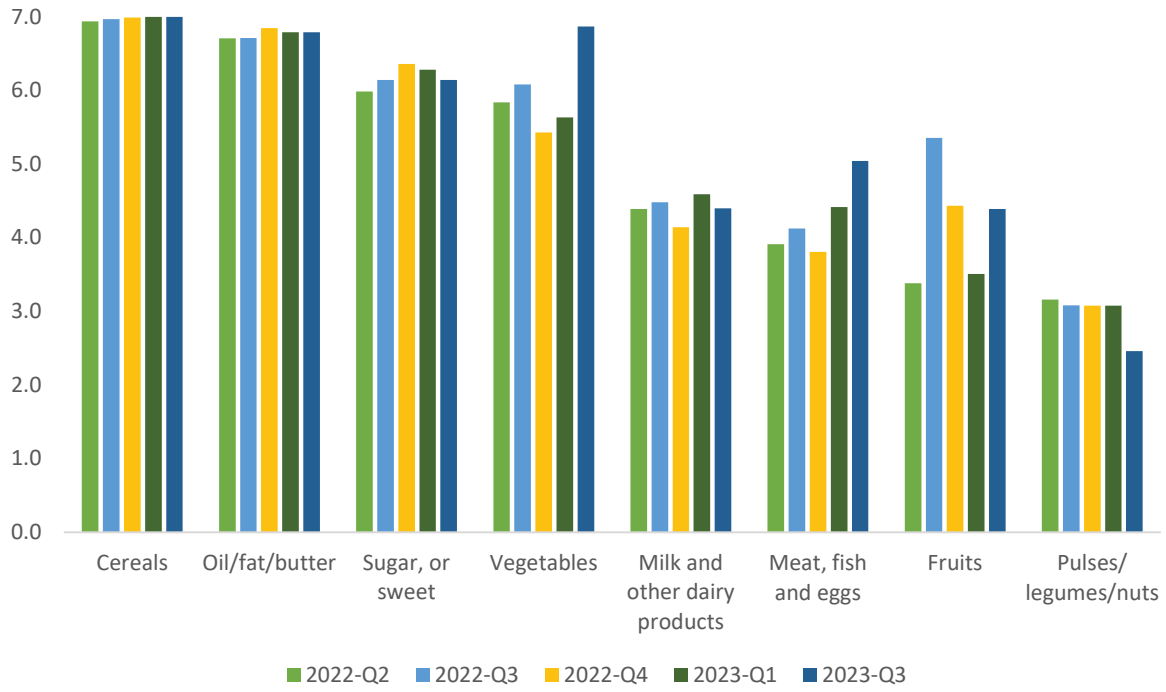
[14] FCS was based on the frequency of consumption of 16 food groups at household level during the seven days prior the survey.

[15] Eight food groups were considered: Cereals, pulses, vegetables, fruits, meat/fish/eggs, dairy, fats and sugar.

daily. Sugar was consumed on average six days per week, followed by meat/fish/eggs, fruits and milk/dairy products that were consumed an average of five days in a week. Pulses/legumes were the least consumed food items with an average consumption rate of two days in a week.

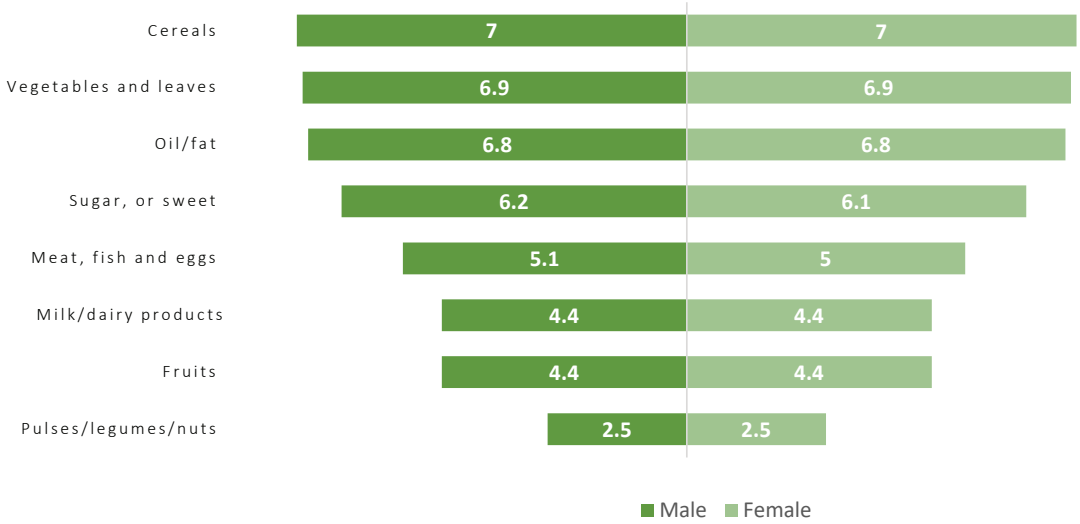
Consumption of the most common food groups, such as cereals, vegetables and oil/fats/butter, was similar across regions, indicating a relatively consistent dietary pattern. However, regional differences were observed in the consumption of meat, fish and eggs, fruits and dairy, suggesting potential disparities in food access;

Figure 20: Tajikistan – Trend of average number of days food items were consumed per week



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 21: Tajikistan – Average number of days food items were consumed per week, disaggregated by gender of household head



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

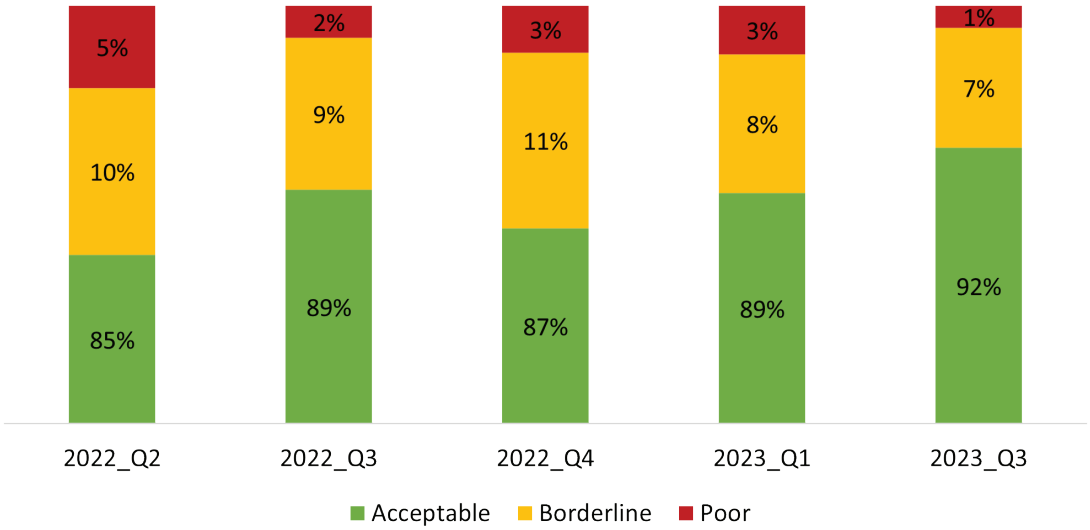
for example in Khatlon, the fruit intake is lower than other regions. Overall, no significant differences were found between urban and rural areas or by gender of household head.

The trend analysis between 2022-Q2 and to 2023-Q3 reveals an improvement in food consumption. The FSMS round conducted in August 2023, shows the highest percentage of households with acceptable food consumption (92 percent) and the lowest proportion of households with poor (1 percent) or border line (7 percent) food consumption levels.

By gender of household head, the percentage of households with insufficient food consumption is 2 percent higher among households headed by women compared to those headed by men (Figure 23).

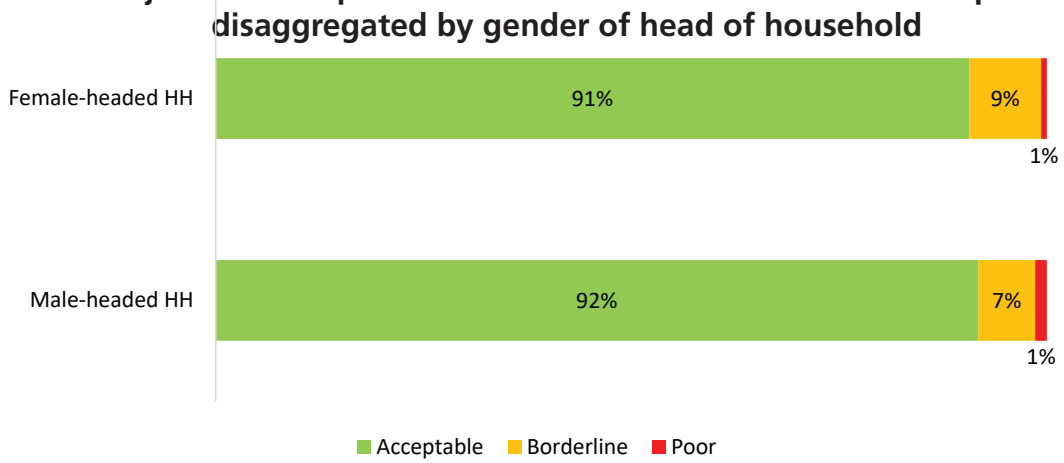
Frequency of consumption of nutrient rich food groups is presented in Figure 24. Results show that most households had a daily consumption of protein (84 percent) or vitamin A (94 percent) rich foods and are, therefore, at lower risk of undernutrition and micronutrient deficiencies. However, 59 percent of households did not consume any iron rich foods in

Figure 22: Tajikistan – Trend proportion of households in different consumption groups



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 23: Tajikistan – Proportion of households in different consumption groups, disaggregated by gender of head of household

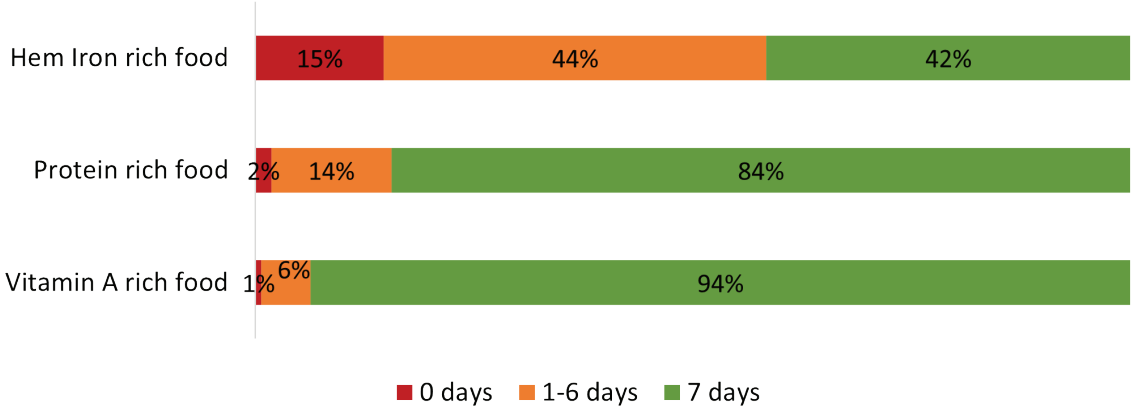


Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

one or more days in the previous week and 15 percent reported not having any iron rich food group in any day of the week. These households are at high risk of iron deficiency anaemia, with special implications for children, adolescent girls and pregnant and lactating mothers. In 2019, WHO estimated that 35 percent of non-pregnant women aged between 15–49 years of age were anaemic throughout the country.[xxxxxx]

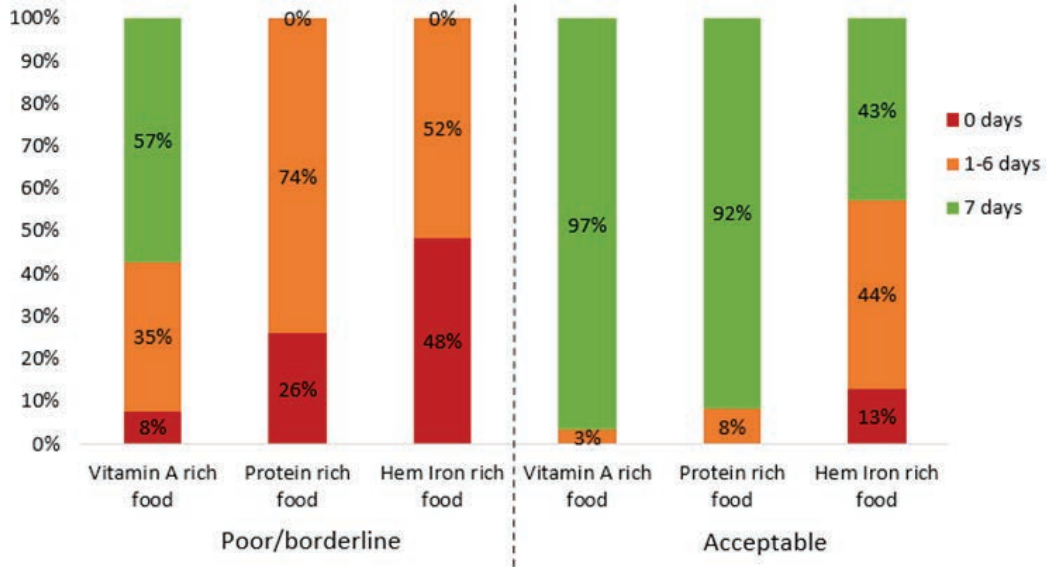
The analysis of frequency of consumption of nutrient-rich food groups by FCS categories shows that no household with poor or borderline food consumption had daily consumption of protein or iron rich food groups, and only 57 percent had Vitamin A rich foods every day of the week (Figure 25). Nearly half of the households with poor and borderline consumption did not have any iron rich food group in the week and one in four households did not have any animal protein. Even among households with acceptable FCS, consumption of iron-rich foods is not daily in 57 percent of them.

Figure 24: Tajikistan – Proportion frequency consumption of protein, Vitamin A and hem-iron rich foods



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 25: Tajikistan – Consumption of Vitamin A, protein and hem-iron rich food groups by poor/borderline grouped and acceptable FCS



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

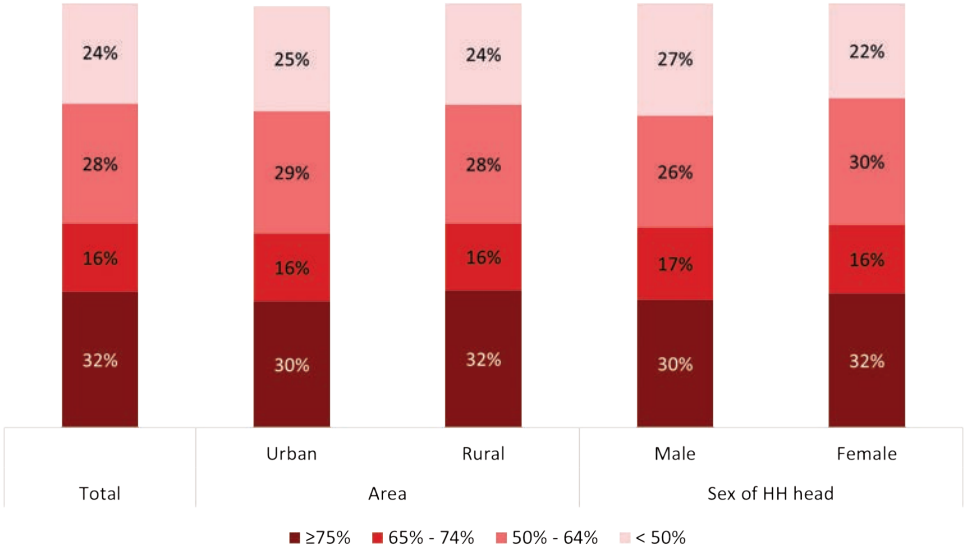
Economic access to food

Households were 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, a critical indicator of economic well-being and food security. Households have been classified in four categories based on their food expenditure share. Nearly half of the households (48 percent) spend more than 65 percent of their monthly budget on food, without significant differences between urban and rural areas or by gender of household head. High food expenditures shares, above 65 percent, imply likely difficulties for the household to cover non-food essential needs.

By region, the average food expenditure is lowest in Dushanbe (57 percent) and highest in GBAO (64 percent). The August 2023 FSMS results have been compared with 2021 and 2022 figures extracted from the Statistical Agency under the President of the Republic of Tajikistan report,[xxxxxxi] serving as historical reference points. The trend analysis reveals a consistent upward trend in food expenditure share across all regions over the three-year period, but with significant differences among regions. From 2021 to 2023, the increase in food expenditure share ranged from 6–7 percent points, in Dushanbe, Sughd and Khatlon, to 21 percent points in GBAO. These results provide insights on the different evolving economic conditions and consumption patterns occurred in the various regions of the country, with GBAO and DRS showing signs of more deterioration in household economic access than the rest of the regions. While in 2021, the average food expenditure in GBAO was the lowest among the regions, in 2023 it shows the highest value of all strata considered. These trends may reflect a combination of factors, including food inflation, changes in dietary preferences and shifts in household income.

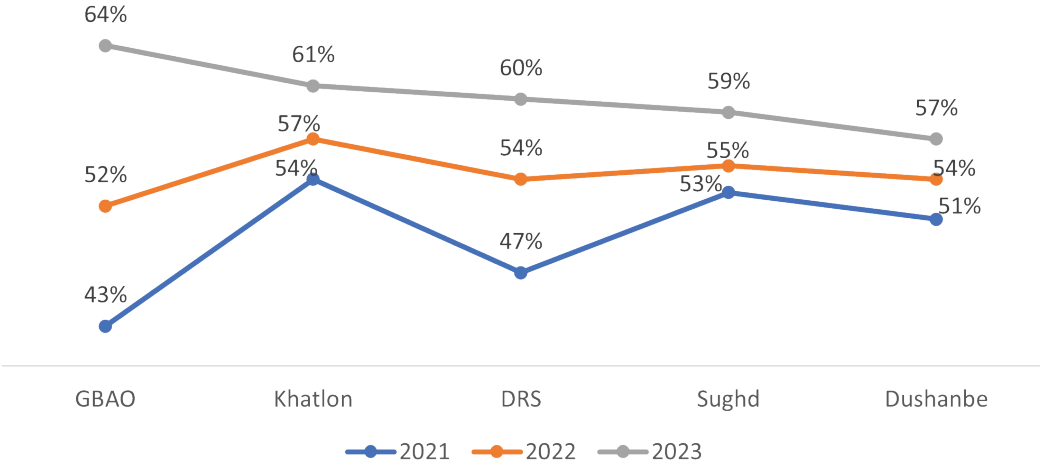
The data highlights the importance of monitoring food expenditure patterns to assess household well-being and food access adequacy. It also serves as a valuable resource for policymakers and national and international organizations to tailor their interventions and programmes to address the specific needs and challenges faced by different regions in the country.

Figure 26: Tajikistan – Food Expenditure share categories by urban/rural area and gender of household head



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 27: Tajikistan – Share of total household expenditure on food, by urban-rural and gender of household head



Source: Authors' own elaboration World Food Programme (WFP) based on data from WFP Food Security Monitoring Systems (FSMS) and the Statistical Agency under President of the Republic of Tajikistan. TAJSTAT. 2019. *Food Security and Poverty No. 4*. Cited July/August 2023. https://stat.tj/storage/files/4-2019__angl..pdf.

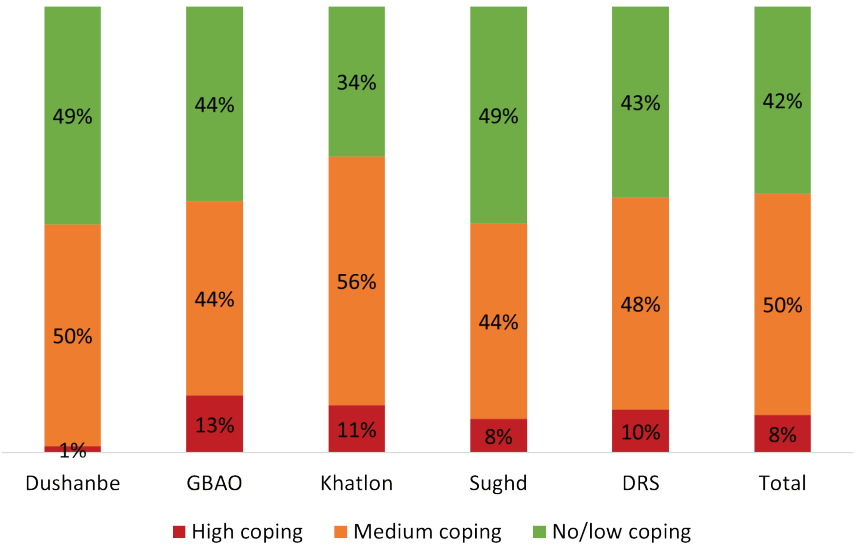
Coping strategies

Food consumption related coping strategies

More than half percent of the Tajik households (58 percent) applied food consumption related coping strategies, in the seven days prior the survey. Consuming less preferred and less expensive food was the strategy most frequently applied (42 percent), followed by limiting portion size of meals (23 percent) and borrowing food or relying on friends and relatives (20 percent). Reducing the number of meals or restricting adult consumption in order for children to eat, was reported by 16 percent of households.

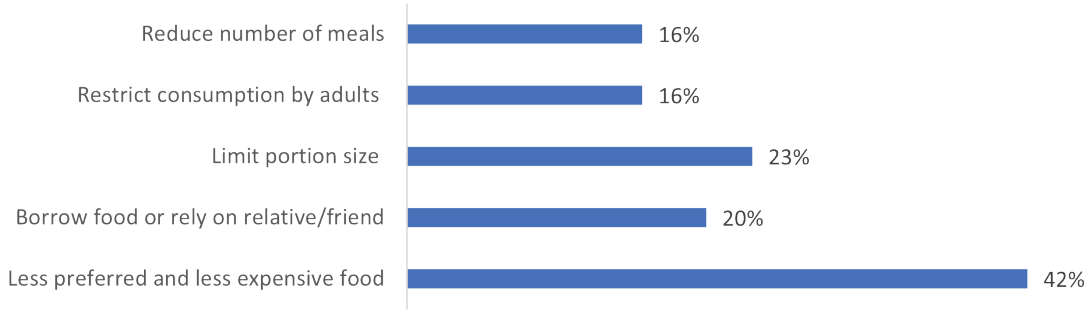
The percentage of households with high and medium coping levels was highest is Khatlon and lowest in Dushanbe. However, the most severe strategies were more frequently applied in GBAO (13 percent) (Figure 28).

Figure 28: Tajikistan – Food-based coping by region



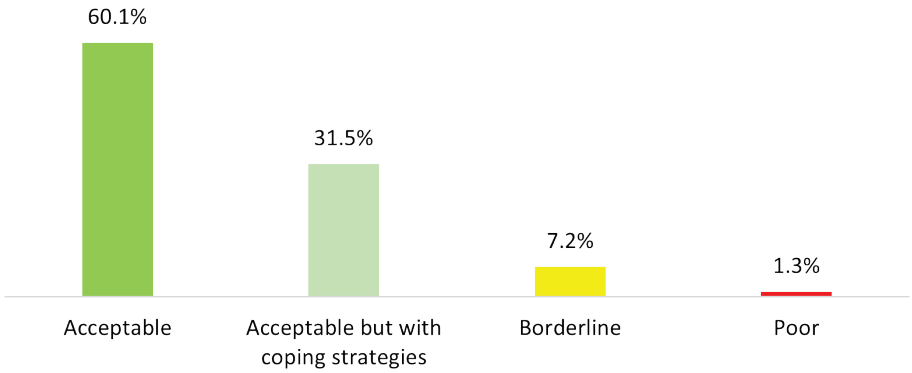
Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 29: Tajikistan – Proportion of households adopting food consumption related coping strategies



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 30: Tajikistan – Proportion of households in different consumption groups inclusive of those with coping strategies



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

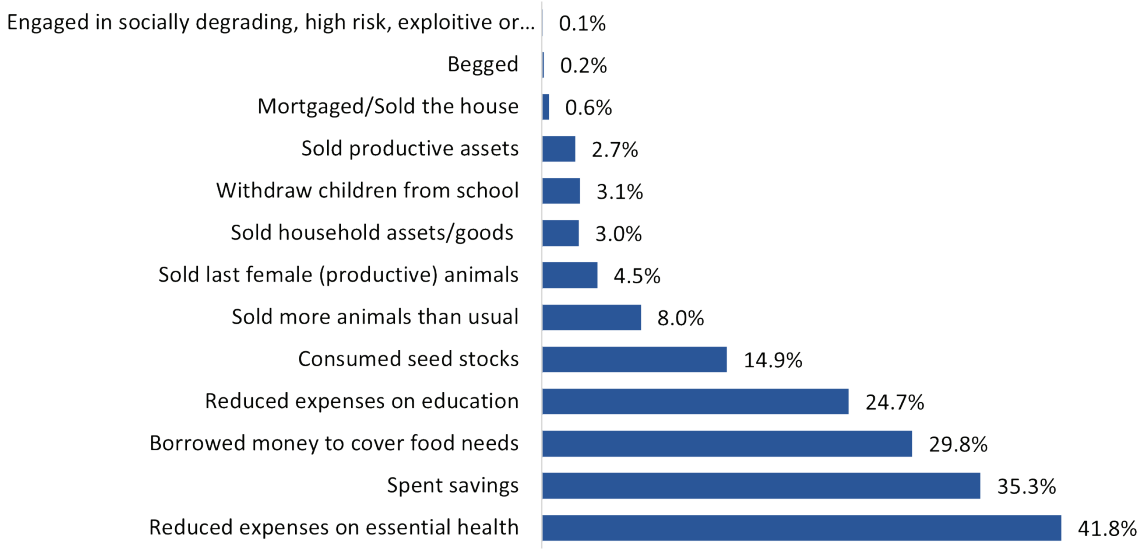
Further analysis showed that one-third of the households with acceptable FCS applied different food coping strategies (Figure 30).

Livelihood-based coping strategies

The degree of vulnerability to food insecurity of any community can be measured by the negative coping strategies adopted by the households that normally result in the erosion of livelihood resources, often with long-term consequences. The most common coping strategy, reported by 42 percent of households, is the reduction of expenses on essential health. This choice underscores the difficult decisions families often face when financial constraints compel them to prioritize the immediate needs over long-term well-being. A substantial 35 percent of households resorted to spending their savings, reflecting the economic strain that many are grappling with. Additionally, 30 percent turned to borrowing money to cover their food needs, highlighting the financial precarity experienced by a significant portion of the community. The impact on education is evident as well, with 25 percent of households reducing expenses on education. This underscores the tough choices families make when facing economic challenges, potentially affecting the future prospects of their children.

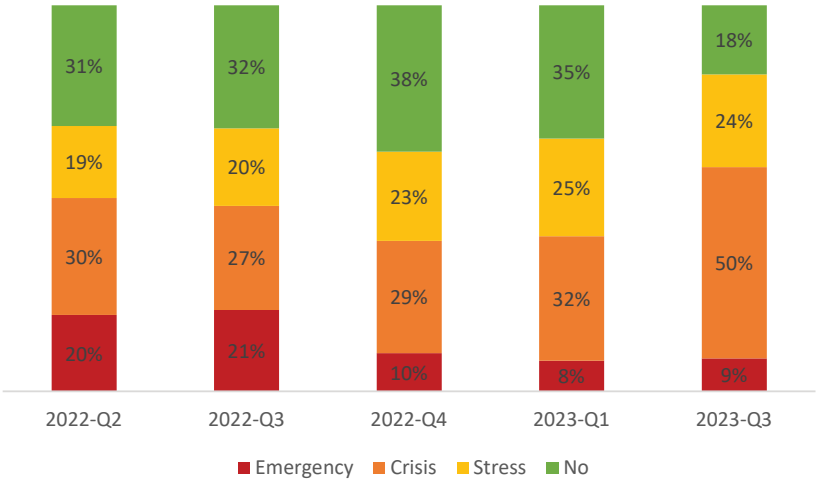
The consumption of seed stocks (14 percent), the sale of animals (8 percent) and productive assets (3 percent), indicate the erosion of vital livelihood resources, which can have long-term consequences on food security and economic stability. More concerning is the fact that some households, albeit a small percentage, engaged in extreme and high-risk coping mechanisms, such as mortgaging

Figure 31: Tajikistan – Proportion of households adopting different types of livelihood-based coping strategies



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 32: Tajikistan – Trend proportion of households adopting livelihood-based coping strategies



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

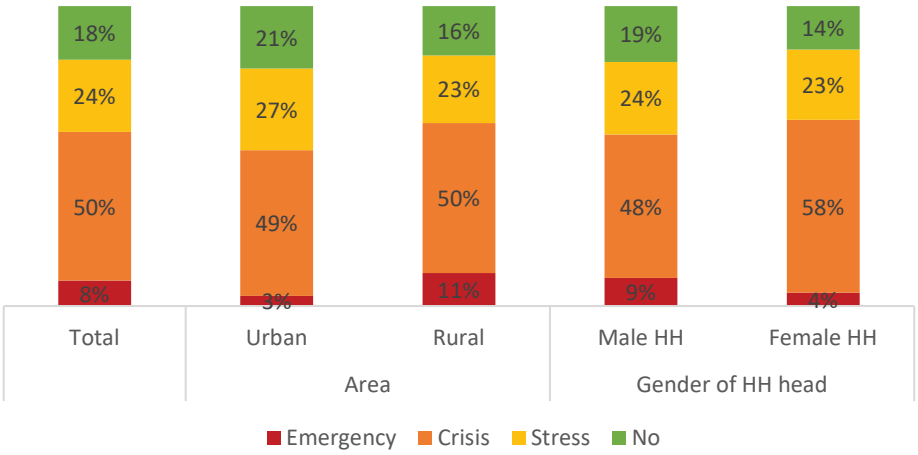
or selling their homes, begging or engaging in socially degrading, exploitative or life-threatening work. These choices underscore the challenges faced by some families to address their immediate needs.

The above results emphasize the urgency of implementing sustainable interventions to mitigate the vulnerability of households to food insecurity. It highlights the critical need for social safety nets, financial support systems and livelihood diversification programmes to help families withstand economic shocks without resorting to coping strategies that have long-term negative consequences.

These livelihood-based coping strategies, according to their severity, were classified into stress, crisis and emergency strategies (Figure 32).[16] Results show that 50 percent of the households were adopting

[16] 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 33: Tajikistan – Proportion of households by livelihood-based coping strategies by area and gender of household head



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

crisis coping strategies such as reducing expenses on health, consuming seed stocks or selling productive assets, 24 percent of the households were adopting stress coping strategies such as spending savings, borrowing money to cover food needs, reducing expenses on education or sold more animals (non-productive) than usual.

Compared to previous FSMS rounds, the percentage of households that applied crisis or severe livelihood coping strategies (59 percent) in August 2023 is the highest since Q1-2022. In the same line, the proportion of households that did not engage in any livelihood coping strategy in August (18 percent) is nearly half the percentage of the previous round (Q1-2023: 35 percent). This increase in the employment of livelihood coping strategies and in the severity of the strategies applied, reflects the difficulties experienced by households to cover basic needs. These families are forced to cope with the situation by engaging in strategies that compromise their future productivity and resilience capacity.

Figure 33 shows that households in rural areas are more likely to employ livelihood coping strategies and of more severity. Similarly, households headed by women are more likely to employ livelihood coping strategies, particularly those in the crisis category.

Shocks and resilience

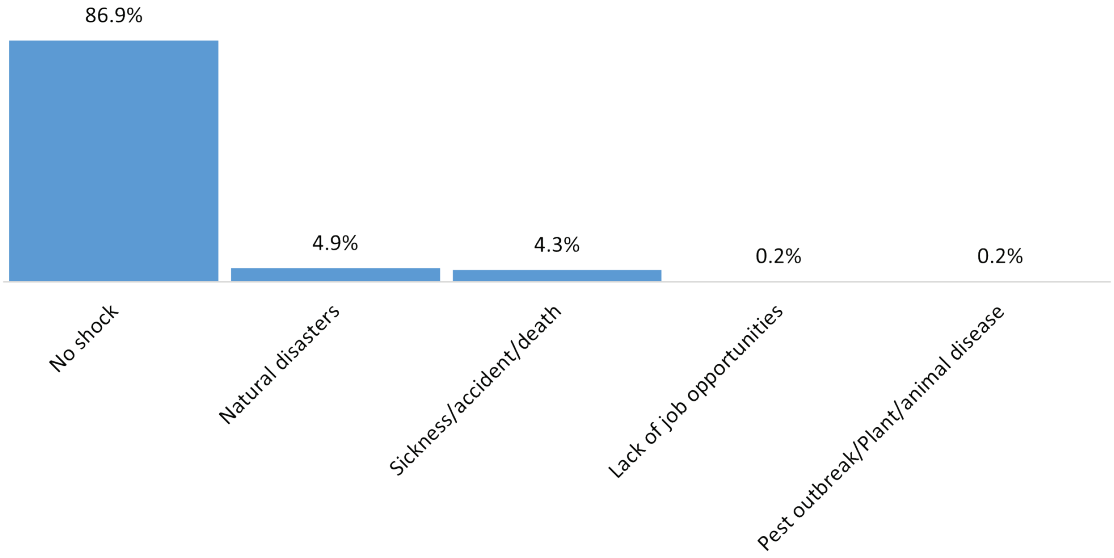
In the last three months preceding the survey, most surveyed households did not face significant shocks that contributed to the deterioration of their well-being. Among the notable shocks reported, natural disasters accounted for 4.9 percent of the cases. These events, such as floods or storms, have immediate and often severe implications for households, affecting their well-being and livelihoods.

Sickness, accidents or deaths in the family were also cited as contributing factors to deteriorating well-being, accounting for 4.3 percent of the cases. These personal health-related shocks can be emotionally and financially challenging for households, underscoring the importance of healthcare access and social support systems.

A minimal percentage of households cited shocks related to lack of job opportunities (0.2 percent) and pest outbreaks or plant/animal diseases (0.2 percent) as contributing factors to their well-being deterioration. While these percentages are relatively small, they highlight the diverse range of challenges that households can face.

In summary, this data emphasizes the need for comprehensive strategies that not only address

Figure 34: Tajikistan – Proportion of households facing shocks in the last three months before the survey



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

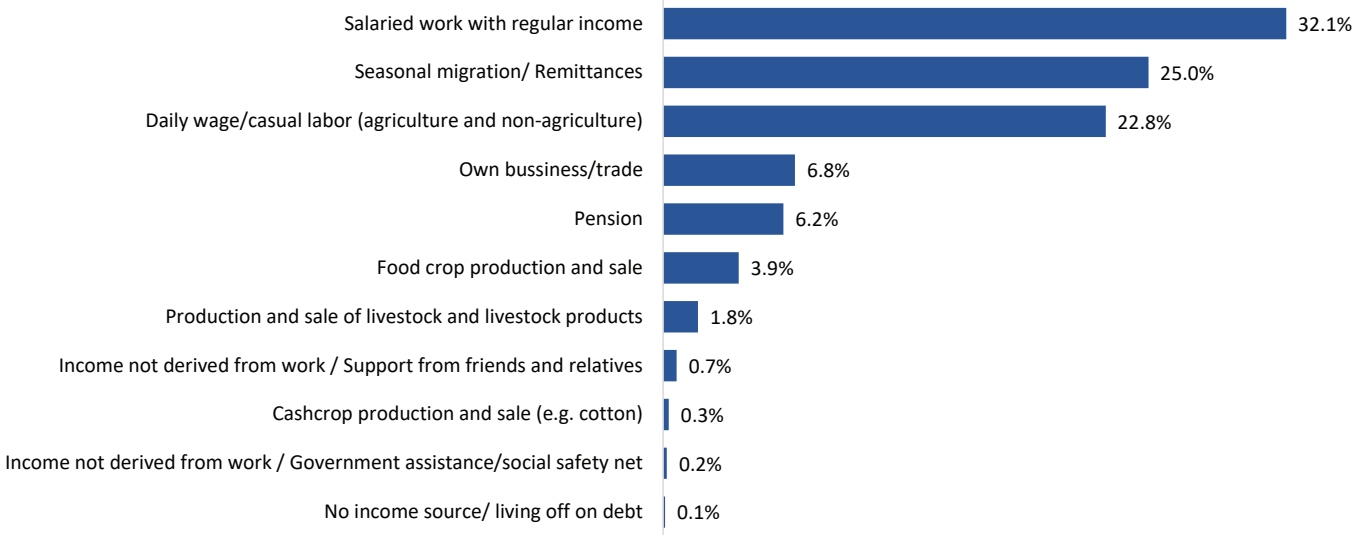
the immediate impacts of shocks, such as natural disasters and health crises but also consider longer-term factors, including job opportunities and agricultural resilience. It underscores the importance of resilience-building measures and social safety nets to protect households from the diverse array of shocks that can impact their well-being.

Sources of income

Household livelihood strategies play a pivotal role in determining individuals' access to food. Generally, households engaged in sustainable livelihood activities enjoy improved physical and economic access to food, essential for a healthy and active life.

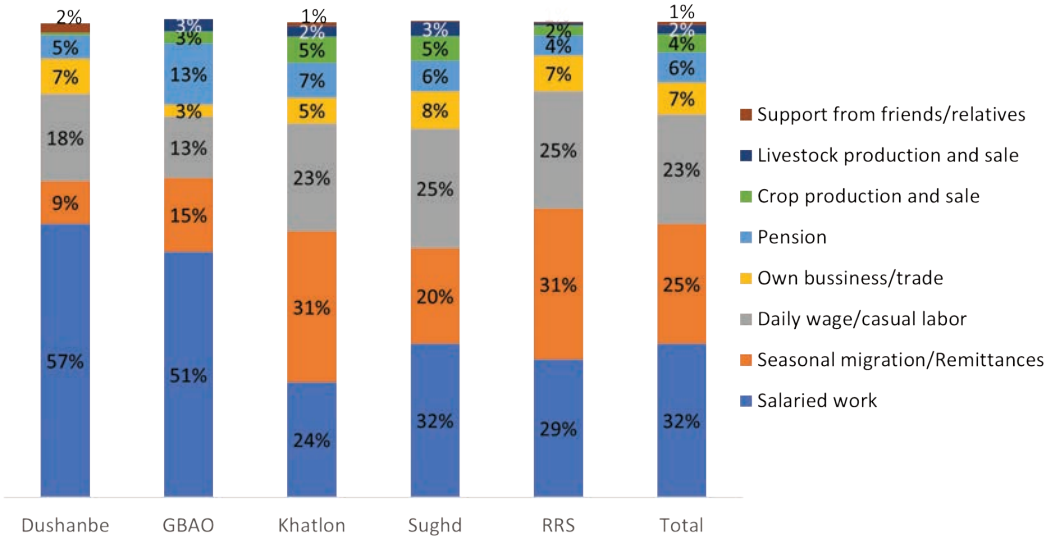
Based on the survey findings, regular salaried employment emerged as the primary livelihood strategy in the country with one-third of the population relying on this regular income. One-fourth of the households relied on seasonal migration, bringing in remittances from overseas, as the main income source and about 23 percent of households relied on daily casual labour (Figure 35).

Figure 35: Tajikistan – Households main sources of income in the last six months before the survey



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 36: Tajikistan – Households main sources of income in the last six months before the survey, disaggregated by region



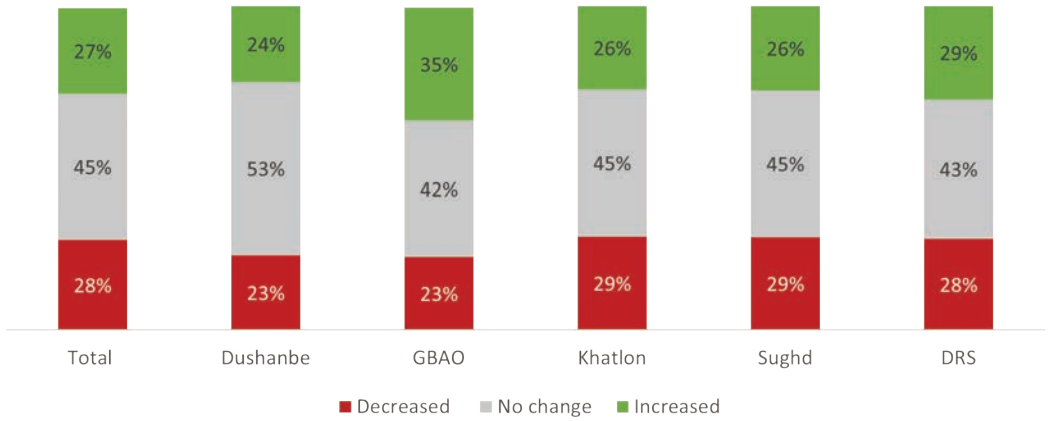
Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Disaggregating results by region, it is evident that there is an over-reliance on seasonal migration/remittances in DRS and Khatlon where over 30 percent of households rely on seasonal migration/remittances as their primary income source, followed closely by salaried work. This heavy reliance on external sources of income may expose vulnerable households to fluctuations in remittance flows or disruptions in migration patterns. To enhance household resilience and food security, efforts should be directed toward diversifying income streams, promoting local economic development and providing training and opportunities for income-generating activities within these regions. Such measures can help reduce dependency on external sources of income and build stronger, more self-reliant communities.

Changes in household income

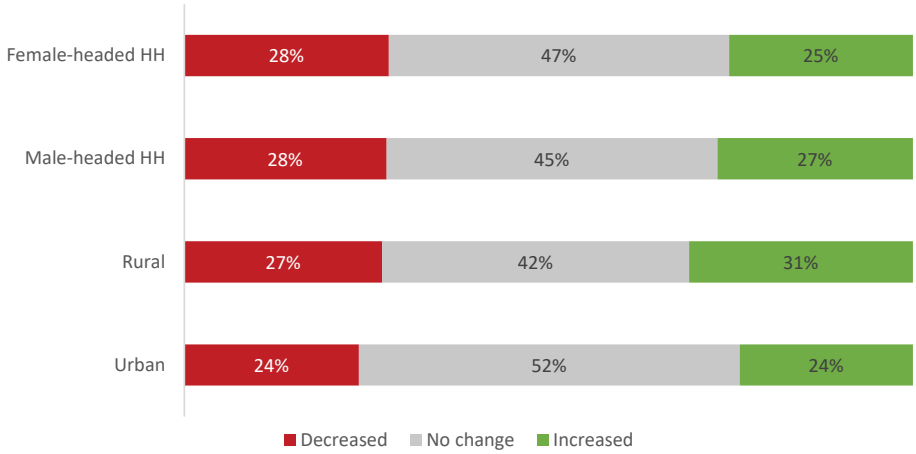
Overall, 28 percent of households reported a decrease in household income compared to the same month last year (Figure 37). This percentage is slightly lower in Dushanbe and GBAO. On the contrary, the proportion of households reporting an increase in household income over the last year, was higher than the national average (27 percent) in GBAO and DRS.

Figure 37: Tajikistan – Proportion of households reporting income changes, disaggregated by region



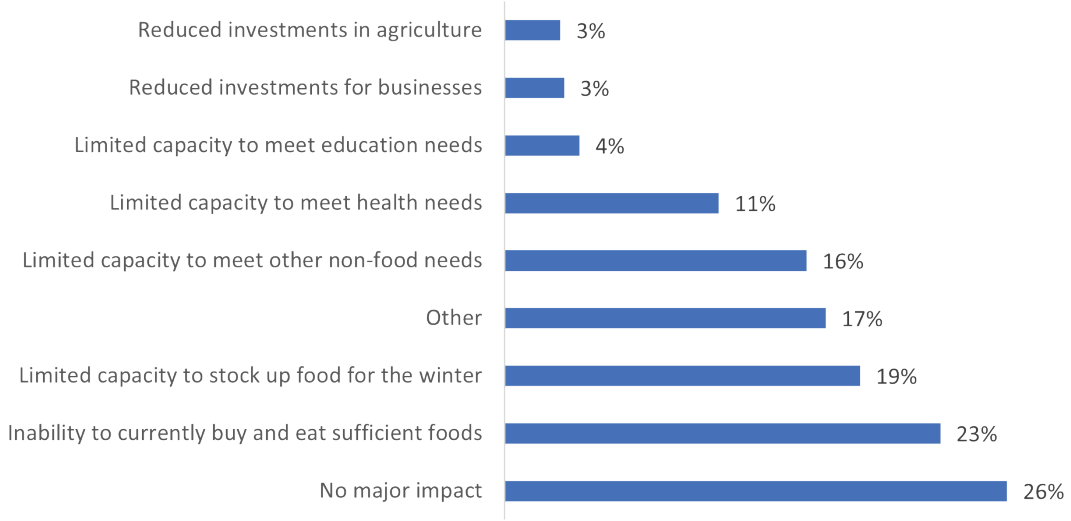
Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 38: Tajikistan – Proportion of households reporting income changes, by gender of household head and rural/urban area



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 39: Tajikistan – Type of impact of income reduction among households reporting income decrease over the last year



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

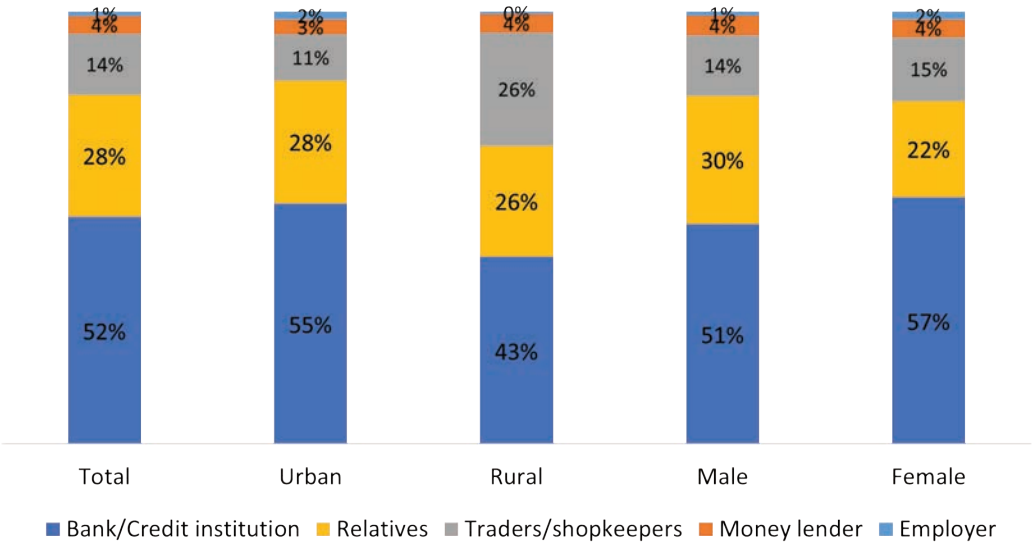
In rural areas, the percentage of households with income changes over the last year is higher than in urban areas, either for income decrease or increase. This could be reflecting a higher instability in household incomes (Figure 38).

Households reporting reduced incomes over the previous year were asked about the impact of this income loss (Figure 39). The most reported impacts were related with a reduced access to food (42 percent), such as challenges to buy sufficient food or stock up for the winter, which reflects the strong link between income and food security as well as the seasonal implications. Limited capacity to meet non-food needs, including health and education, was reported by 31 percent of households, whereas reduced livelihood investments, including agriculture, was reported by 6 percent. These results highlight the far-reaching effects on household livelihoods and human capital. Other impacts were reported by 17 percent of households with reduced incomes showing the variability of effects. One in four households did not report any major impact.

Access to credit

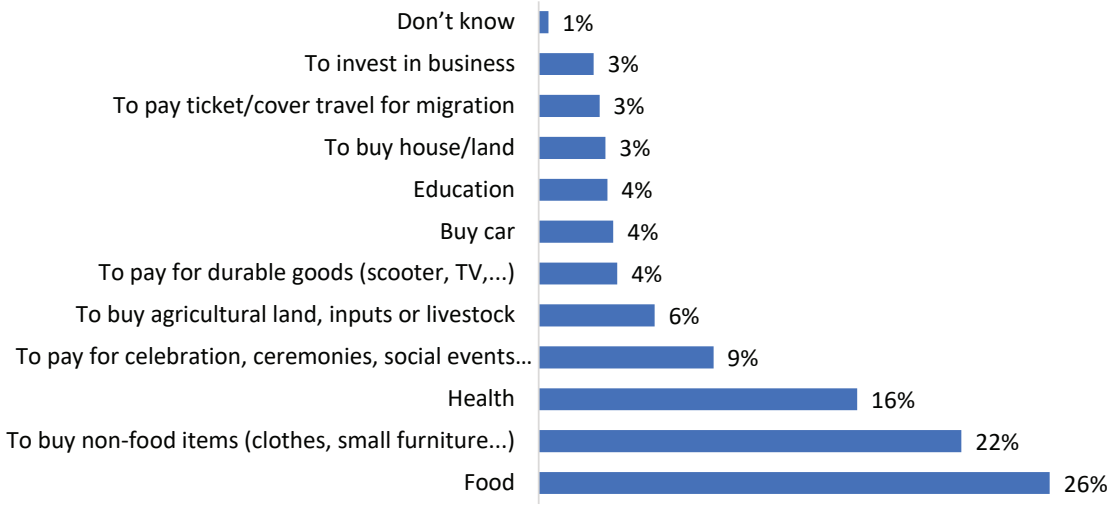
More than half of the interviewed households (54 percent) borrowed money in the last 12 months prior to the survey, without significant difference between male and female-headed households. The main source of credit are banks and credit institutions (52 percent), followed by relatives (28 percent) and traders or shopkeepers (14 percent). In rural areas, borrowing money from traders and shopkeepers is significantly more frequent than in urban areas, where formal sources are more common. By gender of household head, credit from formal sources was relatively more frequent among female-headed households (57 percent) than among male-headed households (51 percent), whereas borrowing money from relatives was more common among male-headed households. This unusual gender analysis result could be linked with the significantly higher proportion of female-headed households in urban areas, where formal sources of credit are more common. The main reasons reported for borrowing money were to buy food (26 percent), to buy non-food items (22 percent) and to cover health-related expenses (16 percent).

Figure 40: Tajikistan – Proportion of households by sources of credit



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 41: Tajikistan – Proportion of households by main reason to borrow money



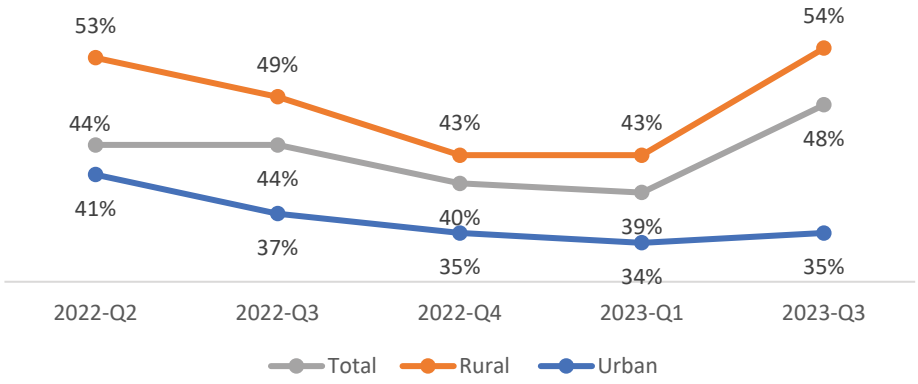
Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Migration and remittances

Remittances from both seasonal and permanent migration are a substantial portion of households' income. When asked about migration for work outside the country in 2023, 48 percent of households indicated that one or more immediate family members had engaged in migration. This represents the highest percentage since 2022 and a significant increase from the previous round (Figure 42). Migration is more common in rural areas, where 54 percent of the households had some member migrated compared to 35 percent of urban households.

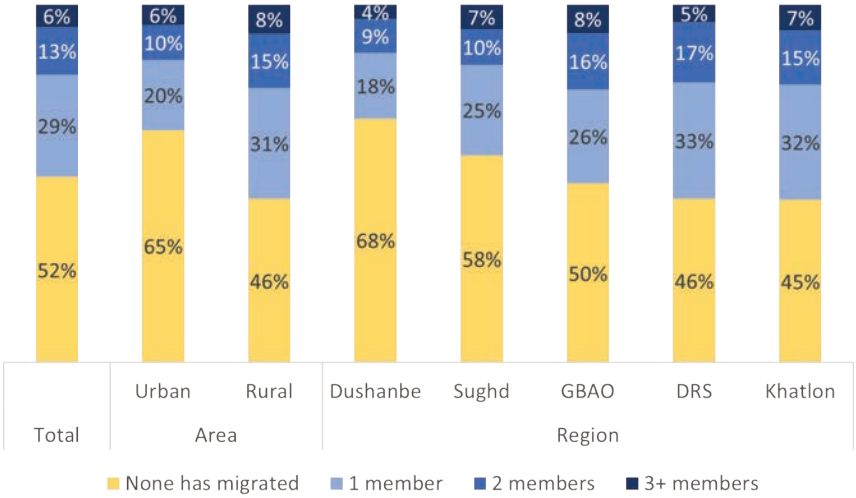
Most households in Khatlon and DRS regions rely on seasonal migration and remittances. In both regions, about 50 percent of households reported that one to three family members had migrated outside the country, showing the significant role of migration as a livelihood strategy in these regions. It is noteworthy that these regions face unique challenges and opportunities associated with labour migration, which require tailored interventions to harness the potential benefits of remittances, while addressing the vulnerabilities associated with family separation. Ensuring the well-being of both migrants and their families left behind should be a priority, including initiatives to support skill development and job creation within these regions to reduce dependency on migration as the sole income source.

Figure 42: Tajikistan – Proportion of households with immediate family members migrated, trend analysis 2022–2023



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Figure 43: Tajikistan – Proportion of households by number of migrated family members, by area and region



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

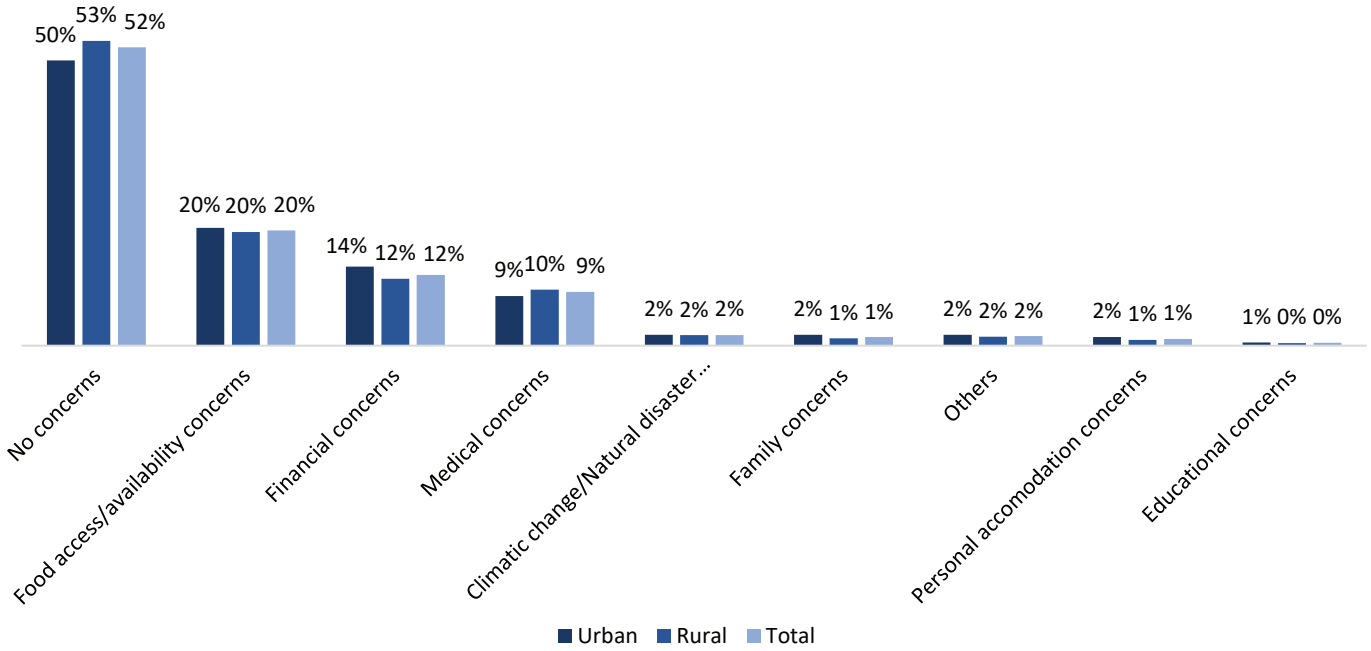
Over 90 percent of interviewed households confirmed that they received remittances in 2023. The average amount received in one year was TJS 19 425.39, with the median amount being TJS 7 000.

Typically, households sent only one member to work abroad, as reported by 57 percent of households. Out of the households with members working abroad, the majority (94 percent) have members migrated to the Russian Federation, while the remaining 6 percent are distributed among Germany, Kazakhstan, the United Kingdom of Great Britain and Northern Ireland, Türkiye and the United States of America. The migrant population was predominantly male, comprising over 85 percent of all migrants.

Household concerns

Understanding the concerns of households forms the cornerstone of effective assistance programmes. When asked about the household current greatest concern, 48 percent of households reported some concern. Food access and availability was the most frequently mentioned by respondents (20 percent), followed by financial (12 percent) and medical concerns (9 percent), which underscored the importance of accessible healthcare services. Other less frequently reported concerns were related to climate change and natural hazards, family, with accommodation or education. Urban and rural concerns are quite similar, although those related to finance are slightly more common in urban areas whereas medical concerns tend to me more reported in rural areas. This snapshot paints a vivid picture of the diverse range of concerns among households, offering valuable insights for the formulation of policies and programme development.

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

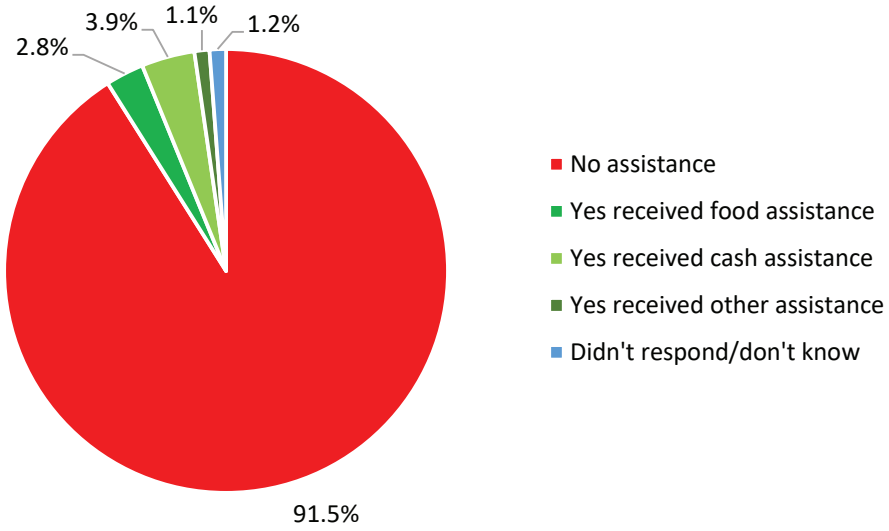


Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Household assistance

The survey inquired if households had received assistance in the past three months, shedding light on their access to social protection. Eight percent of households benefited from some sort of assistance in the previous three months, mainly cash (4 percent) and food (3 percent), while 92 percent did not report any assistance received. Taking into consideration that 16 percent of households are facing acute food insecurity, these results would indicate that half of food insecure households do not benefit from regular assistance, if a perfect targeting is assumed.

Figure 45: Tajikistan – Proportion of households reporting receiving assistance



Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

RECOMMENDATIONS

The Government of Tajikistan has developed the Agri-food System and Sustainable Agriculture Development Programme (ASSADP)[xxxxxxii] for the period up to 2030 to accelerate progress towards achieving the food security goals and objectives of the National Development Strategy (NDS)[xxxxxxiii] assigned to the agricultural sector. The NDS requires the diversification of agricultural production, taking into account the minimum impact on the environment and land quality, increasing the attractiveness of the sector for agricultural producers through training and strengthening of value chains, ensuring access to quality services and infrastructures, and the establishment of a land and water management system. The main goal of the ASSADP is to strengthen structural and institutional reforms in agriculture, with the aim to achieve sustainable agricultural production that can improve food security and increase the competitiveness of exported products.

The mission proposes a series of cost-effective measures to address some of the most pressing structural challenges to the agricultural sector with a view to contributing to national food security objectives and strengthening agricultural resilience.

Seed system

The mission recommends immediate and medium-term actions to contribute to building a national seeds system (in line with ASSADP strategic measure 6.2):

- Review the capacity of existing seed farms and provide intensive capacity support to those with most potential to achieve rapid results in different climate zones.
- Support the capacity of selected seed farms through the provision of equipment, training and seed production inputs, (including foundation stock of pure selected seeds of a certain crop variety, elite seeds and seed treatment, focusing on wheat (irrigated and rainfed), barley, potatoes, pulses (irrigated and rainfed) and oil crops (rainfed).
- Establish a certification mechanism of seeds produced by selected/supported seed farms.
- Promote the distribution of certified seeds to farmers in order to establish a sustainable market demand.
- In the medium-term, scale up the support to other seed farms.
- Review the design of the current seed laboratory under construction and the technical capacity of laboratory staff to ensure alignment with ISTA certification requirement (with the assistance of ISTA experts).
- Allow only imports of certified seeds according to Organization for Economic Cooperation and Development (OECD) schemes and accompanied by ISTA certificate.
- In the medium term, establish a registry of authorized and protected varieties, for both import and multiplication on seed farms, based on the results of adaptability and productivity tests conducted by research farms.

Sustainable climate resilient agriculture

The mission recommends immediate and medium-term measures to address barriers to sustainable crop intensification:

- Test and scale up an irrigation tariff system that promotes water savings at farm level, in particular: a) install water metre devices along irrigation canals that allow the introduction of irrigation water payment per cubic metre used; and b) introduce a two or multi-tier tariff system, with increasing fees to discourage farmers from consuming water, where farmers are asked to pay a higher price per cubic metre if they consume above a certain amount of water (ASSADP strategic measure 2.1).
- Promote crop rotation and diversity on irrigated land to avoid repetition of the same crops from one year to the next. In particular: a) increase alfalfa, soybeans, maize for silage cultivation as well as other animal feed crops (e.g., maize for silage, forage beet root); b) optimize the crop calendar with the introduction of short cycle pulses and vegetables in the cropping cycle; and c) promote investments in fruit production and processing for which the country has a comparative advantage (ASSADP strategic measures 3.8 and 6.3).
- Promote crop rotation on rainfed land through a targeted distribution of subsidized certified seeds of pulses (chickpeas) and oil crops (flax and safflower) (ASSADP strategic measure 3.8).
- Strengthen MoA extension services and reorient support to farmers by local authorities to improve crop productivity by transferring adapted technologies and practices through Farmers Field Schools (FFS).[17,]
- Test and scale up zero tillage technology on rainfed and irrigated land through targeted subsidies for adapted equipment (e.g., direct seeders) and FFS approaches (ASSADP strategic measures 3.5 and 3.8).
- Promote improved underground potato storage facilities through matching grants targeted to vulnerable farmers in mountainous zones to reduce current high post-harvest losses and benefit from high marketing prices in the spring (ASSADP strategic measure 6.3).
- Disseminate summaries of agromet advisories generated by AfH to farmers and local authorities through SMS, radio and other means of communication (ASSADP strategic measure 2.3).

Livestock and pasture

The mission recommends immediate and medium-term measures to address the livestock-feed nexus that constrains animal husbandry intensification and sustainable pastureland management:

- Enhance collaboration between MoA and AfH to improve timing of livestock migrations to summer pasturelands (ASSADP strategic measures 2.3 and 3.1).
- Undertake measures to address the lack of access to all year-round pasture by household farms who own most heads of livestock (ASSADP strategic measures 2.2 and 6.1).
- Review existing practices about how to organize access to all year-round pastures and evaluate pros and cons of either establishing associations of pasture users managing large communal pastureland or allowing small groups of livestock owners to manage small allocations of private pastures (ASSADP strategic measures 2.2 and 6.1).
- Increase the areas under alfalfa and other fodder crops cultivation (e.g., maize for silage) on irrigated and rainfed land in high elevations (ASSADP strategic measure 3.8).
- Undertake actions to improve livestock breed to target farmers whose access to pasture and livestock feed has been addressed (ASSADP strategic measure 6.1).

[17] ASSADP identifies the slow productivity growth as a main challenge in the agricultural sector.

Orchards and vineyards

Conduct a frost damage and loss assessment on orchards and vineyards and identify vulnerable farmers most affected by the hazards. Provide financial support and inputs for replanting orchards that were severely affected by winter frost in 2023 (ASSADP strategic measures 2.3 and 6.3).

Agricultural statistics

The mission recommends rethinking the agriculture statistical system in order to provide accurate and timely data on area cultivated, yield and production as well as on key factors of production for the main field crops. The general features of this system would include the following (ASSADP strategic measure 1.3):

- Reorient AoS data collection activities on major crops, such as wheat, potatoes, cotton, alfalfa and livestock (cattle, sheep and goats) through a light and agile sample survey to be conducted twice a year. The sample size should allow to generate reliable estimates at national and regional levels for *dehkan* and household/backyard farms. The survey design should include actual measurements of area cultivated and yields (crop cuttings) by trained and supervised enumerators.
- Transfer the responsibility of compiling data on minor crops, as vegetables, fruits and spices, to MoA and local authorities. Data compilation procedures from *dehkan* and household/backyard farmers should be simplified into one data collection exercise, under the general oversight and guidance of AoS.

Food security

Based on the household survey, it is estimated that pockets of food insecurity remain in the country with 1.58 million people facing acute food insecurity, with 50 000 of them severely food insecure and in need of food assistance.

In light of these findings, the following recommendations are proposed:

- Ensure that the 50 000 people severely food insecure and in need of assistance are correctly targeted and benefit from food assistance and nutritional interventions, with special attention to Khatlon and DRS. Timely and effective distribution of food assistance, along with measures to enhance their access to livelihood opportunities and social safety nets, should be prioritized to alleviate their severe food insecurity and ensure their well-being.
- Scale up resilience-building activities to food insecure households, including context-specific strategies that focus on livelihood diversification and income-generating activities, among others.
- At the policy level, it is imperative to promote economic diversification and enhance income stability to reduce households' dependency on remittances and irregular income sources, through programmes that encourage income-generating activities, vocational training and access to microfinance services, which can help reduce vulnerability to income fluctuations. Additionally, efforts should be made to support the creation of local employment opportunities and promoting sustainable livelihoods.
- Constant monitoring of household food security situation and market prices is strongly recommended given the international context and high dependency of Tajik households' food security on remittances and irregular income sources.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ANNEXES

ANNEX 1

Annual crops area planted, yield and production, 2018–2023 and changes compared to 2022

Table A1a: Tajikistan – Cereals, pulses, potatoes and cotton planted area, 2018–2023 and changes compared to 2022 ('000 hectares)

	2018	2019	2020	2021	2022	Five-year average	2023[1/]	Percent change 2023/2022
Wheat	255.5	264.0	269.6	274.8	271.1	267.0	290.8	7.3
Barley	72.3	71.8	71.1	69.9	68.2	70.7	72.3	6.1
Maize (grain)	15.9	17.0	17.4	17.6	17.9	17.2	18.5	3.7
Paddy	11.8	12.4	13.0	12.7	12.9	12.6	12.4	-3.7
Total cereals	**355.6**	**365.1**	**371.1**	**375.1**	**370.0**	**367.4**	**394.0**	**6.5**
Potatoes	49.6	51.8	52.7	57.2	56.1	53.5	58.6	2.6
Pulses	17.0	16.3	17.2	17.3	17.5	17.1	18.0	4.4
Cotton	185.8	185.7	185.4	173.8	181.5	182.4	175.7	-3.2

Note: Figures may not add up due to rounding.

[1/] Wheat and barley area planted was adjusted by the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan to account for an increased in rainfed cultivation on pastureland.

Source: Authors' own elaboration based on data provided by the Agency on Statistics under the President of the Republic of Tajikistan (AoS) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan (forecast), 2023.

Table A1b: Tajikistan – Cereals, pulses, potatoes and cotton yields, 2018–2023 and changes compared to 2022 (tonnes/hectare)

	2018	2019	2020	2021	2022	Five-year average	2023	Percent change 2023/2022
Wheat	3.1	3.2	3.2	3.2	3.5	3.2	3.6	4.3
Barley	2.2	2.2	2.2	1.9	2.3	2.1	2.4	2.2
Maize (grain)	5.7	5.7	5.5	5.6	5.8	5.6	5.6	-2.5
Paddy	5.1	5.1	5.4	5.5	5.5	5.3	5.3	-3.6
Potatoes	19.3	19.1	18.7	18.1	19.5	19.0	18.5	-4.1
Pulses	1.6	1.7	1.6	1.7	1.8	1.7	1.7	-5.1
Cotton	1.7	2.2	2.1	2.2	2.3	2.1	2.2	-3.1

Note: Figures may not add up due to rounding.

Source: Authors' own elaboration based on data provided by the Agency on Statistics under the President of the Republic of Tajikistan (AoS) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan (forecast), 2023.

Table A1c: Tajikistan – Cereals, pulses, potatoes and cotton production, 2018–2023 and changes compared to 2022 ('000 tonnes)

	2018	2019	2020	2021	2022	Five-year average	2023	Percent change 2023/2022
Wheat	779.0	836.9	864.1	876.2	934.3	858.1	1 046.7	12.0
Barley	108.8	154.2	153.9	129.6	157.0	140.7	169.9	8.2
Maize (grain)[1/]	90.1	96.5	95.7	98.8	103.5	96.9	104.7	1.2
Paddy[1/]	60.0	62.6	70.1	69.6	70.9	66.6	65.8	-7.2
Total cereals	**1 037.8**	**1 150.2**	**1 183.8**	**1 174.2**	**1 265.7**	**1 162.3**	**1 387.1**	**9.6**
Potatoes	964.6	994.4	1 022.5	1 041.3	1 094.4	1 023.4	1 083.5	-1.6
Pulses[1/]	27.4	28.2	27.8	29.2	30.7	28.6	30.2	-1.0
Cotton	300.3	403.0	396.0	388.8	404.7	378.6	386.5	-4.5

Note: Figures may not add up due to rounding.

[1/] Time series for maize, paddy and pulses were adjusted by the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan.

Source: Authors' own elaboration based on data provided by the Agency on Statistics under the President of the Republic of Tajikistan (AoS) to the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan (forecast), 2023.

ANNEX 2

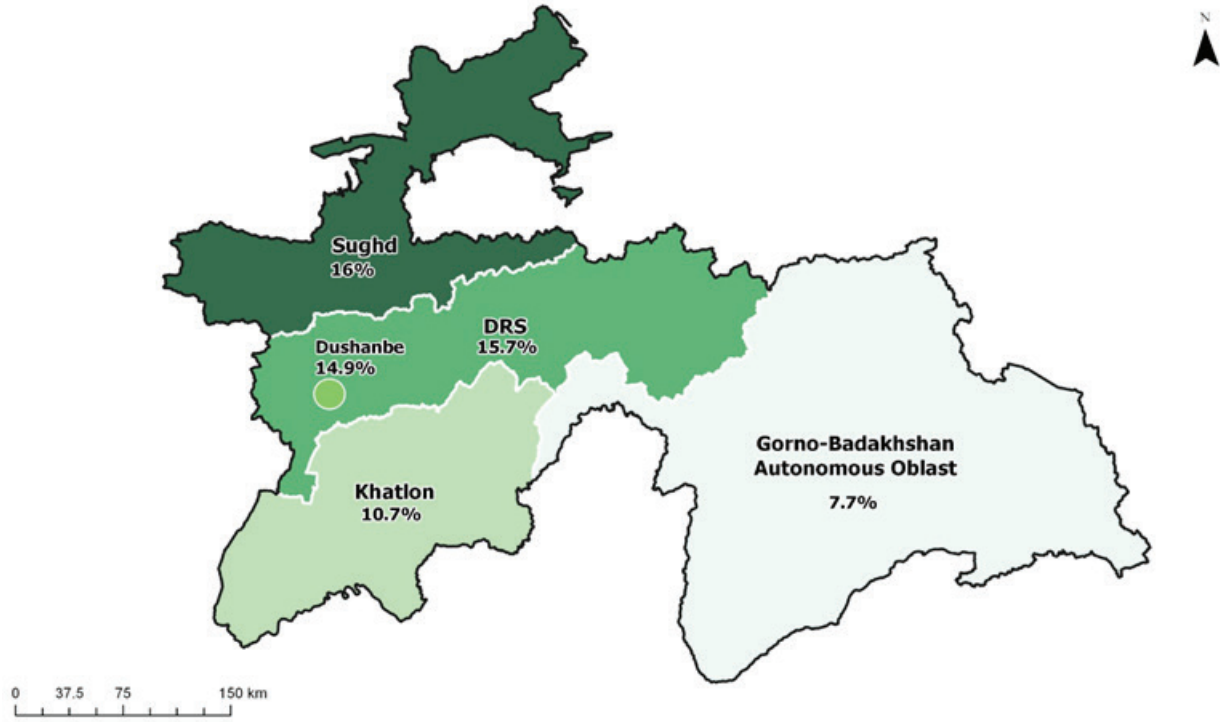
Food Security Monitoring by regions and district, August 2023

Table A2a: Tajikistan – Sample of Food Security Monitoring Systems (FSMS) mobile household survey, August 2023

Region	Sample
Dushanbe	330
GBAO	331
Khatlon	329
Sughd	329
DRS	331
Total cereals	**1 650**

Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

Map A2a: Tajikistan – Food secure regions (proportions), July–August 2023



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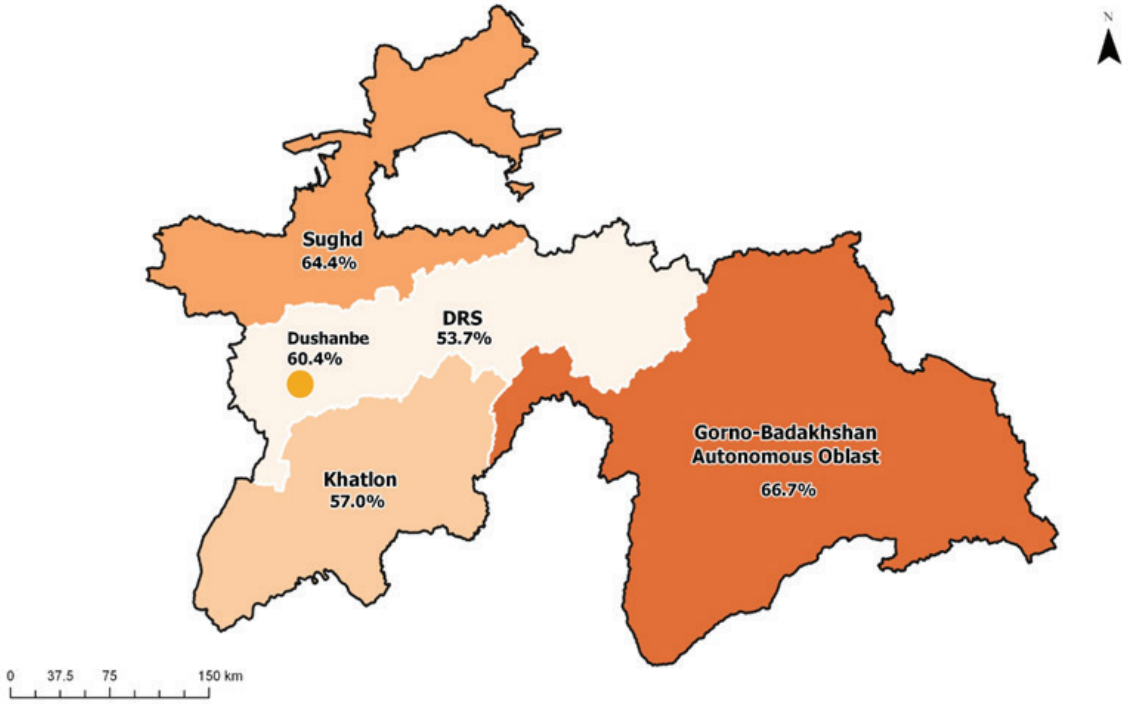
Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS), July/August 2023.

ANNEX 2 *cont'd*

Food Security Monitoring by regions and district, August 2023

Map A2b: Tajikistan – Marginally food secure regions (proportions), July–August 2023



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Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS), July/August 2023

ANNEX 2 *cont'd*

Food Security Monitoring by regions and district, August 2023

Table A2b: Tajikistan – Sample of Food Security Monitoring Systems (FSMS) household survey, August 2023 (sampling frame by district)

Province (ADMIN 1)	District (ADMIN 2)	Population	Sample
Dushanbe	Dushanbe	1 201 800	330
DRS	Vahdat	359 800	57
	Roghun	45 400	7
	Tursunzoda	320 200	50
	Hisor	331 400	52
	Varzob	89 300	14
	Lakhsh	54 400	9
	Nurobod	72 600	11
	Rudaki	387 200	61
	Rasht	131 100	21
	Sangvor	25 100	4
	Tojikobod	50 900	8
	Faizobod	111 700	18
	Shahrinav	121 900	19
Sughd	Khujand	198 700	23
	Istiqlol	18 700	2
	Guliston	50 200	6
	Buston	38 400	4
	Ayni	91 200	11
	Asht	176 300	21
	Devashtich	182 100	21
	Zafarobod	77 400	9
	B.Ghafurov	388 600	45
	J.Rasulov	144 100	17
	Isfara	285 000	33
	Konibodom	219 900	26
	Kuhistoni Mastchoh	24 400	3
	Mastchoh	132 500	15
	Panjakent	312 400	37
	Spitamen	149 700	17
	Istaravshan	288 100	34
	Shahriston	46 200	5

ANNEX 2 *cont'd*

Food Security Monitoring by regions and district, August 2023

Table A2b: Tajikistan – Sample of Food Security Monitoring Systems (FSMS) household survey, August 2023 (sampling frame by district) *cont'd*

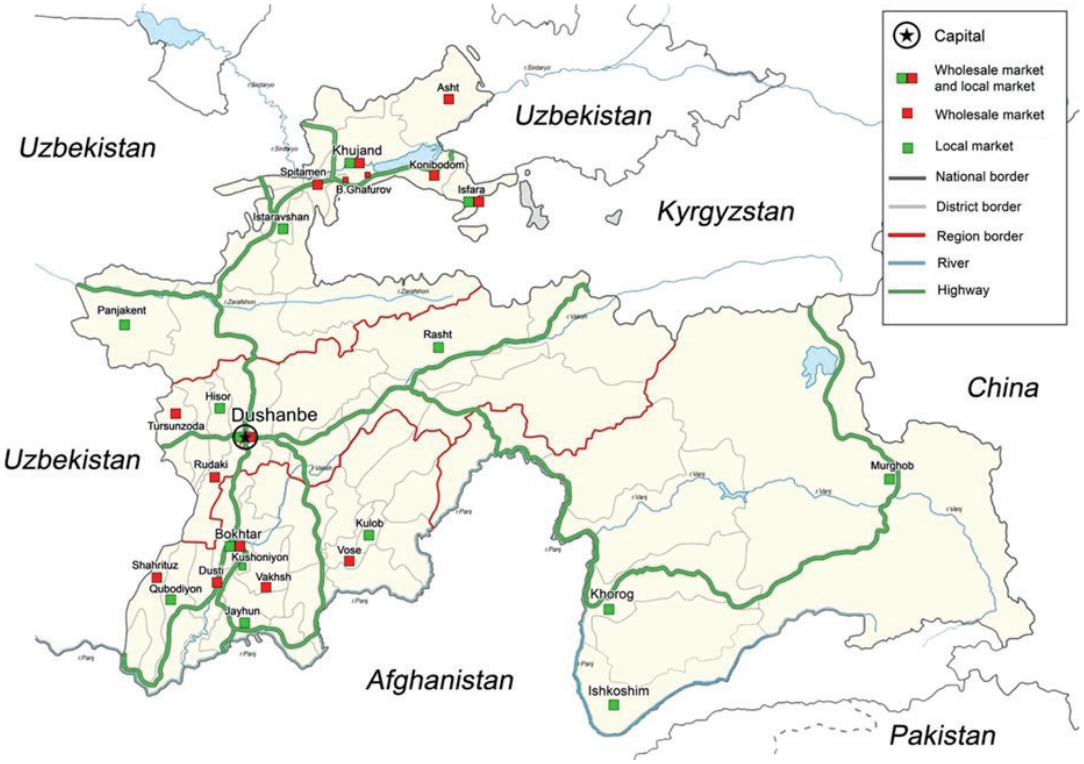
Province (ADMIN 1)	District (ADMIN 2)	Population	Sample
Khatlon	Bokhtar	126 700	12
	Baljuvon	32 700	3
	N.Khusrav	45 100	4
	Kushoniyon	260 500	24
	Vakhsh	213 000	20
	Vose	228 200	21
	Khuroson	126 300	12
	Danghara	171 900	16
	Dusti	122 000	11
	Qubodiyon	195 100	18
	Balkhi	210 500	19
	Kulob	222 100	21
	Jaihun	145 600	14
	M.S.A Hamadoni	154 300	14
	Muminobod	99 300	9
	Norak	64 900	6
	Farkhor	179 100	17
	Panj	124 000	12
	Levakant (Sarband)	49 700	5
	Temurmalik	75 300	7
	Khovaling	58 300	5
	A.Jomi	183 900	17
	Shahritus	135 700	13
	Shamsidin Shohin	57 700	5
	Yavan	248 100	23
GBAO	Khorugh	31 100	45
	Vanj	34 400	50
	Darvoz	23 500	34
	Ishkoshim	30 600	44
	Murghob	16 500	24
	Roshtqala	28 100	40
	Rushon	26 500	38
	Shugnon	39 400	57
Total	**Tajikistan**	**9 886 800**	**1 650**

Source: Authors' own elaboration World Food Programme (WFP), based on data from WFP Food Security Monitoring Systems (FSMS). July/August 2023.

ANNEX 3
Monitoring methodology and coverage

WFP is conducting market monitoring in 15 of the main markets in Tajikistan in partnership with Neksigol Mushovir. The markets monitored include five major markets: in Khorog in GBAO Region, Khujand in Sughd Region, Bokhtar in Khatlon Region, Rasht in DRS Region and Dushanbe, and ten minor markets: in Murghob and Ishkoshim in GBAO Region, Isfara, Istaravshan and Panjakent in Sughd Region, Kulob, Kushoniyon, Jayhun and Qubodiyon in Khatlon Region and Hisor in DRS Region. The focus is on the main commodities that are consumed by the population of the country. Prices are collected twice per week. For each commodity, multiple traders are interviewed and the average prices are recorded and reported.

Map A3: Tajikistan – Locations of markets where the market monitoring was carried out



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Source: Authors' own elaboration based on the 2023 FAO/WFP Crop and Food Security Assessment Mission (CFSAM) to the Republic of Tajikistan, 2023.

ANNEX 4a
District format

Sample multidisciplinary interview guide and data recording format

Season: 2022/2023	Winter crops X / Spring Crops X

1. General Information

Oblast/District:	Key Informants (list):
HH interviewed:	Fields visited:

2. Growing conditions (Information from oblast/district agriculture directorates, farmers, traders and other key informants)

Rainfall

Start		**Dry spells**		**Rainfall amount compared to normal**	**Rainfall amount compared to previous year**
Early ☐ Normal ☐ Late ☐	Date	Month	Number of weeks	Below average ☐ Average ☐ Above average ☐	Better ☐ Same ☐ Lower ☐
Description of the Winter 2022/23, Spring 2023 and early Summer 2023 seasons:					
Field observations:					

Irrigation

Type	**Compared to previous year** (amount regularity, timing, costs)	**Observations on the irrigation status**
Gravity ☐ Pumping ☐ Drip, sprinkler ☐	Better ☐ Same ☐ Lower ☐	
Field observations:		

3. Most seriously affected areas by drought, flood and other shocks (Information from oblast/district agriculture

directorates and other key informants [severity damages: 5 = very severe; 1 = minimal damages])

Locations	**Type of damage** (drought, flood, strong wind, frost, wild animal, other shocks etc.)	**Total acreage of agriculture land affected** (hectares)	**Acreage of main crops affected** (hectares)	**Yield reduction** (percent)	**Severity of the damages** (scale 1 to 5)	**Remarks**
1.						
2.						
3.						
4.						
5.						

4. Agriculture inputs supply (Information from oblast/district agriculture directorates, farmers, traders and other key informants)

	Availability			**Price/cost**			**Remarks**
	Below last year	**Same**	**Above last year**	**Below last year**	**Same**	**Above last year**	
Seeds	☐	☐	☐	☐	☐	☐	
Fertilizers	☐	☐	☐	☐	☐	☐	
Manure/organic fertilizers	☐	☐	☐	☐	☐	☐	
Pesticides/herbicides	☐	☐	☐	☐	☐	☐	
Ag. Machinery/ mechanization	☐	☐	☐	☐	☐	☐	
Fuel	☐	☐	☐	☐	☐	☐	
Labour	☐	☐	☐	☐	☐	☐	
Access to credit/grants	☐	☐	☐	☐	☐	☐	
Post-harvest operations	☐	☐	☐	☐	☐	☐	

ANNEX 4a *cont'd*
District format

5. Area, yields and production (Information from oblast/district agriculture directorates, farmers, traders and other key informants)

Staple Crops		**Wheat** (Winter/ Spring)	**Barley** (Winter/ Spring)	**Maize**	**Rice**	**Potatoes**	**Beans Total**	**Lentils**	**Cotton**
Planted area (hectares)	Last year								
	Current year								
Yields (kg/hectares)	Last year								
	Current year								
Production (tonnes)	Last year								
	Current year								
Factors that affected area, yield and losses (Where this is different by crop, please specify):									

Fruits, vegetables and fodder crops		**Apples**	**Grapes**	**Apricots**	**Melons**	**Tomatoes**	**Onions**	**Alfalfa**	**Fodder crops** (temporary)
Planted area (hectares)	Last year								
	Current year								
Yields (kg/hectares)	Last year								
	Current year								
Production (tonnes)	Last year								
	Current year								
Factors that affected area, yield and losses (Where this is different by crop, please specify):									

6. Pests and crop diseases (Information from oblast/district agriculture directorates, farmers, agriculture directorate staffs and other key informants)

Specify	Crop affected	Level of damage		
		Mild	Average	Serious
Remarks (comparison with last year):				

7. Livestock (Condition: 1 = very poor; 5 = very good. Information from oblast/district agriculture directorates staffs, farmers and other key informants)

	Numbers			Condition (1–5)	Remarks (specify condition and reasons if decrease/increaser compare to last year, type of diseases, etc.)
	2021	2022	2023 (projection)		
Cattle					
Sheep and goats					
Horses					
Poultry (all birds)					

8. Pasture and fodder crops for livestock (Condition: 1 = very poor; 5 = very good. Information from oblast/district agriculture directorates staffs, farmers and other key informants)

	Condition (1–5)	Compare to previous year (improve/same/worse)	Remarks
Pastures			
Fodder crops			

ANNEX 4b
Market check list

Raion:			City:
DAILY/FARMERS/CITY market/store:			
List most important items sold in the market and their price/unit			
List of items (list any other items as well)	Availability Below Last year = **-1** Same = **0** Above Last year = **+1**	Price July 2023	Price July 2022
Wheat flour			
Rice			
Potatoes			
Chick peas			
Beans			
Sunflower oil			
Chicken meat			
Beef meat			
Lamb meat			
Apples			
Apricots			
Melons			
Table grapes			
Onions			
Tomatoes			
Cucumbers			
Sugar			

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