TAJIKISTAN
AGRIFOOD SECTOR AND PUBLIC EXPENDITURE REVIEW

Europe and Central Asia Region

WORLD BANK GROUP

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Abbreviations and acronyms

ADB	Asian Development Bank
AKIS	Agricultural Knowledge and Innovation System
CIS	Commonwealth of Independent States
COFOG	Classifications of the Functions of the Government
COVID-19	Coronavirus disease 2019
DRS	Districts of Republican Subordination
FAO	Food and Agriculture Organization of the United Nations
FAOGIEWS	Global Information and Early Warning System of FAO
FAOSTAT	FAO Corporate Statistical Database
FDI	Foreign direct investment
FSCT	Food Security Committee of the Republic of Tajikistan
GAO	Gross agricultural output
GBAO	Gorno Badakhshan Autonomous Oblast
GDP	Gross domestic product
GIZ	Deutsche Gesellschaft für internationalle Zusammenarbeit (German International Cooperation)
GoT	Government of the Republic of Tajikistan
Ha	Hectare
IDA	International Development Association
IsDB	Islamic Development Bank
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
Kg	Kilogram
MOA	Ministry of Agriculture of the Republic of Tajikistan
MOF	Ministry of Finance of the Republic of Tajikistan
MTDP	Medium-Term Development Program of the Republic of Tajikistan for 2021–2025
NIP	National Investment Plan for Food and Nutrition Security and Sustainable Agricultural Development of the Republic of Tajikistan for 2021-2030
OECD	Organisation for Economic Co-operation and Development
R&D	Research and development
RISE	Resilience, inclusion, sustainability, and efficiency
SPS	Sanitary and phytosanitary
SUN	Scaling Up Nutrition
TAAS	Tajik Agrarian Academy of Science
TAJSTAT	Agency on Statistics under the President of the Republic of Tajikistan
TAU	Tajik Agrarian University
UNICEF	United Nations International Children's Emergency Fund
US$	United States dollar
USAID	United States Agency for International Development
WDI	World Development Indicators of the World Bank Group
WFP	World Food Programme

Executive Summary

1. **Tajikistan's agrifood system[1] has had a steady and growing presence domestically and in the Central Asia region, but still faces many constraints.** Agriculture is significantly affected by climate change due to the high vulnerability of its natural environment and the low adaptive capacity of both farmers and the public sector. COVID-19 disruptions amplified the latter and highlighted the need for more constructive relationships between public policy and the private sector, not only to respond to imminent challenges brought by the current crisis, but also to implement longer-term solutions for resilient development. This report reviews key issues characterizing the agrifood sector in Tajikistan (Chapter 1), assesses how the agrifood sector fared in the face of COVID-19 (Chapter 2), and discusses key findings regarding agricultural public expenditure policies (Chapter 3). Chapter 4 presents recommendations for building a better future.

RECENT DEVELOPMENTS IN THE AGRIFOOD SECTOR OF TAJIKISTAN

2. **Despite the harsh environment, high exposure to climate hazards, and limited natural resources, Tajikistan's agriculture sector has been growing.** Over recent years, Tajikistan achieved high rates of agricultural growth (6.4 percent per year during 2010–2019) and increased agricultural production and export diversification. The Government of Tajikistan (GoT) increased attention to integrated agrifood value chain development, not just to agricultural production, and to the inclusion of smallholders in value chains. The GoT also took steps to address the persistent food insecurity and malnutrition problems in the country.

3. **A series of structural, institutional, and policy issues nonetheless impede achievement of higher and sustained growth in the sector and poverty reduction.** Low agricultural productivity is the result of depleted natural resources (soil, water, pastures), a fragmented farm sector, and overreliance either on imported farm inputs (which are often not adjusted to the local agroecology) or on locally produced, low-quality inputs, coupled with inadequate agricultural public programs. Opportunities and incentives for much-needed private investments in agrifood system are hampered by: unfinished cotton sector reform; fragmented, subsistence-oriented agriculture; weak agrifood processing, export, and other agribusiness companies; and weak institutional capacity to detect and respond to various shocks (food price spikes, climate risks, pest and disease outbreaks).

[1] The agrifood system extends beyond primary agricultural production to include storage, processing, distribution, transport, logistics, retailing, and other services.

4. **As a result of the above-mentioned challenges, food and nutrition security remain big issues in Tajikistan.** The latest *State of Food Security and Nutrition in the World* report reveals that 29–56 percent of households in Tajikistan cannot afford a nutrient-adequate diet.[2] Stunting among children under five years of age averaged 17 percent in 2017, varying by geography. Gorno Badakhshan Autonomous Oblast (GBAO) has an exceptionally high rate (31.6 percent) compared to other regions, where rates hover around 15–18 percent. Little variation is found in stunting prevalence across wealth quantiles and it decreased along all wealth quantiles between 2012 and 2017.

COVID-19 CRISIS AND IMPACTS ON TAJIKISTAN'S AGRIFOOD SECTOR AND FOOD SECURITY

5. **COVID-19 had a significant adverse impact on the Tajik economy.** Real gross domestic product (GDP) growth slowed to 4.5 percent in 2020, compared to 7.5 percent in 2019. The pandemic also had a negative effect on already low foreign direct investment (FDI), which fell by over 70 percent, or 1.8 percent of GDP, in the first half of 2020. Disposable incomes of consumers dropped and are projected to recover slowly, in contrast to many developed countries where the excess savings[3] resulting from lower spending during COVID-19 and government support are anticipated to drive growth in 2021–2022.

6. **On the agrifood sector supply side, agricultural production increased, and the agriculture sector was among the largest contributors to GDP growth in 2020.** Prepandemic-secured farm inputs for the main planting campaign in 2020, relatively favorable weather conditions, some farmland restored to agricultural production, and growing production capacity in the poultry subsector helped boost agriculture sector output in 2020. Yet the negative impact of COVID-19 on the 2021 agricultural season is likely to be high. The demand side of the agrifood sector was more affected by the COVID-19 crisis in 2020. The pandemic heightened the risks of food scarcity during the off-season months, notwithstanding the increased production during summer and autumn. The drop in household income caused by job losses, lower remittances, and business closures (temporary or permanent) reduced food consumption. Meanwhile, some staple foods saw their prices hike up as consumers engaged in panic buying and hoarding. The pandemic effects on nutrition are particularly concerning for the poor and vulnerable, whose access to safe, diverse, and healthy food is jeopardized.

7. **Tajikistan's agrifood sector-related responses to the pandemic were in general similar to those enacted by other emerging economies; in retrospect, they adhered to good global practices, within the country's available means and tools**. To ameliorate the economic fallout, the GoT took several fiscal and monetary mitigation measures and focused on additional areas specifically in agriculture and food security. The ultimate objectives were in line with the general advice from the international community, aimed

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[2] A nutrient-adequate diet provides adequate calories and relevant nutrient intake values of 23 macro- and micronutrients through a balanced mix of carbohydrates, proteins, fats, and essential vitamins and minerals within the upper and lower bounds needed to prevent deficiencies and avoid toxicity. FAO, International Fund for Agricultural Development (IFAD), UNICEF, WFP, and WHO. 2020. *The State of Food Security and Nutrition in the World 2020. Transforming Food Systems for Affordable Healthy Diets*. Rome.

[3] The excess savings during first the first nine months of 2020 are estimated to have ranged from 2.5 percent of GDP in Germany t0 more than 6 percent in the United States. The Economist. 2021. The World Economy: *The US$3 trillion Question*. March 13, 2021.

to: avoid disruptions in domestic food supply chains; protect the purchasing power of poor households to continue to access food; and ensure access to key inputs and labor for the upcoming planting season. The scale of GoT actions, however, was limited by the country's tight fiscal space, amplified by the increased needs for spending on health care and social protection, and a shortage of instruments available for effective crisis response. Some actions, such as export bans and food price controls, were antimarket. These were used anyway due to the lack of alternatives caused by the limited fiscal space (as in many other developing countries), which did not allow sufficient compensation of consumers, even the poor eligible for safety net support for the loss of income and higher food prices, as was done in the majority of higher-income countries. *To build a better future in the aftermath of the pandemic, Tajikistan should focus on removing temporary relief measures and investing in "no regrets" measures to be better prepared for future crises.*

AGRICULTURAL PUBLIC EXPENDITURE REVIEW

8. **Tajikistan's agricultural public expenditures grew annually in most years between 2015 and 2020.** This shows that agriculture is a priority for government support and the government borrowing from donors. In 2020, total agricultural public expenditures amounted to 721 million Somoni,[4] an equivalent of US$65 million, or 0.81 percent of GDP. On average during 2015–2020, agricultural public expenditures grew annually by 21 percent in nominal terms and by 15 percent in real terms. Average annual growth in US dollars was 4 percent. Several sources finance Tajikistan's agricultural public expenditures: (i) the central government; (ii) local governments; (iii) Special Funds[5]; (iv) donors; and (v) tax/customs exemptions. According to the World Bank's estimate, most funds (64 percent of the total) were provided by donors, with most of them executed by government institutions (i.e. recipient executed).

9. **Agricultural public expenditures contributing to public debt are estimated to average 0.30 percent of GDP during 2015–2020, less than one-third of total agricultural spending estimate (1.03 percent of GDP)**. Many donor projects, even recipient-executed ones included in the reports of the Ministry of Finance (MOF) and the State Investment Committee, are still largely financed by grants, not loans, which do not need to be repaid by taxpayers. Furthermore, the credit lines in recipient-executed projects are repaid by subloan beneficiaries, i.e., also not by taxpayers, unless they are defaulted by subloan beneficiaries. And Special Funds originate from payments made by farmers and agribusinesses for provided services, again not financed by taxpayers. As a result, the net burden of agricultural public expenditures on public debt in Tajikistan is much smaller than the aggregate figures reveal.

10. **The GoT spends its budget resources on agriculture along eight areas**. The largest programs are irrigation (50 percent of the total), veterinary services (17 percent), and support to agricultural production (14 percent). Differences arise in what is financed by various sources of funds. The central government budget is spread across many measures, with most funds allocated to irrigation, support to agricultural production, management and control of the agriculture sector, and land management and reclamation.

[4] This figure includes only expenditures reported in the Ministry of Finance's (MOF) Treasury's estimates. It does not include spending under donor-executed projects.

[5] Special Funds are financed by the recipients/users of services provided by state-owned enterprises.

Local government budgets mainly finance veterinary services and irrigation, while Special Funds largely finance veterinary services and inspections and services for the agriculture sector.

11. **The large underinvestment in research and development (R&D) explains many problems faced by Tajik agriculture, especially high productivity gaps and weak climate resilience**. Spending is functionally concentrated on irrigation infrastructure and management, with spending on agricultural R&D conspicuously missing. Slightly more than one-half of funds in the total agricultural budget are allocated to irrigation/drainage infrastructure. The irrigation/drainage budget is more dependent on donor financing than other parts of agriculture. Similarly, more than one-half of the recipient-executed donor projects finance irrigation/drainage expenditures. In contrast, in 2019, Tajikistan is estimated to have spent on agricultural R&D only 0.04 percent of its gross agricultural output (GAO), including donor projects. Assuming that a large fraction (20 percent) of the agricultural education budget (e.g., universities) is spent on R&D increases this number to 0.05 percent. Other developing countries with successful agriculture spend 10 times more, about 0.5 percent of their GAO.

12. **Even though donor funds are spread across many more functions than government funds, many important public goods are still underfinanced**. As mentioned, the largest spending item of donor projects is irrigation. It is followed by support to community organizations, farm cooperatives, and productive partnerships/clusters, closely followed by credit lines, which seek to improve access to agricultural finance complemented by business development services. Substantial donor funds are also spent on pasture management, agricultural extension services, disaster risk management, and mechanization. Much smaller budgets are allocated to agricultural R&D, seed and seedling production, agricultural policy support, sanitary and phytosanitary (SPS) measures, food safety, agrilogistics, and early warning systems for crisis preparedness and response. Combining GoT and donor financing does not change the narrative. Although Tajikistan's agricultural public expenditures have been largely allocated to core public goods, not to input and output subsidies, many core public programs needed to generate sustainable agricultural growth remain underfinanced.

POLICY RECOMMENDATIONS

13. **"What to do" in the areas of agricultural development and food/nutrition security is well covered in the recently strategic documents prepared GoT and the donor organizations.** These documents are the State Program for Medium-Term Development of the Republic of Tajikistan (MTDP) 2021–2025 No. 168 approved on April 30, 2021[6], and the FAO report with the proposed Investment Plan for Food and Nutrition Security and Sustainable Agricultural Development (NIP) 2021–2030 for the Republic of Tajikistan. While achievement of agricultural and food/nutrition outcomes continues to be greatly affected by general economic reforms that could deliver lower inflation, interest, and tax rates, the concrete agrifood sector-specific public policies and investments outlined in the draft MTDP 2021–2025 and the draft NIP 2021–2030 are critical to move the sector forward. Together they provide a strategic framework for further reforms, reflecting in

[6] Other recently approved GoT documents include the Program for Enhancing Food Security during 2020-2024 and the Concept for Establishment and Development of Agrifood Clusters.

retrospect the RISE (resilience, inclusion, sustainability, and efficiency) pillars identified by the World Bank as having a large impact on economic and social development around the globe:[7]

a. The MTDP 2021–2025 outlines the following for accelerating agriculture to improve food security and contribute to broader economic and social development of the country: (i) improving policies and regulations and the capacity of public institutions; (ii) enhancing farmers' access to inputs, advisory services, and information; (iii) strengthening farmers' capacity; (iv) improving food security and access to high-quality food through supporting climate-smart and green agriculture; (v) modernizing irrigation and drainage infrastructure and management; and (vi) supporting development of agrifood value chains. The draft MDTP 2021–2025 emphasizes resilience and efficiency, two aspects of the RISE framework.

b. The FAO report with NIP 2021–2030 groups specific measures for food and nutrition security and sustainable agricultural development into five development pillars: (i) sustainable development of the natural resource base; (ii) development of sustainable agrifood systems (or value chains); (iii) sustainable services for agrifood systems; (iv) ensuring social inclusion; and (v) enabling the business environment. The first three pillars are divided into 22 directions, which are the key subsector intervention areas of NIP: (i) land, water, forestry, and pasture management; (ii) seeds/seedlings production and multiplication, field crops (cereals, cotton, oil crops and pulses, horticulture, greenhouses, logistical infrastructure, export promotion), dairy and meat, poultry, fisheries, beekeeping, and agroforestry; and (iii) food safety, SPS measures, mechanization, input use, Agricultural Knowledge and Innovation System (AKIS) (science, education, and advisory services), access to finance, digitalization, food security monitoring, and crisis prevention and management. The draft NIP also includes social inclusion programs, which comprise the fourth pillar. The fifth pillar represents cross-cutting issues on enabling the business environment, playing a key role in achieving NIP priorities. Overall, the draft NIP 2021–2030 emphasizes all RISE aspects of sustainable development.

14. **Effective implementation of the identified public policies and programs, which this report supports, will be the key to achieving results on the ground**. In other words, as "what to do" has been largely agreed upon, "prioritizing what to do first" and "how to do it" are the most critical questions going forward. The COVID-19 crisis in Tajikistan and worldwide[8] has shown the importance of balancing investments in the capacity to detect and respond to crises with investments in long-term agricultural development. Four areas of emphasis are important for Tajikistan in this respect (Table 1), building on the report's diagnostic analysis: (i) investing in short-term food security risk management; (ii) strengthening food and nutrition security; (iii) proactively crowding in private sector investment to maximize finance for development; and (iv) increasing sustainability and value for money from agricultural public expenditures. Some of these actions are relatively inexpensive to implement, while others can be pursued at a scale that requires significant investments. Even when the level of financial commitment is high, these actions are worth investing in because of the high probability of positive impacts.

[7] World Bank. 2021. *The RISE Framework*. Washington, D.C.
[8] World Bank. 2020. IDA: *Responding to the Emerging Food Security Crisis.* Washington, D.C.

Table 1. Areas of emphasis and implications for policy recommendations

No	Areas of emphasis	Implications
i	**Investing in short-term food security risk management**	
	Tajikistan is vulnerable to various economic and natural shocks, with pronounced impacts on food security. COVID-19 was another crisis exposing these weaknesses. Going forward, more public investment is required today to strengthen the capacity of public institutions to detect and respond to short-term shocks and crises tomorrow, including strengthening farmers' capacity to respond, while maintaining a line of sight to long-term development challenges.[a]	The GoT needs to have more operational tools in its toolbox ready to respond faster and more effectively to future crises. This implies for the GoT to: (i) invest in an early warning system, agrometeorology, locust prevention, and information dissemination; (ii) establish remote sensing monitoring of agricultural production and farmland use; (iii) strengthen collaboration with donor projects that support agricultural advisory services to build a more sustainable and effective system for delivering advisory services to farmers, including through public-private partnerships; (iv) rebuild the foundation seed stock of core food staples to reduce the risk of future supply disruptions; (v) reduce the risk of zoonotic diseases by using the One Health approach, which requires strengthening surveillance, epidemic preparedness, and veterinary and public health capacity; (vi) support private sector investment in storage infrastructure and public investment in agrilogistics to better manage export disruptions; and (vii) increase effectiveness of the public food stocks.
ii	**Strengthening food and nutrition security**	
	COVID-19 reignited many governments around the world to focus more on food self-sufficiency. The idea of self-sufficiency, a legacy of the Soviet Union, was present in Tajikistan even before COVID-19. However, in the recent decade it evolved from the objective of full import substitution to a more pragmatic approach, supported by recognition of land and water scarcity, on one hand, and the high economic cost of full self-sufficiency, on the other. This pragmatic approach needs to be further maintained.	TThe GoT should increase its efforts, through public policies and expenditures, to help increase competitiveness of local agricultural production, thereby enhancing food and nutrition security. This would help replace some food imports, while increasing the export competitiveness of horticulture, which could earn foreign exchange to finance food imports along with remittances. In remote areas, especially GBAO, better programs supporting agriculture production, including through greenhouse hydroponics and aquaponics, are needed to increase food self-reliance. Lastly, temporary market and price controls induced by COVID-19 should be phased out to restore trust in agricultural trade and enhance Central Asia regional cooperation, which is critical to achieve food and nutrition security in Tajikistan.

No	Areas of emphasis	Implications
iii	**Proactive crowding in of private sector investment**	
	Promoting market-based development is key to increasing private sector investments, which is turn important to strengthen agrifood value chains. They would create much needed jobs for Tajikistan. In this context it is important to remember that in the agrifood sector, farmers are the largest representatives of the private sector, in addition to input suppliers, traders, processors, and exporters, whose full potential has been held back by the market failures presented in this report. Global experience indicates that rising farm incomes need to be the centerpiece of public programs to induce private sector investments and move the agrifood sector forward. In this regard, the continued interference of local governments into cotton sector, recently being justified by the need to support industrialization, raises particular concerns.	Three actions by the GoT could especially crowd in private sector investments in agrifood value chains: Ensure that farmers are not forced by local governments to grow cotton where it does not generate profit, while promoting competition among ginneries and textile/garment enterprises for buying cotton from farmers and monitoring cotton certification and weighing procedures, and other measures to strengthen farmers' position. Introduce targeted programs for supporting horizontal and vertical coordination in agrifood value chains for inclusion of farmers. Inclusion of small farms in value chains does not happen spontaneously on its own. The GoT needs to develop targeted programs and offer market incentives to promote collective actions. Tax and grant/credit incentives could be provided to food processing and textile/garment enterprises to stimulate productive partnerships/clusters with farmers, accompanied by their capacity-building (through agricultural extension services) and market-promotion programs. Increase the rate of industrialization of agrifood value chains in a market-based manner. Ambitious targets for the shares of agricultural products processed domestically set in the MTDP 2021–2025 should be achieved through programs and regulations that increase competitiveness, including through attracting FDI, and through the abovementioned productive partnerships rather than by taxing export of raw commodities or forcing farmers to sell their produce only to the assigned businesses. For industrialization to succeed, it should become profitable to farmers to contribute and benefit from it, not to "pay" for it.

No	Areas of emphasis	Implications
iv	**Increasing sustainability and value for money from agricultural public expenditures**	
	The majority of funds provided to agriculture in Tajikistan come from donor-funded projects, more than 60 percent. While the total support amounts to about 1.0 percent of GDP, only 0.3 percent of GDP of this support adds to public debts. More needs to be allocated to the sector as advocated by the NIP 2021–2030. Yet, in the context of the tighter fiscal space, increasing the impact of already allocated public spending on agriculture would take a priority. A large share of donor financing brings a risk of long-term sustainability. It also brings planning, coordination, and implementation challenges, requiring a high attention to coordination and proactive engagement of public staff in implementation of donor-financed projects.	The GoT should prepare to receive a smaller share of grants in the future, assuming continued growth in per capita GDP, and to replace the future shortfall in donor funds by its own expenditures to ensure sustainability. Irrigation expenditures are especially dependent upon donor financing. Before the donor financing in capital investments dries out, a better prioritization of agricultural and irrigation investments in high-potential agricultural areas becomes a critical issue to be immediately enacted. More active involvement of staff of recipient public institutions in designing and implementing the donor-financed projects would ensure more coordination and complementarity with GoT-financed expenditures. Public spending on agricultural R&D and advisory/extension services is extremely low, explaining the low technology adoption and productivity of Tajik agriculture. Spending more on these programs is a high, no regret priority for future investments. More also needs to be spent on natural resource management, seed/seedling sector development, SPS measures, agrilogistics, digital agriculture, and establishment of early warning systems to help cope with shocks such as COVID-19 or climate extremes. Where the expenditures are already relatively large, such as for irrigation, land cadaster, and veterinary services, the public programs should start supporting modernization and more integrated programs rather than financing traditional activities, which do not bring high impacts on the ground.

[a] World Bank Group. 2020. *Saving Lives, Scaling Up Impact, and Getting Back on Track.* World Bank Group COVID-19 Crisis Response Approach Paper. Washington, D.C.

15. **In the post-COVID-19 year of 2021, many important decisions will determine whether Tajikistan can turn this crisis into an opportunity to build a better future**. The tighter fiscal space resulting from several consequent financial and economic crises amplified by COVID-19 will make the task harder, but not impossible. The key to unlocking an effective crisis response — one with minimal upfront costs and future benefits to the budget — is found outside the government's direct scope of control: if the state strengthens its partnership with farmers, agribusinesses, and (potential) investors, with clear and uniform rules, Tajikistan could tap into the considerable potential of sustainable economic dynamism. In fact, considerable preparatory work has already been done to put in place the required economic reforms[9] to boost private sector confidence, local production, export, and jobs. With profit opportunities in domestic and neighboring markets (of which there are many) and the clarity and predictability of the government's role and obligations, the private sector is certain to exploit these.[10] This, in turn, will open doors to addressing a long list of priority challenges influencing economic policymaking, including development of the agrifood sector and food and nutrition security.

[9] The MTDP 2021–2025 is the latest high-level policy document to recognize a significant role of the private sector and that efforts are needed from the state to crowd in private sector investment. The NIP 2021–2030 also strongly emphasizes these points for agrifood sector development.

[10] *Tajikistan: Building Blocks for a Dynamic Post-COVID-19 Recovery*. Asia Plus News, January 7, 2021.

1 RECENT DEVELOPMENTS IN THE AGRIFOOD SECTOR OF TAJIKISTAN

(i) Context

1. **Primary agriculture has a steady presence in Tajikistan's national accounts.** In 2020, the agriculture sector accounted for 22.6 percent of gross domestic product (GDP) and 61 percent of the labor force, rendering it the largest economic sector in the country. The share of agriculture in GDP stayed largely the same during the last decade (2010–2020), similar to the share of agricultural public expenditures in the total budget (Table 2). But the shares of agricultural employment and agrifood export declined. Irrespective of the source of data on agricultural labor force, either Tajik Agency of Statistics (TAJSTAT) or the World Development Indicators of the World Bank Group (WDI), which differ significantly, Tajikistan has the largest share of agricultural employment in total labor force in Central Asia and in the entire Europe and Central Asia region.

Table 2: Agriculture in Tajikistan's economy, %, 2010–2020

	2010	2015	2020
% share of agriculture in:			
GDP	22.1	25.1	22.6
Labor force (TAJSTAT)	67.0	64.9	60.8
Labor force (WDI)	46.1	43.2	40.5
Export	18.9	22.5	19.3
Public expenditures	n/a	2.4	2.8

Source: TAJSTAT, WDI, FAO Corporate Statistical Database (FAOSTAT), and the Ministry of Finance of the Republic of Tajikistan (MOF).

2. **Food and textile/garment industries, which are part of the agrifood sector, play a much smaller role in the economy**. In 2018, they accounted for 7.3 percent of GDP, including 4.8 percent for the food industry and 2.4 percent for the textile/garment industry, and a meager 1.1 percent of the labor force (0.4 percent and 0.7 percent, respectively).[11] These industries have a large potential for future growth and job creation given their strong backward and forward linkages with the primary agriculture sector.

3. **Agricultural growth is registered despite Tajikistan's low availability of productive farmland.** Tajikistan is a mountainous, landlocked, and isolated country with low productive land availability. About 35 percent of the country's total land area (14 million hectares (ha)) is agricultural land (Table 3). Agricultural land use includes arable land, perennial crops, pastures and meadows, and storage areas. In 2018, only 15 percent of agricultural land was classified as arable, translating into about 700,000 ha. Tajikistan's arable land per capita is only 0.1 ha, the smallest among Central Asian countries.[12] River valleys is where arable agriculture takes place the most. Sixty-eight percent of farmed land depends on irrigation, which generates 90 percent of gross agricultural output (GAO). Irrigation expanded its coverage from 757,000 ha in 2010 to 822,000 ha in 2018 (Table 3). However, the actual annual irrigated area is estimated at 700,000 ha because of deteriorating irrigation and drainage infrastructure, salinization, waterlogged soils, and unreliable electricity supplies to pump stations.[13]

Table 3: Tajikistan: Use of agricultural land, '000 ha, 1995–2018

	1995	2010	2018
Land area	13,996	13,996	13,996
Agricultural land	4,582	4,756	4,728
Arable land	844	747	702
Land equipped with irrigation	719	757	822
Permanent crops	115	134	151
Meadows and pastures	3,623	3,875	3,875

Source: FAOSTAT.

4. **Large differences in agroecological conditions and productive farmland availability lead to significant regional and crop variations in agricultural production.** Khatlon is the region with the largest contribution to national GAO (53 percent) and boasts the largest average size of dehkan farms (4.6 ha) (Table 4). It comprises mostly fertile land suitable for large-scale cotton production. The eastern mountainous Gorno Badakhshan Autonomous Oblast (GBAO), on the other hand, contributes the least to national GAO. It is characterized by high mountains, wherein during long and severe winters villages become completely isolated. Agricultural production is restricted to a short growing season

[11] TAJSTAT.

[12] Food and Agriculture Organization of the United Nations (FAO) and World Bank. 2019. *Modernizing Central Asia Irrigation: Stocktaking and Strategic Discussion Report*. Rome and Washington, D.C.

[13] Asian Development Bank (ADB). 2014. *Country Partnership Strategy: Tajikistan, 2016–2020*. Manila.

carried out on small, fragmented plots suited to horticulture and root crops.[14] In between are: (i) Sughd region, which includes production of cotton and grain in the lowlands and horticulture, tobacco, and root products in the highlands; and (ii) Districts of Republican Subordination (DRS), the districts around Dushanbe, which are under direct central rule and focus on supplying Dushanbe with fruits and vegetables along with producing cotton and grains.

5. **Climate change is a key threat to Tajikistan's development, especially for agriculture.** Farming is significantly affected by climate change due to the high vulnerability of its natural environment and its low adaptive capacity. In addition to rising average temperature and loss of glaciers, Tajikistan suffers from more frequent droughts and strong winds, which have a large impact on water availability, crop yields, and pasture productivity.[15] The projected rise in average global temperatures of up to 2 degrees centigrade by 2050 will catalyze glacial and early snow melts, changing the seasonality of runoffs and affecting the stability of water supplies. Increased drought frequency, catastrophic flooding because of glacier lake outbursts, destabilization of mountain slopes, and more frequent landslides will produce economic losses, pose risks to the population, and hamper the ability of communities to fight poverty. Adverse effects of climate change will be compounded by projected population growth of 67 percent during the 21st century.[16]

Table 4: Tajikistan: Selected national and regional agricultural indicators, 2018

	Sown area, ha (% of national)	Sown area under ag enterprises, ha (% of regional)	Sown area under farms, ha (% of regional)	Sown area under household plots, ha (% of regional)	Sown area, ha per capita	Average dehkan farm size, ha
Tajikistan	826,704* (100%)	106,957 (12.9%)	549,523 (66.5%)	170,224 (20.4%)	0.091	3.18
GBAO	11,844 (1.4%)	981 (8.3%)	8,463 (71.4%)	2,400 (20.3%)	0.052	0.53
Sughd	272,566 (33.0%)	41,130 (15.1%)	186,891 (68.6%)	44,545 (16.3%)	0.103	2.89
Khatlon	403,353 (48.8%)	45,414 (11.3%)	274,396 (68.0%)	83,543 (20.7%)	0.123	4.56
DRS	138,888 (16.8%)	19,379 (14.0%)	79,773 (57.4%)	39,736 (28.6%)	0.065	2.51

Source: TAJSTAT.
*Note: * Sown area is larger than arable land area due to double and sometimes triple cropping.*

[14] Hofman, I. 2019. *Cotton, Control, and Continuity in Disguise: The Political Economy of Agrarian Transformation in Lowland Tajikistan*. PhD thesis, Leiden University, the Netherlands.
[15] Khakimov, P., J. Aliev, T. Thomas, J. Ilyasov, and S. Dunston. 2020. Climate Change Effects on Agriculture and Food Security in Tajikistan. Silk Road: *A Journal of Eurasia Development* 2(1): 89–112.
[16] ADB. 2014. *Country Partnership Strategy: Tajikistan, 2016–2020*. Manila.

6. **Over the past decade, Tajikistan made steady progress in reducing poverty and growing its economy, but underdelivered on job creation and food security and nutrition.** Between 2000 and 2020, the poverty rate fell from 83.0 percent of the population to 27.5 percent, while the economy grew at an average rate of 7.0 percent per year. However, job creation was slow and unable to keep pace with the fast-growing population: the 7.0 percent annual growth was accompanied by only a 1.1 percent annual increase in net jobs, while the working-age population increased by about 3 percent per year during 2007–2017. Moreover, the growth elasticity of employment fell from 0.33 in 2000–2009 to just 0.13 in 2010–2014.[17]

7. **A lack of enough well-paid domestic jobs triggered widespread migration of male Tajik workers overseas**. Remittances account for 25–30 percent of GDP, and a large part of them is used to pay for food, comprising up to 70 percent of household expenditures. As a result of male outmigration, women constitute most domestic employees, accounting for 53 percent of the economically active population in agriculture.[18] Also, despite the large agricultural labor force in Tajikistan reported in the statistics, some places face a labor deficit during peak harvest times along with a lack of agricultural and harvesting machinery.

8. **Tajikistan's undernutrition is the most severe in Central Asia and comparable to some of the world's poorest countries**. Food production patterns and dependence on remittances have affected food prices and food affordability. In addition, stunting among children under five years of age declined 2 percentage points per year nationwide during 2012–2017, from 26 percent to 17 percent. With an annual population growth rate of 2.5 percent, however, the current rate of decline is insufficient to reduce the stunting prevalence.

9. **The persistently large share of the agriculture sector in Tajikistan's economy is a sign of both strengths and weaknesses, discussed below through the lens of the RISE framework**. The following diagnostic of strengths and challenges covers the four pillars of resilience, inclusion, sustainability, and efficiency (RISE) identified by the World Bank as having a large impact on economic and social development around the globe.[19] These RISE pillars are key to achieving the goals of a fairer, more efficient, and sustainable economy, making RISE a useful framework for developing solutions/policy recommendations (presented in Chapter 4):

a. *Resilience*: Living in a world full of costly risks – climate change and weather variability, zoonotic disease, and economic crises, among others – requires decisions and investments that prepare people and assets for shocks, which impact the well-being of citizens and the country's development.

b. *Inclusion*: High levels of inequality lead to lost opportunities and social risks, including instability and discrimination. Improving inclusion in a society means closing inequality gaps by increasing the access of disadvantaged groups to markets, services, and spaces.

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[17] World Bank. 2019. *Country Economic Memorandum: Nurturing Tajikistan's Growth Potential.* Washington, D.C., and World Bank. 2019. Tajikistan – Country Partnership Framework for the Period of FY19–23. Washington, D.C.
[18] FAO. 2011. *Women in Agriculture – Closing the Gender Gap for Development*. Rome.
[19] World Bank. 2021. *The RISE Framework.* Washington, D.C.

c. *Sustainability*: It is important that countries do not cause future harm. Greater caution is called for when decisions have long-term consequences, since fixing problems will become more challenging in a future of higher debts.

d. *Efficiency*: In anticipation of declining fiscal space and a more resource-constrained future, countries need to spend better and use scarce resources more efficiently. Better spending can deliver the infrastructure and services that countries desire. And more productive use of land and other resources is key to achieving prosperity and improving lives and livelihoods.

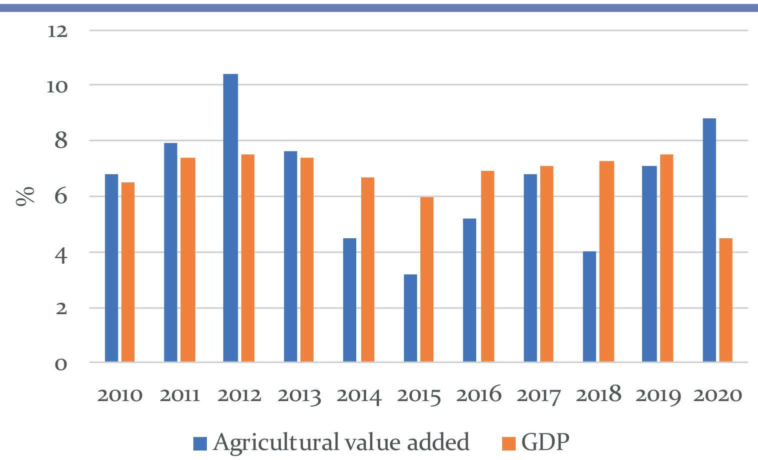
(ii) Recent achievements

10. **Against this backdrop, Tajikistan's agriculture showed several signs of strength in recent years**. They include: (i) high rates of agricultural growth; (ii) acceleration in agricultural diversification; (iii) advancement in agricultural land reforms; (iv) increased attention to integrated agrifood value chain development and agrifood export diversification; and (v) establishment of a platform for enhancement of food and nutrition security. These achievements are discussed below.

High rates of agricultural growth

11. **Despite the harsh environment, high exposure to climate hazards, and limited natural resources, Tajikistan's agriculture achieved high growth rates during the last decade.** Between 2010 and 2019, agriculture grew by 6.4 percent on average, compared to 7.0 percent growth in GDP (Figure 1). In 2020, the beginning of the COVID-19 (coronavirus disease 2019) crisis, agriculture grew by 8.8 percent versus 4.5 percent of GDP, pointing to the sector's strength. Tajikistan's agricultural growth was more volatile than nonagricultural growth, which is expected given that the sector is significantly affected by climate hazards. Yet this volatility was on average lower than that in peer countries (Table 5). Furthermore, agricultural growth in Tajikistan showed a rate of volatility similar to the global average for countries at a comparable income level, another positive aspect of Tajikistan's recent agricultural development.

Figure 1: Tajikistan: Growth in agricultural value added and GDP, 2010–2020



Source: MOF.

12. **Tajikistan's agriculture sector grew much faster than in the neighboring Central Asian countries due to relatively low initial agricultural productivity and recent favorable public policies.** Its growth was also faster than that in lower-middle-income countries on average and in countries eligible for concessional loans and grants from the World Bank's International Development Association (IDA), to which Tajikistan belongs (Table 5). This high growth in Tajikistan is partially explained by its relatively low initial agricultural productivity – past growth was a convergence of Tajikistan with its peers. But this was not the only explanation: other countries with similar initial agricultural productivity levels such as the Kyrgyz Republic or other IDA countries grew much more slowly. Tajikistan's public policies, encouraging agricultural diversification, and public expenditures supported by donors in the last decade played a positive role.

Table 5: Initial agricultural income and agricultural growth in selected countries and regions, 2010–2019

	Agricultural value added per worker in 2010 and 2019 (in constant US$)	Average annual growth in agricultural value added, %	Volatility of agricultural growth, %*
Tajikistan	1,144 1,820	6.4	35
Kazakhstan	2,873 6,790	2.7	442
Kyrgyz Republic	1,157 2,001	1.9	120
Uzbekistan	3,570 5,737	4.7	52
Lower-middle-income countries	1,492 2,191	3.6	34
IDA countries	870 986	3.1	23

Source: WDI.
*Note: * Volatility is defined as the standard deviation divided by the average.*
*** Data for Tajikistan are for 2018.*

13. **Agricultural growth was driven mostly by the increase in crop yields and less by livestock productivity.**[20] During the last one and a half decades, yields grew for all crops, especially for fruits, vegetables, and grapes (Table 6). Grain and cotton yield also increased, compensating for the loss of some arable land diverted to production of other crops (Figure 2). Notwithstanding this growth, Tajikistan's average yields remain low, pointing to the high potential for future growth. In neighboring Uzbekistan, for example, where cotton and wheat production are also irrigated as in Tajikistan, the average yield during 2015–2018 was 2,345 kilograms (kg)/ha (15 percent higher) for cotton and 4,483 kg/ha (39 percent higher) for wheat. Although livestock productivity grew, it did not grow by as much as land productivity. Livestock productivity has been low due to a combination of factors, which include poor feeding, low genetic potential, inadequate herd/flock management, and unfavorable animal health status. For household farms, the average daily yield estimated or recorded varies between 2.0 liters and 5.5 liters. Even for farm

[20] More detailed agricultural growth composition analysis, for example the analysis of value addition by main commodities or subsectors, is not possible with the current data/statistics.

Table 6: Tajikistan: Crop yields, kg/ha

	Average 2005–2008	Average 2015–2018	Percentage change
Raw cotton	1,640	2,030	+24%
Wheat	2,027	3,225	+59%
Potatoes	20,437	21,006	+3%
Vegetables	18,797	28,565	+52%
Fruits	2,597	3,405	+31%
Grapes	3,250	5,988	+84%

Source: TAJSTAT.

enterprises that operate the most intensive systems, productivity remains low (2,757 liters per lactation). Productivity of ruminants is exceptionally low, with figures ranging from 0.62 to 0.89 lambs/female/year.[21]

Agricultural diversification

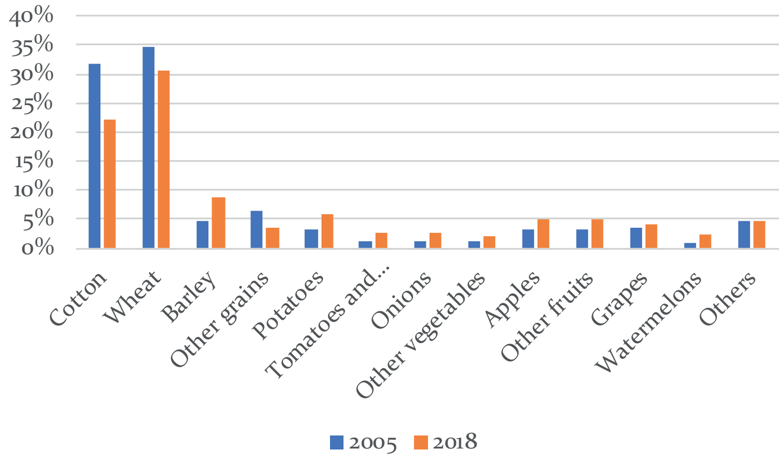
14. **The recent agricultural growth was also driven by diversification.** Total land used for agricultural purposes has remained largely the same since 1992, but the cultivation mix has changed. Wheat and cotton remain Tajikistan's main crops, as in old times, but their relative importance has declined. The cotton-growing area dropped from 32 percent of the total in 2005 to 22 percent in 2018, while the wheat-growing area declined from 35 percent in 2005 to 31 percent in 2018 (Figure 2). On the other hand, the horticulture-growing area, which consists of potatoes, vegetables, fruits, melons, and grapes, increased from 18 percent in 2005 to 30 percent in 2018, a significant increase. Land area under permanent crops (fruits and nuts) also expanded, from 115,000 ha in 1995 to 151,000 ha in 2018 (Table 3). The shift toward more balanced land use and production of higher-value crops occurred in Tajikistan much earlier than in neighboring Uzbekistan, which started to shift land away from cotton to horticulture only in 2017.

15. **This diversification has been good for farmers and for the economy.** In addition to increasing farm incomes, higher horticulture production and its processing tend to create many jobs. In neighboring Uzbekistan, for example, a US$1 million investment in horticulture value chains (e.g., in intensive orchards, greenhouses, processing, and storage) is estimated to have created 40–50 jobs, with more than one-half occupied by women.[22] An investment amounting to US$58,000 in drying, processing, and packaging of fruits in Tajikistan's Sughd free economic zone is projected to create 40 permanent jobs.[23] A global survey carried out by the International Energy Agency and the International Monetary Fund[24] in 2020 found that infrastructure investments in the context of building back better, by comparison, create only up to 27 jobs, with a large majority of investments

[21] Punda, I., and E. Isaeva. 2020. *Dairy and Meat Industries Development.* Working Paper for the National Agricultural Investment Plan 2021–2030. FAO Investment Center, Rome.
[22] World Bank. 2020. *Uzbekistan's Agrifood Job Diagnostic.* Washington, D.C.
[23] *Donai Almos investment.* The article on East Fruits platform accessed on November 1, 2020.
[24] Cited in World Bank. 2020. *Building Back Better: Towards a Sustainable and Resilient Infrastructure in ECA*. Infrastructure Practice Group. RMT presentation on September 16, 2020.

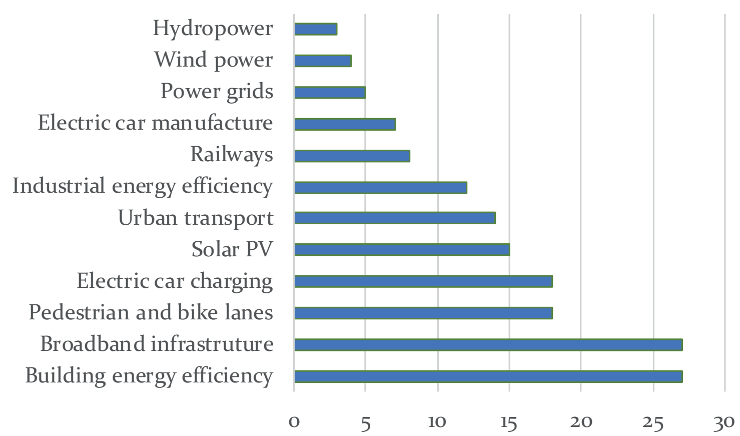
not exceeding 15 jobs (Figure 3).[25] Comparable data on job creation in Tajikistan by industry/subsector are not available; notwithstanding, horticulture value chains, especially export-oriented ones, have been shown to have great power to create many better-paid jobs that are difficult to automate; this offers a long-term job solution for a country such as Tajikistan, where good jobs so far have been in large deficit. Accelerating crop diversification, therefore, offers an opportunity to reverse low job creation.

Figure 2: Tajikistan: Agricultural land use, %, 2005 and 2018



Source: TAJSTAT.

Figure 3: Number of jobs created globally per US$1 million investment



Source: International Energy Agency and International Monetary Fund.

[25] One of the more rigorous assessments in the United States concluded that each US$1 million provided under the green American Recovery and Reinvestment Act created 15 jobs during 2013–2017, one-half of which were in construction and waste management. See Popp, D., F. Vona, G. Marin, and Z. Chen. 2020. *The Employment Impact of Green Fiscal Push: Evidence from American Recovery Act.* National Bureau of Economic Research.

Agricultural land reforms

16. **The shift in cultivation mix, which continues, has been enabled by land reform, land use right transferability, and removal of most agricultural policy distortions**. Land reform moved land use rights from collective to private farms, i.e., dehkan farms and household plots.[26] Although according to the Constitution of the Republic of Tajikistan land is exclusively under state ownership and cannot be privatized, land use rights can be transferred to individuals. This transferability of land use rights helps move land from less to more efficient farmers and gives farmers a choice in deciding what to produce on their land (except for cotton, as discussed later). In addition, the move to diversify agricultural production in Tajikistan over the last few decades was propelled by an understanding of the risks stemming from overreliance on cotton, food security and market considerations, as well as natural resource and environmental threats, such as land degradation due to salinity and unsustainable water supply and use to support cotton cultivation. Removal of the state production quota system in the late 1990s also made agricultural diversification possible.[27] For comparison purposes, the state production quota in Uzbekistan was abolished only in 2020.

17. **The Government of Tajikistan (GoT) has encouraged farmers to produce more fruits.** Tajikistan used to be one of the largest fruit producers in the Soviet Union. Fruit production and marketing channels were interrupted following the collapse of the Soviet Union and the civil war and continued to decrease until 1999. Since then the GoT has encouraged farmers to produce more fruits. During 2010–2014, orchards and vineyards occupied an area of 53,232 ha.[28] Further expansion of 46,901 ha occurred in 2016–2020.

Integrated value chain development and diversified agrifood export

18. **Agricultural diversification in Tajikistan has been supported by increased attention to value chain development, beyond just agricultural production, and recent attention to export orientation.** Several recent donor-supported projects include activities along the entire agrifood value chain, not just production (yet attention to production is still needed in Tajikistan), reflecting the government's intention to support inclusion of small farmers in modern value chains and export. Creation of productive partnerships between lead agribusiness/processing firms and farm groups (or agricultural clusters) has also begun, albeit slowly, paving the way for building the competitive and sustainable value chains needed to penetrate international markets.[29]

19. **Despite the GoT's support, horticulture export is still tiny, less than 3 percent of total export (Table 7).** In 2020, the value of export of fruits and vegetables was 35 percent smaller than in 2015. This reflects: (i) weak horizontal and vertical coordination

[26] United States Agency for International Development (USAID). 2014. *AgTCA Tajikistan: Agricultural Technology Commercialization Assessment.* USAID Enabling Agricultural Trade Project.

[27] Khakimov, P., I. Pawlowski, and M. Schmitz. 2014. Measuring Agricultural Support for Tajikistan. *Journal of Agricultural Science*, Vol. 6 (3).

[28] According to World Bank. 2020. Central Asia's Horticulture Sector — *Capitalizing on New Export Opportunities in Chinese and Russian Markets.* Washington, D.C., this area included 21,192 ha of apricot orchards and 4,376 ha of vineyards. The total area of established orchards matched the target set in the President of the Republic of Tajikistan Decree No. 683 "On Additional Measures for the Development of Horticulture and Viticulture in the Republic of Tajikistan for the period 2010–2014," dated August 29, 2009.

[29] World Bank. 2020. *Central Asia's Horticulture Sector — Capitalizing on New Export Opportunities in Chinese and Russian Markets*. Washington, D.C.

among small farmers and exporters along the value chain, counter to what is needed to create "exportable" products; (ii) large room for further improvement in transport corridors, removal of nontariff barriers to trade, harmonization of the regulatory environment with international norms and standards,[30] and development of single-window procedures[31]; and (iii) insufficient public investment in agrilogistics,[32] SPS measures, and other customs trade facilitation. Telling, dried fruits and onions represent a large majority of horticulture export as their storage and transport are easier than for fresh fruits. Cotton is still the largest agrifood export commodity by value, amounting to US$169 million during 2015–2020, representing 16 percent of total export value.

Table 7: Tajikistan: Agrifood export, '000 US$, 2015–2020

	2015	2019	2020	Av. 2015-2020	%, Agrifood	%, Total
Meat, milk, fish and other livestock products and food	534	999	435	647	1.9	0.1
Vegetables	10,936	8,009	7,796	6,953	20.9	0.7
Fruits and nuts	20,108	9,478	10,940	13,164	39.5	1.3
Shellac, resins, and other plant juices	6,279	7,277	6,044	5,964	17.9	0.6
Vegetable oils	1,326	784	989	1,006	3.0	0.1
Processed fruits, nuts, and vegetables	80	114	251	184	0.6	0.0
Alcoholic beverages	293	1,466	3,284	994	3.0	0.1
Tobacco	1,863	2,508	4,553	3,046	9.1	0.3
Other agrifood products	1,135	2,430	935	1,380	4.1	0.1
Subtotal agrifood export	**42,554**	**33,065**	**35,227**	**33,337**	**100.0**	**3.2**
Cotton	155,258	182,203	173,850	168,892		16.1
Total agrifood export	**197,812**	**215,268**	**209,077**	**202,229**		**19.3**
Total export	**897,123**	**1,115,850**	**1,311,879**	**1,046,970**		**100.0**

Source: TAJSTAT.

[30] Tajikistan scores 41.5 out of 100.0 for agrifood trade as it has not adopted the following best practices: (i) exporters cannot apply for a phytosanitary certificate online; and (ii) phytosanitary certificates cannot be issued on-site where goods are located, and the certificate fee is not publicly available. World Bank. 2019. *Enabling the Business of Agriculture 2019: Country Profile – Tajikistan*. Washington, D.C.

[31] The single window began its operation only on September 1, 2020.

[32] While agrilogistics is a private sector activity in high-income countries, the small market and capital constraints in Tajikistan could require initial public investment and public-private partnerships for operation and management of agrilogistics, as in Uzbekistan and many other developing countries.

20. **Unofficial calculations suggest that actual horticulture export has been much higher and that the export potential is also higher.** Many shortcomings arise in the foreign trade statistics available for Tajikistan, which may not capture the entire trade flows. A good example is the export of dried apricots and dried fruits in general, analyzed in great detail in the study of East Fruit[33]; this study suggested that Tajikistan should be exporting close to 100,000 tons of dried fruits, but only 14,400 tons of exports are reported in the official statistics. Similar issues are noted with export figures of other key products such as yellow onions, table grapes, plums, raisins and other dried fruits, cherries, fresh apricots, etc. Based on information gathered by the East Fruit platform for these key products, actual exports of horticultural products from Tajikistan are estimated to be 2.1 times higher than officially reported.[34] This means that total exports could be close to 220,000 tons. Therefore, the real volume and value of Tajik horticultural exports are likely much greater than indicated by the statistics and could be close to US$250–300 million, rather than the US$17.4 million officially reported.

21. **The geography of Tajikistan's agrifood export destinations is more diverse than that of neighboring countries**. All countries in the region focus on Russian and other Eurasian markets, especially the Kyrgyz Republic and Uzbekistan (Table 8). Tajikistan, in contrast, sold 62 percent of its agrifood products in 2019 outside of the Eurasia region.[35] Relying on one large market is a risky strategy, and although Tajikistan seems to have escaped it, continued efforts are still required to maintain and further increase the diversity of agrifood export destinations.

Table 8: Eurasian region agrifood exports in 2019

	Value of agrifood exports (% of total agrifood exports)			
	To Eurasian Economic Union (EEU)			To rest of world
	To Russia	To other EEU	Total	
Kyrgyz Republic	29.6	22.2	51.8	48.2
Armenia	51.0	2.2	53.2	46.8
Uzbekistan	12.5	44.1	56.6	43.4
Tajikistan	10.7	28.1	38.8	61.2
Kazakhstan	13.2	6.1	19.3	80.7
Belarus	79.4	7.5	86.9	13.1
Russia	-	13.9	13.9	86.1

Sources: Eurasian Center for Food Security and the World Bank.

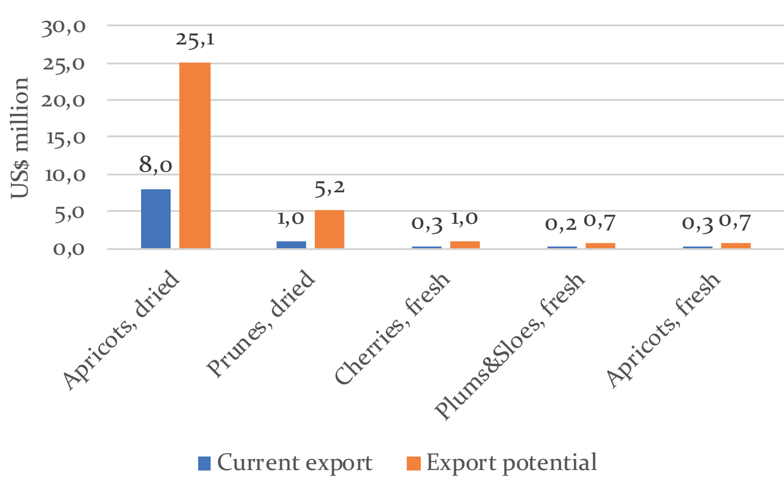
[33] https://east-fruit.com/article/kto-sel-tadzhikskiy-abrikos-ili-pochemu-ploshchad-sadov-rastet-a-eksport-kuragi-i-sukhofruktov-bystro-padaet

[34] National Investment Plan for Food and Nutrition Security and Sustainable Agricultural Development (NIP) 2021–2030 for the Republic of Tajikistan.

[35] Most cotton lint is exported to Turkey and most dried fruits are exported to Western Europe.

22. **Looking forward, the Tajik export promotion and diversification strategy should build on the country's strong comparative advantage in dry and fresh apricots, cherries, plums, and grapes.** Total export potential of only these products is estimated at US$32.6 million, 3.3 times more than the actual export in 2018 (Figure 4). High potential export competitiveness of these horticulture products, especially apricots, was confirmed by a recent World Bank Relative Competitiveness Advantage analysis.[36] The early season for Tajik fruits is one of the characteristics that can foster competitiveness. Relatively low labor and electricity costs are another such characteristic. In addition, favorable climatic conditions, such as a long growing period and numerous sunny days, result in a special flavor and high sugar content. The right public investments to harness this potential for value chain development (e.g., farm productivity, productive partnerships), trade facilitation (e.g., agrilogistics, green corridors for perishable products, a single window for export-import operations), and crowding in of private sector investment are critical to turn this comparative advantage into economic competitiveness.

Figure 4: Export potential of Tajik fresh and dried fruits, US$ million



Source: International Trade Center.

Established platform for enhanced food security and nutrition

23. **Improving food and nutrition security is a recognized development challenge and priority for the GoT.** The Agrarian Reform Programme of the Republic of Tajikistan (2012–2020) names "enhancing national food and nutrition security and safety" as one of the Programme priority areas.[37] Food security and access to quality food is one of four strategic priorities of the country as outlined in the National Development Strategy of the Republic of Tajikistan for the Period up to 2030 (NDS 2030). The Food Security Program (2015–2020) recognized the need to increase food production and make policy adjustments to improve food access through pricing and income strategies. It also

[36] World Bank. 2020. *Central Asia's Horticulture Sector — Capitalizing on New Export Opportunities in Chinese and Russian Markets*. Washington, D.C.

[37] FAO. 2020. *Developing Capacity for Strengthening Food Security and Nutrition*. http://www.fao.org/in-action/fsn-caucasus-asia/activities/national/tajikistan/en/. Accessed on November 18, 2020.

identified broad nutrition issues (such as maternal nutrition, infant and young child feeding, micronutrient deficiencies, and sanitation and hygiene) as important for food and nutrition security.[38]

24. **Tajikistan recognizes that agriculture is a key determinant of food security and nutrition.** The Medium-Term Development Program of the Republic of Tajikistan (MTDP) 2021–2025 acknowledges that agriculture and high-quality food products play a significant role in achieving food and nutrition security. This goal is also emphasized in the FAO report with the proposed National Investment Plan for Food and Nutrition Security and Sustainable Agricultural Development (NIP) 2021–2030 for the Republic of Tajikistan. This document identifies specific actions to accelerate sustainable, inclusive, and resilient agricultural growth, which would contribute to enhancing food and nutrition security.

25. **Tajikistan has made global and national commitments to nutrition and agriculture.** In September 2013, it joined the Scaling Up Nutrition (SUN) Movement,[39] solidifying the way for multisectoral solutions to malnutrition, including through agriculture. Two Deputy Ministers from the Ministry of Agriculture (MOA), one overseeing plant production and the other cattle breeding, participate in SUN working groups to develop the Common Results Framework for improved nutrition.[40] The country also established the Food Security Committee of the Republic of Tajikistan (FSCT), created by the Law on Food Security of 2010, to coordinate strategic decision making on national food security. The FSCT, under the Prime Minister, aims to "coordinate the actions and strategic and operational decisions related to ensuring a stable and uninterrupted supply of food to the country."[41] In 2014, Tajikistan established the Multi-Sectorial Coordination Council for Scaling Up Nutrition, which comprises representatives of 18 ministries and agencies, including agriculture, and other stakeholders[42] and is led by the Ministry of Health and Social Protection of the Population. This serves as a platform for coordination among nutrition actors and food security/agriculture ministry workers.

(iii) Challenges

26. **Despite some positive recent developments and the strengths presented above, many challenges related to agricultural development and food security in Tajikistan remain.** The major ones include: (i) still high rates of food insecurity and malnutrition; (ii) excessive food price volatility, amplified by weak public capacity to detect and respond to various shocks; (iii) limited arable land, amplified by inadequate public services/agricultural public expenditures, resulting in low agricultural productivity; (iv) high

[38] USAID. 2018. *Tajikistan: Nutrition Profile*. February 2018.

[39] SUN is a global movement that unites national leaders, civil society, bilateral and multilateral organizations, donors, businesses, and researchers in a collective effort to improve nutrition. See https://scalingupnutrition.org/sun-countries/tajikistan/

[40] Oriol, Christine. 2018. *Agricultural and Food Systems Transformation for Better Food Security and Nutrition in Eurasia: Tajikistan Country Study*. World Bank and The Eurasian Center for Food Security. First draft submitted: May 20, 2018.

[41] Law on Food Security. Source: Oriol, Christine. 2018. *Agricultural and Food Systems Transformation for Better Food Security and Nutrition in Eurasia: Tajikistan Country Study.* World Bank and The Eurasian Center for Food Security. First draft submitted: May 20, 2018.

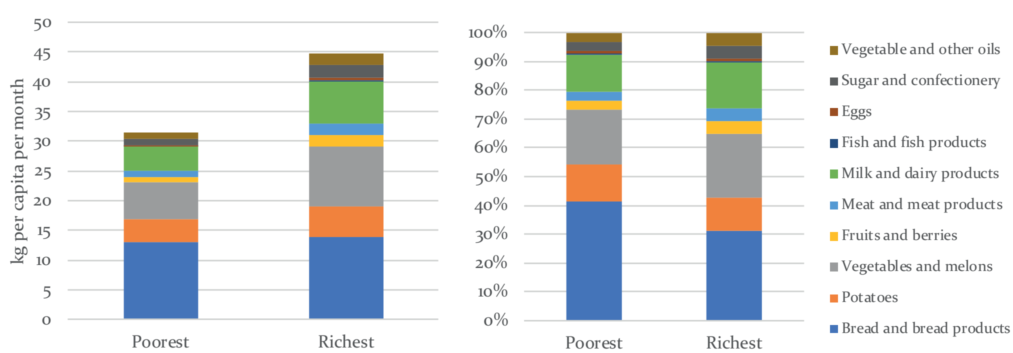
[42] SUN. 2019. *Tajikistan Country Report.* https://scalingupnutrition.org/wp-content/uploads/2019/10/SUN_Report_EN_2019_Country_Tajikistan.pdf

reliance on import of farm inputs, which are often not adjusted to the local agroecology; (v) depleted natural resources (e.g., soils, pastures, water); (vi) unfinished cotton sector reforms; (vii) fragmented, small-scale agricultural production systems, with many small farms and some actors, especially women, excluded from modern agrifood value chains; (viii) gender inequality; and (ix) weak agrifood processing, export, and other agribusiness companies. These challenges are exacerbated by the overly weak capacity of public institutions and the lack of clarity and predictability of obligations of the state toward the private sector in Tajikistan.

Food insecurity and malnutrition

27. **Tajikistan's undernutrition is the most severe in Central Asia and comparable to that in some of the world's poorest countries.** The latest State of Food Security and Nutrition in the World report reveals that 29–56 percent of households in Tajikistan cannot afford a nutrient-adequate diet.[43] Relatedly, the largest share of energy continues to be derived from nutrient-poor cereals, specifically wheat. The share of Dietary Energy Supply (in kcal/capita/day) derived from cereals, roots, and tubers has steadily decreased in Tajikistan, from 71 percent in 1999–2001 to 58 percent in 2013, but still remains one of the highest in Central Asia, and represents more than one-half of the daily diet.[44] Bread and bakery products represent 41 percent of consumption of food for the poorest households, declining t0 31 percent for the richest households (Figure 5).

Figure 5: Tajikistan: Household food consumption, Jan.–Sept. 2018



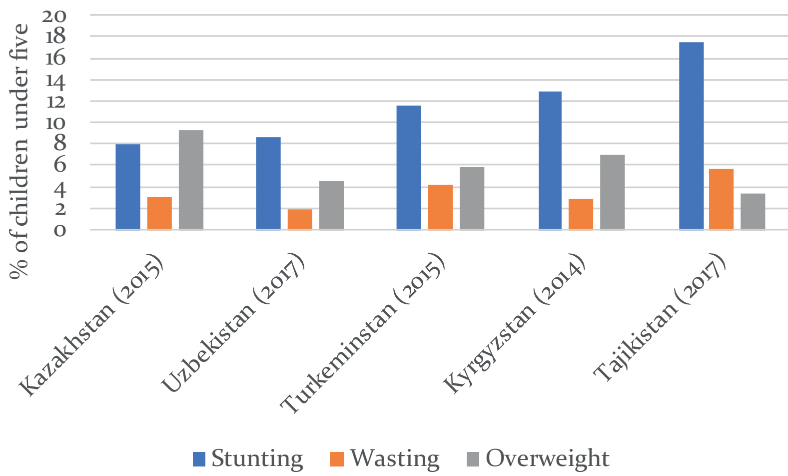
Source: TAJSTAT.

[43] A nutrient-adequate diet provides adequate calories (per the energy-sufficient diet above) and relevant nutrient intake values of 23 macro- and micronutrients through a balanced mix of carbohydrates, proteins, fats, and essential vitamins and minerals within the upper and lower bounds needed to prevent deficiencies and avoid toxicity. FAO, International Fund for Agricultural Development (IFAD), UNICEF, WFP, and WHO. 2020. *The State of Food Security and Nutrition in the World 2020. Transforming Food Systems for Affordable Healthy Diets*. Rome.

[44] Oriol, Christine. 2018. *Agricultural and Food Systems Transformation for Better Food Security and Nutrition in Eurasia: Tajikistan Country Study*. World Bank and The Eurasian Center for Food Security. First draft submitted: May 20, 2018.

28. **Nationally, stunting among children under five years of age declined 2 percentage points per year during 2012–2017, from 26 percent to 17 percent (Figure 6).** Child stunting rates vary by geography. GBAO has an exceptionally high rate (31.6 percent) compared to other regions, where rates hover around 15–18 percent. Wasting prevalence was 6 percent in 2017, down from 10 percent in 2021. Similar to stunting rates, wasting rates vary greatly among regions, reaching 17 percent in Dushanbe and 10 percent in the remote areas of GBAO. Looking at the trend, a greater degree of improvement was observed in rural areas, where child stunting reduced from 27.4 percent in 2012 to 17.4 percent in 2017, down 36 percent, while in urban areas the decline was 19 percent (from 21.4 percent in 2012 to 14.3 percent in 2017). Little variation is found in stunting prevalence across wealth quantiles and it decreased along all wealth quantiles between 2012 and 2017.[45]

Figure 6: Nutrition of children under the age of five, Central Asia



Source: UNICEF.

29. **Agriculture can and should deliver more to reduce malnutrition in Tajikistan.** Household-level crop diversification, yield enhancement, and production expansion, for example through productive partnerships, are empirically estimated to be positively associated with various nutrition indicators at the household and individual level in Tajikistan, complementing improved sanitation, water and hygiene facilities, remittances, and market access.[46] Improving nutrition security is especially important and challenging in GBAO, the remotest region of Tajikistan.

30. **Increasing household incomes should play a major role in reducing malnutrition, too.** In 2019, the Global Food Security Index from The Economist placed Tajikistan 93 out of 113 countries included in the survey, singling out the low GDP per capita among major

[45] Kawabata, M., A. Berado, P. Mattei, and S. de Pee. 2020. *Food Security and Nutrition Challenges in Tajikistan: Opportunities for a Systems Approach*. Food Policy.
[46] Takeshima, H., K. Akramov, A. Park, J. Ilyasov, Y. Liu, and T. Ergasheva. 2020. Agriculture-Nutrition Linkages with Heterogenous, Unobserved Returns and Costs: Insights from Tajikistan. *Agricultural Economics*, 1–13.

food security challenges.[47] Consumer food prices in Dushanbe in October 2020 were largely the same as in other Central Asian capitals (Table 9), although they grew faster in recent months than in neighboring countries (Figure 10), which could mean that food prices in Tajikistan were below average in the recent past. Bread prices were the highest, but the prices of cucumbers, tomatoes, onions, milk, and eggs were the lowest. In many instances, therefore, it has been Tajikistan's households' insufficient income to afford a healthy diet combined with a lack of awareness on health/unhealthy food choices that contribute to malnutrition and food insecurity, rather than food prices, which seem to largely reflect the fundamentals of supply and demand on regional food markets.

Table 9: Retail prices of selected food products in Central Asia's capitals, in US$, Oct. 2020

	Units	Dushanbe, Tajikistan	Tashkent, Uzbekistan	Nursultan, Kazakhstan	Bishkek, Kyrgyz Republic
Bread (1st grade flour)	400 g	0.24	0.15	0.18	0.17
Flour (1st grade)	1 kg	0.44	0.56	0.69	0.49
Sugar	1 kg	0.61	0.73	0.71	0.62
Potatoes	1 kg	0.31	0.36	0.30	0.29
Cabbage	1 kg	0.31	0.20	0.23	0.10
Onions	1 kg	0.14	0.19	0.26	0.17
Carrot	1 kg	0.23	0.29	0.28	0.22
Tomatoes	1 kg	0.29	0.29	1.13	0.43
Cucumbers	1 kg	0.29	0.48	0.97	0.78
Apples	1 kg	0.94	0.87	1.13	0.46
Rice	1 kg	1.32	0.89	1.87	0.79
Beef	1 kg	4.94	6.00	4.65	4.52
Milk	1 l	0.44	0.56	1.07	0.42
Eggs	10 pieces	0.78	0.97	1.00	0.79

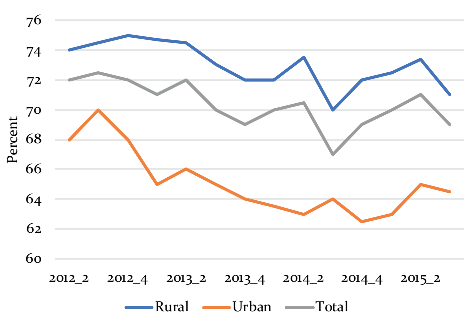
Source: World Bank staff estimates using statistical and media data.

31. **Due to low per capita income, food accounts for a large share of Tajikistan's household consumption, especially for those living in rural areas and the poor.** Thus, even small food price spikes or income drops are felt by a large proportion of the Tajik population. Households in rural areas usually spend a larger share of their budget on food than those in urban areas. In the second quarter of 2012, for example, food accounted for about 74 percent of consumption in rural areas, falling to about 71 percent in the third quarter of 2015 (Figure 7). Food accounted for about 69 percent of consumption for households in urban areas in the second quarter of 2012, fell to nearly 62 percent in 2014,

[47] For comparison, Kazakhstan and Uzbekistan were placed 48 and 71, respectively: https://www.foodsecurityportal.org.

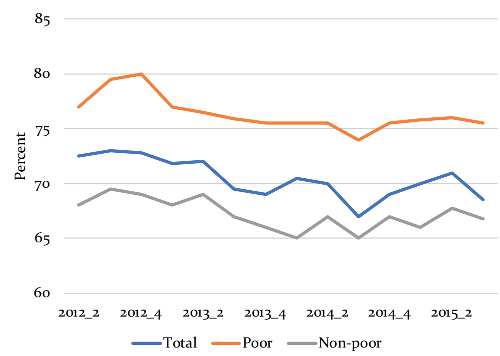
but climbed to around 65 percent by the third quarter of 2015. Similarly, the poor spend a larger share of their income on food. Food accounted for about 60 percent of total consumption for households in the top quintile. For the bottom quintile, food accounted for about 80 percent of consumption in the second quarter of 2012, falling to about 76 percent by the third quarter of 2015 (Figure 8).[48]

Figure 7: Tajikistan: Food as a share of total consumption, 2012–2015



Source: World Bank staff estimates.

Figure 8: Tajikistan: Food as a share of consumption by poverty status, 2012–2015



Source: World Bank staff estimates.

Excessive food price volatility

32. **Excessive food price volatility is another challenge and weakness of Tajikistan's agrifood system**. It is characterized as "excessive" because it has consistently exceeded the price volatility level in Central Asia. Tajikistan's volatility of beef and wheat flour prices, for example, was higher during 2009–2020 than in Kazakhstan and the Kyrgyz Republic, while the volatility of potato prices in Tajikistan just trailed the volatility in the Kyrgyz Republic (Table 10 and Figure 9). The aggregate food price index, which includes beef, potatoes, and wheat flour, shows much higher volatility in Tajikistan compared to its neighbors, along with the most rapidly rising prices (Figure 10). Tajikistan's aggregate food price index grew 2.7 times during January 2009–September 2020 versus 2.2 times in Kazakhstan and 1.6 times in the Kyrgyz Republic. This rapid growth of food prices and their high volatility added pressure on the food security and nutrition of Tajikistan's households, which, as shown earlier, already spend up to 70 percent of their household expenditures on food on average.

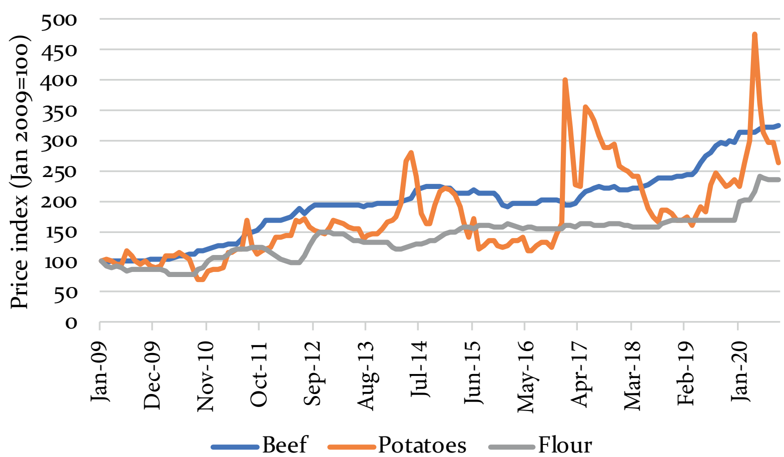
[48] For comparison, household expenditures on food in 2019 in Uzbekistan averaged 52 percent, in Kazakhstan 45 percent, and in Russia 34 percent. In high-income countries, consumers spend 7–15 percent on food.

Table 10: Price volatility of selected food products, Central Asia, retail prices, in %, Jan. 2009–Sept. 2020, national currencies*

	Beef meat	Potatoes	Wheat flour (1st grade)
Kazakhstan	1.2	9.5	1.8
Kyrgyz Republic	1.7	16.5	3.2
Tajikistan	2.0	14.5	3.5

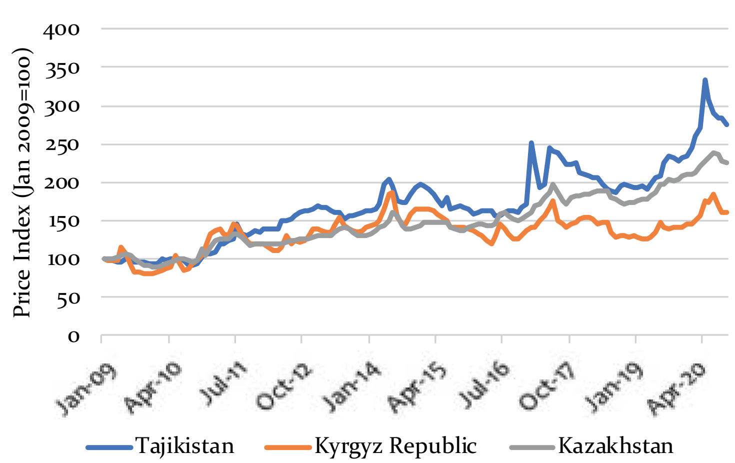
Source: World Bank staff estimates using data from FAOGIEWS.
Note: Volatility is estimated as the standard deviation of the logarithm of the price differences expressed in nominal national currencies.
** Uzbekistan is not included due to the lack of comparable price data in FAOGIEWS.*

Figure 9: Tajikistan: Price of selected food products, price index



Source: World Bank staff using data from FAOGIEWS.

Figure 10: Aggregate food price index, Central Asian countries



Source: World Bank staff using data from FAOGIEWS.

33. **Food price volatility has been higher outside of Dushanbe, the capital**. The volatility of potato and wheat flour prices has been consistently higher in all regions outside of Dushanbe (Table 11), and especially high in Khujand, Bokhtar, and Sughd.

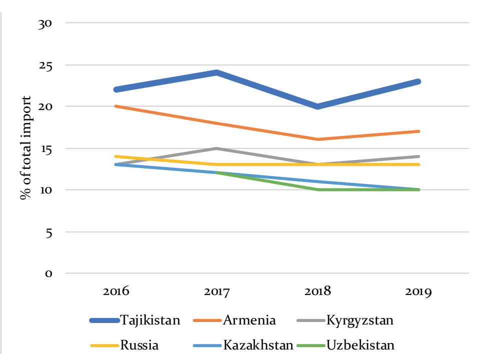
Table 11: Tajikistan: Potato and flour price volatility, in %, Jan. 2009–Sept. 2020

	Dushanbe	Khatlon	Khorugh	Khujand	Bokhtar	Sughd
Potatoes	11.4	14.5	13.3	17.2	17.8	16.7
Wheat flour	3.3	3.4	4.1	5.8	5.1	4.4

Source: World Bank staff estimates using data from FAOGIEWS.

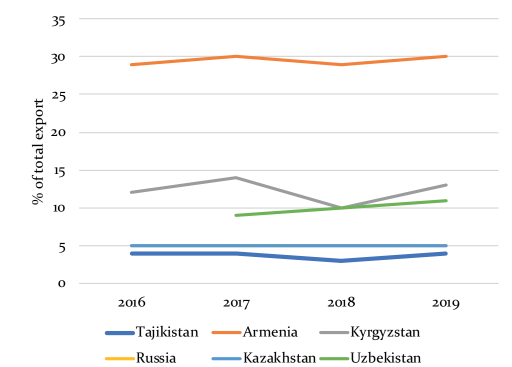
34. **Some of the food price volatility is being brought to the country through food imports.** Tajikistan's agrifood import during 2015–2020 averaged US$691 million, or 22 percent of total imports. The country imports 65 percent of its entire food consumption fueled by remittances and the undersupply from domestic production. The share of agrifood imports in total imports is the highest for Tajikistan among Central Asian countries (Figure 11), while its share of agrifood exports in total exports is the lowest compared to its neighbors (Figure 12). In Tajikistan, net food imports range between 20–35 percent of agricultural GDP. The net food trade balance has fluctuated since the early 2000s: it deteriorated in the 2000–2010 period but has improved since 2010.[49]

Figure 11: Share of agrifood in total imports, selected countries, 2016–2019



Source: International Trade Center.

Figure 12: Share of agrifood in total exports, selected countries, 2016–2019

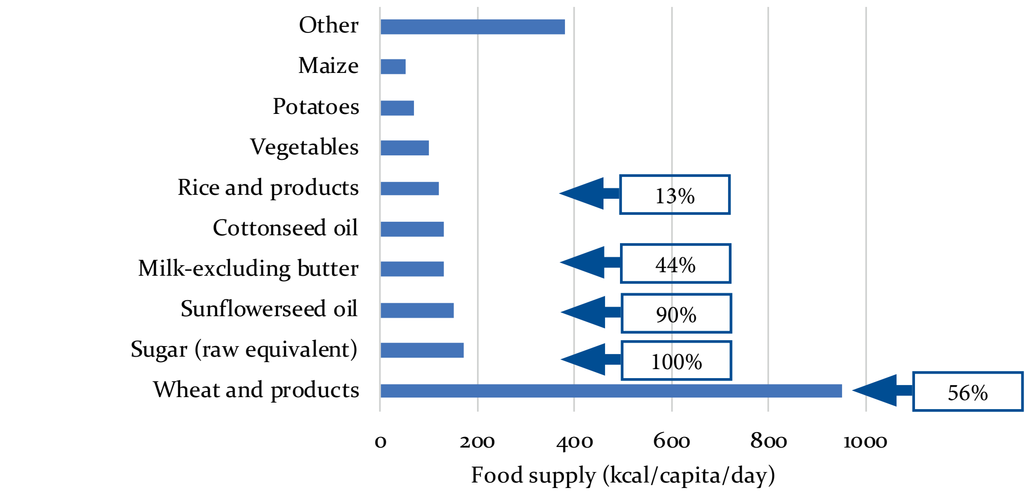


Source: International Trade Center.

[49] Regional Agrifood Trade Development in the Eurasian Region. A Joint Flagship Report of the Eurasian Center for Food Security and the World Bank; Concept Note.

35. **Import dependency is high in wheat and flour, which provide a high percentage of the caloric consumption, and oils (Figure 13).** Almost 60 percent of consumed wheat is imported, mostly from Kazakhstan.[50] In terms of value, cereals (specifically wheat), animal or vegetable oils (specifically sunflower seed/safflower oil), and sugar are the three largest drivers of agrifood imports.[51]

Figure 13: Tajikistan: Food supply and import dependency



Source: FAOSTAT.

36. **Domestic reasons also contribute to volatility.** The price volatility of fruits, which are largely produced locally, has been high (Figure 14). This volatility is the result of: (i) fluctuations in local agricultural production caused by natural hazards, locust outbreaks, irregular irrigation water delivery, and other factors; and (ii) limited capacity for postharvest storage, handling, and processing. Although it increased in recent years,[52] refrigerated warehouse capacity in Tajikistan in 2018 was estimated at only 0.10 million m^3, or 0.04 m^3 per urban resident.[53] In Uzbekistan, for comparison, it was 0.39 m^3 per urban resident, increasing from 0.10 m3 in 2014.

37. **Another reason for the excessive food price volatility in Tajikistan is macroeconomic shocks.** Tajikistan experienced several macroeconomic shocks in the last 15 years; three were outside its influence and control. Following the impacts of the global financial and economic crisis of 2008, the oil price collapse of 2014 (which had massive impacts on the value of remittances flowing back into Tajikistan's economy), and the domestic banking crisis of 2016 (which required a major budget-financed bailout), the COVID-19 crisis (the impacts of which are detailed in Chapter 2) hit the country at a moment

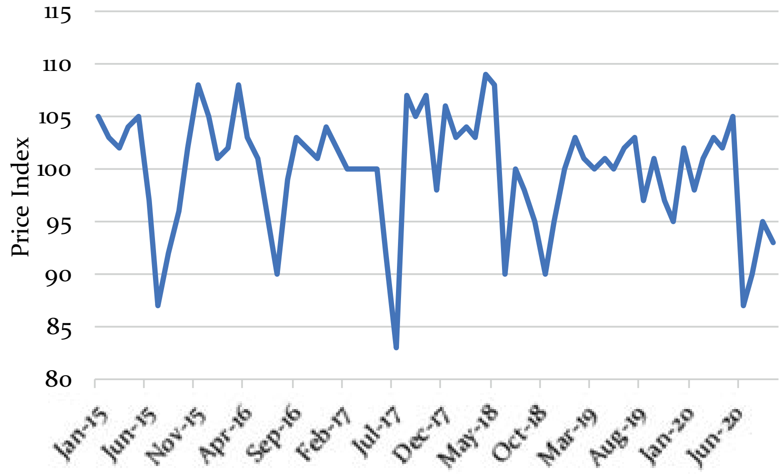
[50] FAO, WFP, and USAID. 2020. COVID-19: *Note on Impacts on Agriculture, Food Security, and Nutrition in Tajikistan.* April 2020.

[51] Based on the World International Trade Statistics 2009–2019 data.

[52] During 2015–2019, 188 new storage facilities were constructed with a total capacity of 224,000 tons, according to the draft MTDP 2021–2025.

[53] Global Cold Chain Alliance. 2018. *Global Cold Chain Capacity Report*. International Association of Refrigerated Warehouses.

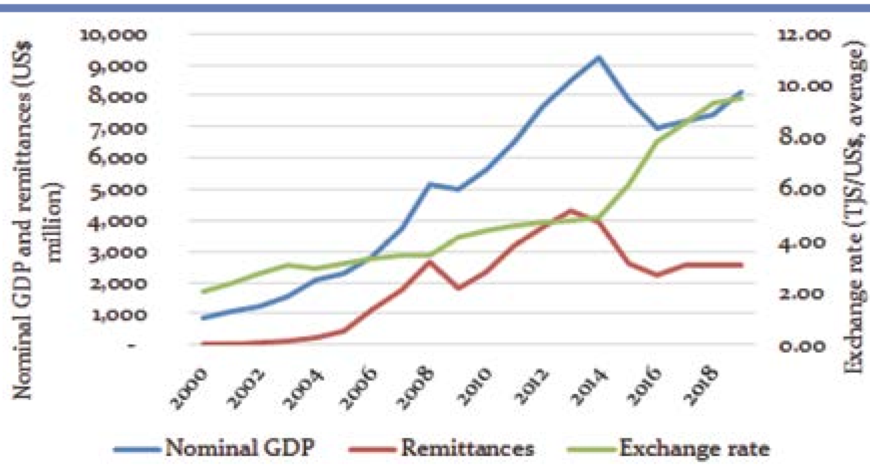
Figure 14: Tajikistan: Volatility of fruit price index, Jan. 2015–Sept. 2020



Source: TAJSTAT.

of fiscal fragility. Despite high rates of economic growth, these crises meant that Tajikistan has struggled to respond with adequate fiscal resources to these inherited and emerging challenges.[54] The large dependence of Tajik household consumption on remittances has made food demand highly sensitive to their changes. Exchange rate volatility, affected by remittances and other macroeconomic factors, added to food price volatility and the rise in food prices, given the large share of imported food in Tajikistan (Figure 15).

Figure 15: Tajikistan: Selected macroeconomic indicators, 2000–2019



Source: World Bank staff estimates using MOF data.

[54] *Tajikistan: Building Blocks for a Dynamic Post-COVID-19 Recovery*. Asia Plus News, January 7, 2021.

38. **The impact of various shocks on food prices is amplified by weak public sector capacity to detect/provide early warnings and the lack of instruments to respond to crises.** Import tariffs for agrifood products are relatively low, averaging 10.4 percent,[55] so their temporary reduction or even nullification at times of crises will not lead to substantial food price reductions. In addition, the soft and hard capacity of public institutions to estimate and (remotely) monitor production, stocks, prices, and markets remains limited. Public seed reserves do not exist, so when the seed supply chain is disrupted, farmers are left with little or no good-quality seed to plant for the next harvest. Lastly, fiscal space is limited to meaningfully scale up safety nets and food emergency programs to protect the poor. Even when funds are available, for example from donors, the lack of ready farm technologies tailored to the needs of various agroecological zones and the absence of operational farm advisory/extension services limit the GoT's ability for rapid delivery of services and support to affected farmers.

Low agricultural productivity

39. **Inadequate public services contribute to the still low agricultural productivity.** Although the 2018 agricultural land productivity in Tajikistan as measured by value added per hectare of arable land was the second highest in the region, trailing only Uzbekistan, agricultural labor productivity as measured by value added per worker was among the lowest in Central Asia (Table 12). Given that labor productivity is important for the well-being of people, as economies grow when people move to better, decent, and more productive jobs, low labor productivity is a matter of concern. Tajikistan's low agricultural labor productivity is partially a result of underemployment on its relatively low-size farms and of a lack of nonfarm rural jobs. It is the only country in Central Asia with more farmers in 2018 than in 2008, with an annual increase of 2.1 percent. In contrast, other Central Asian countries' agricultural labor forces declined, pushing agricultural labor productivity up by reducing the productivity denominator. However, the main reason for the low agricultural labor productivity in Tajikistan, over which policymakers have more control than creation of nonfarm jobs, is the inadequate public investments and services needed for market-based agricultural transformation.

Table 12: Agricultural productivity, Central Asia

	Average arable land productivity, US$/ha (2018)	Growth in land productivity, % per year (2008–2018)	Average agri-cultural labor productivity, US$/worker (2018)	Growth in labor productivity, % per year (2008–2018)	Change in agricultural labor force, % per year (2008–2018)
Kazakhstan	312	3.6	6,570	9.7	-5.0
Kyrgyz Republic	783	2.3	1,904	6.1	-3.3
Tajikistan	2,445	6.8	1,819	6.2	+2.1
Uzbekistan	4,452	4.9	5,526	5.7	-0.6

Source: WDI.

[55] The average bound tariff for nonagrifood products equals 7.6 percent.

40. **Despite the growth, Tajikistan still lags in productivity of crops compared to other countries in the region**. For example, Tajikistan's average yields of major crops (2.2 tons/ha for wheat, 1.7 tons/ha for cotton, and 21.9 tons/ha for potatoes) trail those of Uzbekistan (4.5 tons/ha for wheat, 2.3 tons/ha for cotton, and 24.5 tons/ha for potatoes), which themselves are low by international standards (Table 6). Crop yields under irrigation are higher than rainfed yields (see para. 13), but they are still below the levels achieved in other countries. Yields for irrigated wheat should be in the range of 5–6 tons/ha.[56]

41. **The situation is similar for livestock productivity.** Meat and milk production per animal somewhat recovered in the 2000s after their decline in the 1990s, but are still relatively low.[57] For example, milk yields in Tajikistan average 723 liters/year, 2.6 times less than in neighboring Kyrgyz Republic and more than 3.0 times less than in Iran.[58] Even for farm enterprises, which operate the most intensive systems, productivity remains low (2,757 liters per year).

42. **Global experience shows that agricultural productivity is largely driven by the agricultural knowledge and innovation system (AKIS)**.[59] Sustaining growth in agricultural productivity depends on farmers adopting a steady stream of new farm practices and technologies that enable them to raise yields, manage inputs more efficiently, adopt new crops and production systems, improve the quality of their products, and conserve natural resources. These new technologies must be well adapted to local environmental and social conditions and renewed as environmental conditions change (due to coevolution of pests and diseases, degradation of water and land resources, and climate change, for example). These factors – constraints to direct technology transfer between regions and productivity losses in the face of environmental changes – point to a pressing need to strengthen national agricultural research and development (R&D). Such localized R&D capacity is essential for adapting technologies in specific areas.

43. **In addition to generating technologies adapted to local needs, improving the enabling environment for technology adoption will enable success in enhancing agricultural productivity.** Global experience shows the importance of removing policy bias against agriculture, securing land tenure for smallholders, providing information and advisory/extension services, helping farmers manage risks, improving access to financial services, and integrating farmers into agrifood value chains.

44. **Tajikistan has made significant advances on some of these aspects but lags on several others**. As discussed, it has done a relatively good job in: securing land tenure for smallholders; removing agricultural policy bias, letting market forces determine farmers' decisions of what and how to produce and sell (except cotton); and improving access to financial services through donor-financed credit lines and matching grants. However, it lags in: generating knowledge and technologies through agricultural R&D and providing information and advisory/extension services; helping farmers manage risks; and linking farmers to markets (see more discussion in "Fragmented, small-scale agricultural

[56] ADB. 2014. *Country Partnership Strategy: Tajikistan*, 2016–2020. Sector Assessment (Summary): Agriculture and Natural Resources. Manila.

[57] D. 2010. *The Feed-Livestock Nexus in Tajikistan: Livestock Development Policy in Transition*. FAO Regional Office for Europe and Central Asia Policy Studies on Rural Transition No. 2010–1.

[58] FAO. 2015. *Dairy Value Chain in Tajikistan*. TAJ/UTF/011/TAJ "Preparation of the World Bank's Agriculture Commercialization Project." Dushanbe.

[59] World Bank Group. 2019. *Harvesting Prosperity: Technology and Productivity Growth in Agriculture*. Washington, D.C.

production" of this chapter). Tajikistan's public expenditures on agricultural research and extension services in 2019 were estimated to reach only 0.05 percent of GAO, compared to at least 0.5 percent prevailing in developing countries with successful agriculture (see more discussion in Chapter 3).

45. **Two main institutions for agricultural research and education are present in Tajikistan, and both need capacity building.** The Tajik Agrarian Academy of Science (TAAS) has an important historical heritage and has made significant achievements in collaboration with CGIAR-associated institutes[60] in: (i) germplasm enhancement; (ii) crop variety development for yield performance and tolerance to stress factors; (iii) Integrated Pest Management packages; (iv) water and soil management technologies; and (v) conservation and evaluation of genetic resources. However, major collaborative programs halted in the last 10 years. The scientific and physical assets of the TAAS, spread over the country's different agroclimatic zones, are significant but are in distress and need repair and maintenance. TAAS human resources also require significant investment in capacity building. A revised research agenda and a modern business plan are needed for a TAAS that looks into the sustainability of activities and services.[61] Another major asset is the Tajik Agrarian University (TAU). TAU's knowledge base and approach to education are both outdated and ill-suited to the small-scale, mixed farms that now predominate. The university recognizes the need for curriculum modernization and has already begun this process, but without exposure to comparable programs in western universities. Some donor-financed projects are in place to address this issue and to support curriculum reform.[62]

46. **Tajik farmers face many risks.** Climate change and extreme events (dust storms, droughts, heavy rainfalls, pests, locusts, zoonotic diseases) as well as market uncertainty coupled with price volatility regularly challenge farmers. The annual cost of Tajikistan's damage from climate change is estimated to range from US$50 million in 2014 to US$132 million in 2030.[63] Agricultural impacts include: (i) the increased need for irrigation due to drought; (ii) decreased yields; (iii) loss of pasture and arable lands; (iv) altered growing conditions and seasons; (v) increased crop losses due to insects[64] and diseases; (vi) rising local and regional food prices; (vii) food and input price volatility; and (viii) other disruptions to farmers and labor.

47. **At the same time, the GoT's capacity to help farmers and the capacity of farmers themselves to manage these risks are assessed as low**. The World Bank, for example, indicates Tajikistan as the most vulnerable country in Central Asia to climate change. Of 180 countries ranked by the University of Notre Dame's global adaptation index, Tajikistan ranks 111th. In the area of agriculture, risks could be mitigated by more public investment in: agricultural R&D, especially for drought-tolerant seeds/seedlings, emergency seed and food stocks; advisory/extension services to adapt and implement

[60] Mainly International Center for Agricultural Research in Dry Areas, International Maize and Wheat Improvement Center, International Potato Center, and International Food Policy Research Institute.

[61] NIP 2021–2030.

[62] The World Bank's Agricultural Commercialization Project and the IFAD's Livestock and Pasture Development Project II.

[63] Government of Tajikistan. 2019. *National Adaptation Strategy to Climate Change of the Republic of Tajikistan for the Period until 2030.* Dushanbe.

[64] Together with its neighboring Central Asian countries, Tajikistan is, for example, highly affected by the annual transboundary locust plagues, from which Tajikistan incurs an annual loss of crop and pastureland output estimated at US$10–15 million.

local knowledge systems and practices and improve soil fertility, sanitary (veterinary) and phytosanitary (plant protection and quarantine) measures; locust prevention and mitigation; remote sensing monitoring of agricultural production; and market information systems. These investments in Tajikistan are either lacking or insufficient (see more on this topic in Chapter 3).

48. **Agricultural risks are elevated by inefficient irrigation systems.** Tajikistan has a sufficient amount of water in global comparison, but its efficiency in using it has been very low. During 1990–2004, annual diversions from surface and groundwater declined from 13.7 cubic kilometers (km^3) to 12.3 km3, and water delivered declined from 12 km^3 to 9 km^3, triggering a decrease of water delivery efficiency from 88 percent to 75 percent. These declines are traced to crumbling water resource management (WRM) infrastructure (particularly irrigation and drainage, since 91 percent of diverted water is destined for irrigation) and the weak capacity of WRM institutions, including government agencies and water users' associations (WUAs), to carry out operations and maintenance.[65]

49. **Despite the importance of irrigation in Tajikistan's agriculture sector, irrigated land is below its potential and irrigation and drainage[66] infrastructure is deteriorating**. There are slightly different figures available, but they all converge to the same conclusion: irrigated land use is below what it could be. According to one source, about 85 percent of the country's 830,000 ha of arable land is irrigable, but only about 515,000 ha are currently estimated to be irrigated.[67] According to another source, while 720,000 ha of arable land are irrigated (90 percent of Tajikistan's arable land), only 500,000 ha are in use, because of the deterioration of irrigation and drainage infrastructure, waterlogging and salinization,[68] as well as unreliable electricity supplies to pump stations. Approximately 563,000 ha of actual irrigated areas are in "good condition" and 133,000 ha are in "satisfactory condition."[69] Over 40 percent of irrigated agriculture relies on pumps, which in turn consume a lot of electricity, preventing a low-cost irrigation expansion. During 2005–2013, the annual cost of pump irrigation was estimated to reach US$218 million, or US$96/ha.[70] In more recent years it was estimated to increase to US$120/ha. One irrigated hectare generated US$470–490/ha of average profit when producing cotton and wheat, two dominant crops in irrigated agriculture, and much more when producing horticulture crops (Table 13). This is enough to cover the pumping cost, but farmers cover very little of it. In fact, most costs of delivering irrigation and drainage services are not paid by farmers but covered by the GoT. While Tajikistan's agriculture consumes 21 percent of the country electricity supply, irrigation fees are among the lowest in the world.

50. **The irrigation systems were set up to meet the demands of the Soviet collective farm system, which called for large-scale, mechanized cotton production.** With land reform those farms became many smaller dekhan farms, and management of the collective

[65] ADB. 2014. *Country Partnership Strategy: Tajikistan, 2016–2020*. Sector Assessment: Agriculture and Natural Resources. Manila.
[66] In many locations, the drainage canals are in worse conditions than irrigation infrastructure. This especially affects the lowland areas of Khatlon, the largest agricultural production region, by salinization.
[67] USAID. 2014. *AgTCA Tajikistan: Agricultural Technology Commercialization Assessment*. USAID Enabling Agricultural Trade project.
[68] OECD. 2015. *Private Sector Development Policy Handbook: Increasing Exports in Tajikistan – The Case of Agribusiness*. Paris.
[69] ADB. 2014. *Country Partnership Strategy: Tajikistan, 2016–2020*. Sector Assessment: Agriculture and Natural Resources. Manila.
[70] World Bank. 2017. *The Cost of Irrigation Inefficiency in Tajikistan*. Report ACS21200, Washington, D.C.

irrigation system fell through. Prolonged poor management has led to degradation of irrigation infrastructure, a rising water table, and widespread soil salinization. This is especially problematic for orchards whose tree roots extend farther into the soil.

51. **Efforts at maintaining the country's irrigation and drainage infrastructure have not been successful**. Responsibility for development and maintenance of irrigation infrastructure, including both supply and drainage channels, lies with the then-called Ministry of Water Resources and Land Reclamation. That ministry was hampered with low institutional capacity and poor management, which led to its restructuring in 2013 as part of the Ministry of Energy and Water Resources and the Agency for Melioration and Irrigation. In recent years, development partners, including the World Bank, supported the establishment of private WUAs to maintain irrigation supply canals. The drainage canals, which are under the primary responsibility of farmers, have not received the same attention, however. Farmers are obligated to pay fees to both the national water agency and the local WUA, and many are unwilling or unable to do so. As a result, the irrigation system is chronically underfunded, without capacity for capital investments.

Depleted natural resources

52. **Tajikistan's limited arable land, water, and pasture resources should have a premium on their sustainable use, but sustainability of their use has been so far neglected.** Over 82 percent of all lands are estimated to be eroded.[71] Erosive processes are especially active in the foothill regions. Agricultural development and associated unsustainable cropping practices play a significant role in the erosive processes of sloping lands. The hilly parts of cotton fields suffer from underwatering, while in those places where there are depressions, crops suffer from an oversupply of water. Both negatively affect the productivity of cotton fields and of other crops. Under rainfed agriculture, slopes are widely cultivated, ignoring observance of anti-erosion measures.[72]

53. **Pastureland is overgrazed and eroded.** Pastures are owned by the state but are mainly held by agricultural enterprises and dehkan farms. Farms of all types use pastureland for their animals, but the existing system for pastureland management does not involve the end user, is not fit for a public good, and thus does not safeguard this natural resource.[73] Most of Tajikistan's natural pastures are located in high mountain areas, at altitudes ranging from 1,700–2,000 to 3,500 meters above sea level. Of the 3.8 million ha of pastureland in the country, the largest pasturelands are found in the Khatlon region (31 percent) and DRS (28 percent). Land degradation from erosion caused by overgrazing impacts around 85 percent of the total pastureland[74]; 89 percent of summer pastures and 97 percent of winter pastures are exposed to moderate and high erosion.[75] Despite

[71] World Bank. 2008. *Tajikistan Environmental Assessment*. Washington, D.C., which used the State Land Management Committee data.

[72] NIP 2021–2030.

[73] FAO. *Pasture Management Reforms Yielding Good Results in Tajikistan*. http://www.fao.org/europe/news/detail-news/en/c/882116/ Accessed on November 29, 2020.

[74] World Bank. 2018. *Sustainable Management of Natural Resources Helps Tajik Communities Adapt to Climate Change*. https://www.worldbank.org/en/news/feature/2018/05/04/sustainable-management-of-natural-resources-helps-tajik-communities-adapt-to-climate-change.

[75] Government of the Republic of Tajikistan Agency for Hydrometeorology under the Committee on Environmental Protection under the Government of the Republic of Tajikistan. 2018. The First Biennial Report of the Republic

this, livestock numbers are increasing, reflecting food security and livelihood strategies of rural households, which unfortunately leads to overgrazing. This trend also threatens the biodiversity of adjacent ecosystems.

54. **The unsustainable use of land and water together lead to water deficits and the deterioration of water quality.** Thus, the main issue relating to water resources is inadequate water management and its use. While the available water resources from the main rivers are almost fully utilized, the agriculture sector has great potential for water saving and more effective water consumption. Capitalizing on this potential is significant, as it is estimated that by 2030, water demand will increase by up to 30 percent.[76]

High reliance on imports of seeds[77] and other inputs

55. **Lack of availability of seed, seedling, and planting materials is very critical in Tajikistan, reducing agricultural productivity**. The primary supply of inputs is from farmers' own resources. The supply deficit is highest for all cash and fodder crops but is also severe for cotton, potatoes, and wheat, leading to weak replacement rates of old seeds by new, better seeds. The seed and seedlings supply system has made discrete progress with donor support but is still incomplete. It is also important to note the reduction in the use of mineral fertilizers that occurred after independence. Their use is somewhat gradually recovering (now at 50 percent of the 1991 level), positively affecting the seed supply response.

56. **As earlier discussed, Tajikistan has low capacity to generate new agricultural technologies, including seeds and seedlings**. The national system of agricultural research in Tajikistan rests within the MOA. The horticulture and livestock institutes receive limited support and fail to produce field-ready agricultural technologies, including new varieties of crops. Some research institutes and universities engage in seed production, but this includes mainly maintaining "original" and "elite" seed.[78] Even though a mandate exists to monitor seed quality and relevant public procedures have been established, it is not clear whether budgetary resources exist to do so. Nevertheless, it is reported that only 60 percent of seed farms produce seed of acceptable quality. Reasons include their substandard location (climate, soil), management, and access to inputs such as fertilizers, mechanization, insecticides, and herbicides. The capacity to test new varieties of crops for their adaptation to soils and climate in the country seems to be lacking, and in general regular testing of new varieties, whether domestically created or imported, is not conducted.

of Tajikistan on Inventory of Greenhouse Gases Under the UN Framework Convention on Climate Change.

[76] National Action Plan for Climate Change Mitigation, 2003.

[77] The information on seeds is from Burns, T. 2020. *Assessment of the Seed and Associated Systems*. Prepared for NIP 2021–2030.

[78] "Original" (also referred to as "Pre-basic" or "Super Elite" in some government documents) are seeds, seedlings, and planting material that represent the main characteristics of the variety and are free from pathogens and infectious diseases. These are used by the breeder in developing new varieties or maintaining existing ones. They are generally only maintained by the breeder or breeding organization. Upon registration of the variety it is officially listed in the "Register of Commercial Varieties." "Elite" are seeds (also referred to as "Basic" in some government documents), seedlings, and planting material propagated directly from "Super Elite" material and would include that propagated using any method, including in vitro techniques, buds, and cuttings. This material would be developed by the variety owner or a contractor and used by operators to produce "Certified" material. These definitions are taken from an English translation of the "Seed Law of Tajikistan."

57. **Private seed and seedling producers do not seem to be currently leading any major R&D activities on their own.** Except for open pollinated varieties of melons, watermelons, and tomatoes, for example, most vegetable seeds are hybrid varieties imported from the Netherlands and China. Planting material (seedlings) is also imported, mostly from Italy, Belgium, Germany, the Netherlands, and Serbia; the value of that reached over US$4 million in 2019. Laboratory facilities are not currently supporting any crop R&D programs, such as, for example, plant physiology and molecular biology, except for a phytopathology and plant tissue culture laboratory at TAU set up with support from the Swedish International Development Agency (SIDA). SIDA also supported establishment of the main seed testing laboratory in Dushanbe, one of the three laboratories in the country that nevertheless do not participate in R&D.

58. **In lieu of enough high-quality, locally produced seed from either the public or private sector, farmers rely on imported, farmer-saved seed or poor-quality, local inputs.** Capacity in Tajikistan to mass propagate seedlings under laboratory conditions (plant tissue culture or in vitro plant culture) is currently limited. Even where it is possible, there are reportedly no laboratories equipped with the technology to provide variety certifications and disease-free certifications. About 70 percent of the seed used in Tajikistan is either produced by the private sector or imported. Most imported seed are of commercial seed grade, but some elite and registered seed grades are imported for local multiplication. Farmers and seedling multipliers, however, tend to prefer imported planting material over locally multiplied due to its quality, including greater vigor, less disease, variety true to type, and the assurance of being accompanied by certificates of origin and phytosanitary certificates. Access to high-quality imports varies and is costly. Indicatively, in 2019:

- Approximately 2.5 million seedlings were produced in Tajikistan, of which 15 percent were apple varieties, 12 percent apricots, 11 percent peach, 10 percent grapes, 6 percent plums, and 4 percent of both cherries and almonds at an average price of between US$1.50–2.50 for grafted and US$0.20–0.50 for ungrafted varieties. This compares to the average market price of imported varieties of US$5 for nongrafted and US$10–15 for grafted ones.

- A total of 176,108 seedlings, both grafted and nongrafted, were imported, with a total value of US$4,431,000, or an average of US$2,550 per seedling.

59. **Greenhouse cultivation in Tajikistan relies on imported material. Greenhouses represent the future of agriculture, as adoption of technologies such as greenhouses presents growth and job opportunities**. Seeds used in greenhouses are exclusively imported greenhouse hybrid vegetable varieties of tomato, eggplant, pepper, and cucumber, because locally produced varieties are open pollinated, not hybrid, and are generally not adapted for cultivation under greenhouse conditions. In addition, locally produced varieties do not meet export market requirements.

60. **The situation is similar for feed. Access to and use of high-quality feed is limited for most farmers in Tajikistan**. Only a few farmers have access to quality alfalfa, hay, corn, and oil meal (a byproduct of cottonseed oil production). Some farmers grow

feed themselves, mainly corn for silage, as well as sorghum and other crops, but with the exception of some advanced farms, yields are very low for most, since farmers have limited knowledge of correct agronomic techniques and storage practices. The main forage used for animal feed in Tajikistan is straw, a poor-quality feed with little nutritional value. Cooperatives use some concentrates, primarily cotton-cake with residual oil, wheat, or rice hulls. Given the lack of locally produced quality feed, Tajikistan imports it. Reportedly there is only one local feed producer, who manufactures compound feed and premixes only for the poultry sector (daily output is about 100 tons). Kazakhstan and Russia cover the gap and are the largest trade sources for feed to Tajikistan.[79] Feed concentrates are not produced at all in the country. Tajikistan imports 99 percent of its concentrates from the European Union, Iran, Afghanistan, and Russia.

Unfinished cotton sector reforms

61. **Cotton remains Tajikistan's agriculture subsector with the most market distortions.** Given the continuously large share of cotton-growing areas in arable land (23 percent in 2018, Figure 2) and export (16 percent of total export and 85 percent of total agrifood export in 2020, Table 7), these distortions affect the entire agrifood sector. Despite the many reforms described below, Tajik cotton farmers continue to be taxed by: (i) monopsony of ginneries; (ii) debt; and (iii) an implicit crop placement system, under which local authorities still force farmers to grow cotton by denying access to irrigated water or forcing them to repay accumulated past debts.

62. **The reforms in Tajikistan's cotton sector started in 1996**. The GoT abolished the mandatory crop placement system, state farmgate cotton prices, production targets, and procurement volumes. State financing of cotton production was also eliminated. As a result, the cotton-growing area declined from 236,000 ha in 2000 to 160,000 ha in 2020.[80] These reforms occurred much earlier than in neighboring Uzbekistan, for example, which abolished state production and procurement targets only in 2020 but kept the mandatory crop placement and state financing of cotton production for the time being.

63. **These positive reforms in Tajikistan were overshadowed by less reformist measures.** The implementation of free selection of crops for production remained uneven, and when needed, the local authorities could easily 'force' farmers to produce cotton by denying them access to irrigation water, for example. Privatization of cotton-growing farms in the lowlands of Khatlon and Sughd regions lagged and many collective dehkan farms, which succeeded former *kolkhozes*,[81] continued to largely follow the old principles of operation.[82] The GoT privatized the cotton procurement chain by establishing a "futures system" under which domestic private companies provided commodity credit to cotton growers, with cotton fiber serving as collateral. However, only a small group

[79] FAO. 2015. *Beef Value Chain Analysis in Tajikistan*. Preparation of the World Bank's Agriculture Commercialization Project. Dushanbe.
[80] Estimate of the United States Department of Agriculture (USDA).
[81] A collective farm in the former Soviet Union.
[82] Lerman, Z. 2012. *Agrarian Reform of the Republic of Tajikistan: Farm Reform and Restructuring and Cooperative Development*. Technical Report.

of businessmen was able to establish futures companies, capturing local monopsony power over the cotton value chain via input supply, credit, and sales.[83] In addition, the GoT introduced a 10 percent tax on export of cotton lint, reducing cotton farmgate prices.

64. **Until 2010, cotton farmers engaged in cotton production contract schemes with futures companies**. These companies were the only way for farmers to obtain inputs on credit after abolishment of the state order system and state prefinancing of cotton production. In most cases, farmers could sell raw cotton only to designated ginneries or textile companies, driven by the incentives enforced by local authorities to maximize local tax revenues and serve private vested interests.[84] In Uzbekistan, cotton textile clusters with territorial contract farming are a model explicitly established to transition from the state order system by bringing in private sector investment and encouraging textile investors to provide technical, financial, and advisory services to designated cotton growers.[85] In contrast, Tajik cotton farmers are "implicitly assigned" to designated textile/futures companies without any commitment from them to provide any services to these farmers.

65. **In addition, Tajikistan's textile/garment enterprises have not made significant investments in textile and garment production, which would increase domestic value addition, export, and job generation.** Only 30 percent of cotton lint is processed domestically.[86] Excess ginning capacity remains, left from earlier years when Tajikistan production exceeded 1 million tons of seed cotton, compared to 409,477 tons in 2020, vis-à-vis a lack of yarn for domestic processing and undercapacity in dyeing. The spinners do not have the financial capacity to buy lint to store and they are left working only for as long as the stocks last.[87] Out of 18 spinning mills, only 4 have a full cycle of cotton lint processing (spinning, weaving, dyeing, and sewing). This is unlike Uzbekistan, where investments by textile enterprises since 2017 have led to a sharp increase in higher-value cotton products' exports in more recent years. In 2015, cotton lint accounted for more than 50 percent of Uzbekistan's total cotton textile export. In 2019, this fell to only 15 percent due to the increased capacity of and demand from the domestic textile and garment industry.[88] In Tajikistan, in contrast, the share of cotton lint in total cotton textile export exceeded 90 percent in 2019, its share hardly changing over the last decade. An increase in domestic processing of cotton in Uzbekistan also led to creation of new jobs in the textile and garment industry, from 120,000 in 2015 to more than 202,000 in 2019, with jobs growing faster in garment enterprises (123 percent versus 48 percent in textiles), which tend to produce higher-value products and offer higher wages than textile enterprises.[89]

66. **The significant influence of futures companies/investors on input and output prices, as well as pricing and terms of credit, led to a cotton farm debt crisis by the end of the 2010s**. Soft budget constraints supported debt accumulation, which by 2008

[83] World Bank. 2012. *Cotton Sector Reform: Increased Competition, Improved Incentives, and Higher Production*. Agricultural Sector Policy Note 2. Washington, D.C., and Van Atta, D. 2009. White Gold or Fool's Gold? The Political Economy of Cotton in Tajikistan. *Problems of Post-Communism* 56(2): 17–35.

[84] This occurred despite the Tajikistan's Cabinet of Ministers Resolution 111 on *Freedom to Farm* adopted in March 2007, which guaranteed farmers freedom in the selection of crops and crop outlets.

[85] World Bank. 2020. *Cotton-Textile Clusters in Uzbekistan: Status and Outlook.* Just-in-Time Policy Note as part of the Policy Dialogue on Agriculture Modernization. Washington, D.C.

[86] MTDP 2021–2025.

[87] Jaeger, P. 2017. *Opportunities for Intervention in the Agribusiness Sector in the Republic of Tajikistan and the Kyrgyz Republic*. Scoping study for the International Finance Corporation.

[88] The State Statistics Committee of Uzbekistan.

[89] World Bank. 2020. *Uzbekistan: Agrifood Job Diagnostic*. Washington, D.C.

was estimated at US$500 million, with 90 percent of all cotton growers in debt.[90] Tax incentives (one-half of the amount of the common land tax), nearly-free irrigation water, and public expenditures to cotton farmers[91] were insufficient to compensate cotton farm losses from overvalued inputs, undervalued output, and growing production costs caused by the worsening mechanization and irrigation infrastructure and lack of advisory/ extension and other public services. Once in default, producers became tied clients of the investors, who then exploited them further, resulting in accumulation of debts. These debts were later attached to farmland plots, leading to a loss of land use rights by farmers or land abandonment.

67. **The 2008 legislation on cotton debt write-off recognized the problem but does not seem to have fully resolved it.** The 2008 cotton debt roadmap envisaged writing off all cotton-related debts accumulated by farms by January 2008 (Decree 663 and Resolution 312) and all dekhan farms were supposed to nullify their debts. However, actual implementation of this debt write-off varied on the ground, with many investors refusing to write off farm debts. Since 2009, farmers have borrowed directly from commercial banks, not from futures companies, to buy inputs, but a continued territorial monopsony of ginneries enforced by the authorities as well as high cost/low profit (Table 13) could lead to another round of debt accumulation under the assumption of continued soft budget constraints.

Table 13: Tajikistan: Average costs and profits of selected crops, US$/ha, 2020

	Cotton	Wheat	Potatoes	Lentils	Carrot	Apricots
Total cost	1,420	577	2,758	680	1,623	1,122
Profit	487	464	2,650	405	3,155	2,418

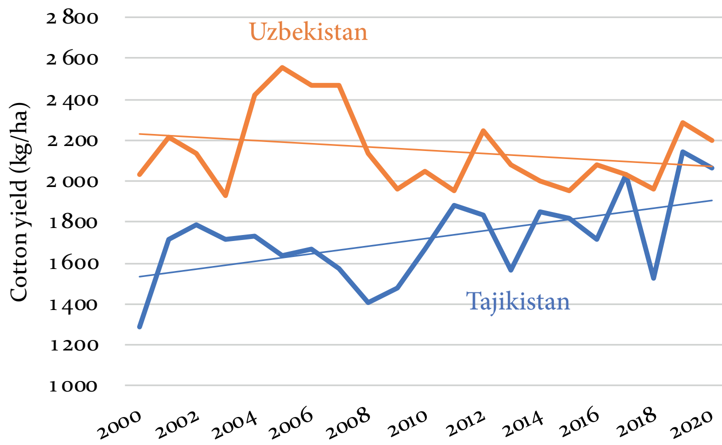
Source: FAO staff estimates.
Note: Total cost includes production costs and 5-10 km transport costs for selling outputs and buying inputs.

68. **The lack of predictability and high production costs along with low profitability have hampered rapid closing of the persistent yield gap, so much needed in Tajikistan with its limited arable land.** Cotton yield has risen in Tajikistan – between 2000 and 2020, yield grew on average by 3.5 percent per year, compared to 0.8 percent in Uzbekistan (Figure 16). Despite this growth, in 2020, average cotton yield in Tajikistan (1.7 tons/ha) was still 20 percent below Uzbekistan's average yield (2.2 tons/ha), which is among the lowest in the world. In Turkey, for example, average raw cotton yield is above 5 tons/ha, and is even higher in China, India, and the United States. Moreover, Tajikistan's cotton yield was more volatile, at 12.4 percent during this period, compared to 8.9 percent in Uzbekistan, reflecting poorer irrigation and farm technologies and practices.

[90] World Bank. 2012. *Cotton Sector Reform: Increased Competition, Improved Incentives, and Higher Production.* Tajikistan Agricultural Sector Policy Note 2. Washington, D.C.

[91] During 2010–2014, cotton growers received direct payments as farm income support totaling 1.2 million Somoni. These subsidies stopped in 2015. In addition, cotton growers received public services such as cotton seeds, irrigation, and plant protection at below-market rates.

Figure 16: Raw cotton yield in Tajikistan and Uzbekistan, 2000–2020



Source: USDA.

69. **Export prices of Tajik cotton lint closely followed the world market prices.** The Free on Board (FOB) export price of Tajik cotton lint averaged US$1,536/ton during 2012–2020 compared to the average world market price of $1,793/ton, as proxied by the Cotton-A price index in Liverpool (Figure 17). The average gap between export and world market prices during the entire period was US$257/ton, explained by the export tax and transportation and other export-related costs. During 2012–2016, the price wedge averaged US$282/ton, but between 2017 and 2020, the price wedge declined to US$226/ton.

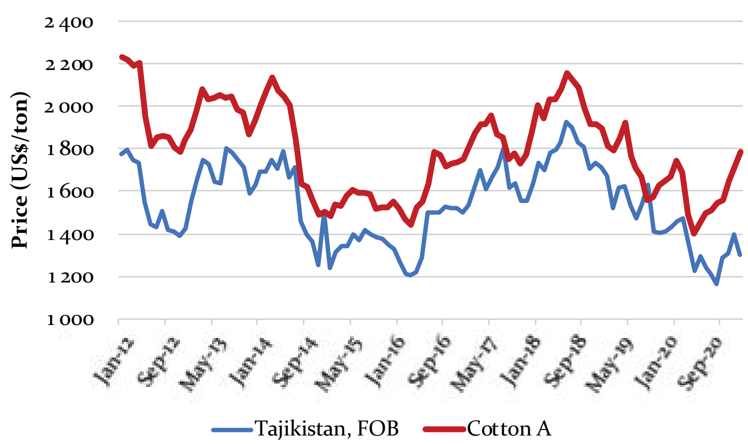
70. **The press[92] and the World Bank's 2012 cotton market assessments report that farmgate cotton prices are consistently below market level.**[93] Thus although Tajik export lint prices are aligned with the world market level, Tajik farmers are considered to have received a lower share of the export price than could have been the case without government interventions. The lack of accurate, consistent, and representative farmgate price statistics for cotton and any other agricultural product in Tajikistan does not allow confirmation or rejection of those statements. A 2014 study that analyzed Tajikistan's agricultural price distortions during 2000–2007 found that domestic cotton farmgate prices were 57 percent lower than the export parity prices.[94] Analysis of more recent periods is not available. Given that since 2014 the cotton market has become less distortive and the export tax for cotton lint was phased out, cotton farmgate prices are likely to have moved closer to the world market level (i.e., export parity prices) in recent years.

[92] *Tajik Dekhan Farms are Disappointed to Grow Cotton, Which Lost its "Golden" Status*. February 2020. www.asiaplustj.info.
[93] World Bank. 2012. *Cotton Sector Reform: Increased Competition, Improved Incentives, and Higher Production*. Tajikistan Agricultural Sector Policy Note 2. Washington, D.C.
[94] Khakimov, P., I. Pawlowski, and M. Schmitz. 2014. Measuring Agricultural Support in Tajikistan. *Journal of Agricultural Science*, 6(3).

71. **Cotton price taxation is not the only problem**. Many farmers would incur losses even if they received export parity prices. With an average yield of 1.7–2.0 tons/ha, revenue at export parity prices would be 8,000–10,000 Somoni, which is insufficient to cover costs (estimated at 14,5oo Somoni/ha, Table 13) and generate profit. Thus the cotton sector faces multiple problems, including low productivity of cotton production resulting from the years of debt crises, lack of high-quality public services (high-yielding varieties, advisory services extending climate-smart farm technologies, irrigation and drainage, etc.), and interference of local authorities into the cotton value chain. These issues are especially important in areas with poor soils, where cotton yield is below a threshold guaranteeing an average profit. On such soils, farmers should not produce raw cotton at all.

72. **The challenge is that debt resolutions have not fixed the underlying problems that caused the debt crisis in the first place.** As discussed above, the real causes of the debt crisis and the constraints to cotton production are the lack of competition in processing, marketing, and credit; the low consequent incentives for producers to raise output; and government interference. Simple debt resolution, without solving these larger issues, could easily lead to further debt accumulation.

Figure 17: Tajik export and world market prices of cotton lint, 2012–2020



Source: World Bank Pink Sheets and TAJSTAT.

73. **Privatization of cotton gins and textile factories has not created a free market for raw cotton**. Local governments are still reported to coerce cotton producers to work with specific gins and textile investors, creating a system of local and regional monopsonies.[95] This power is reinforced by the power of the local government to restrict movement and transportation of cotton, while textile enterprises pay local taxes. Assured of raw materials, ginners have minimal incentive to raise their efficiency standards or to pay farmers a market-based price for their cotton seed. Investors are able to exploit their position as sole suppliers of inputs and credit and as exporters. Some local governments facilitate

[95] *Tajik Dekhan Farms are Disappointed to Grow Cotton, Which Lost its "Golden" Status*. February 2020. www.asiaplustj.info.

this monopsony activity because it ensures that the taxes generated from cotton grown in their locality accrue to them and not somewhere else. These actions are detrimental to the cotton sector as farmers are deprived of incentives to produce more cotton.[96]

Fragmented, small-scale agricultural production

74. **Four types of agricultural producers resulted from land reform:** (i) household plots; (ii) individual and family dehkan farms; (iii) collective dehkan farms; and (iv) agricultural enterprises (successors of former state farms). Only the first two are considered family farms in the true meaning of the term. Agricultural enterprises are specialized state-owned farms, and collective dehkan farms have succeeded former kolkhozes and largely follow their principles of operation.[97]

75. **The land reform significantly increased the number of farms.** The total number of dehkan farms increased from about 20,000 in 2005 to nearly 90,000 in 2011. As of 2018, the Tajik farm sector consisted of 750,000 rural households, each with a household plot of 0.3 ha on average, and almost 173,000 dehkan farms with 3 ha of sown area and 30 ha of agricultural land on average.

76. **The majority of Tajik farms (about 88 percent) are small-scale, subsistence family farms that comprise the country's major agricultural producers.** Many farms are located in marginalized farmlands with an average size of 0.3–4.6 ha. Incomes from these farms vary, but the average gross annual income is US$5,056, with crop production the primary activity (average 40 percent).[98] In 2019, they accounted for 63 percent of agricultural production, 87 percent of livestock inventories (with an average size of 2–5 head of cattle), and 93 percent of livestock output. Only 18 percent of GAO is sold by family farms, indicating the subsistence-oriented character of Tajik smallholders' production. Farm production on small-scale holdings tends to be diversified; often smallholders' primary objective is to feed the household, while commercialization of any surplus is a secondary goal. This diversification is an effective risk management strategy of asset-poor households, but it constrains the development of modern agrifood value chains.

77. **While most Tajik farms are private, which brings many economic and social benefits, this fragmented, small-scale, and subsistence orientation creates many challenges and leads to market failures**. Small farms tend to be efficient in producing commodities and satisfying their subsistence needs, but they face challenges to market their products and respond to the evolving and strict requirements of domestic and overseas consumers related to food volumes, quality, safety, traceability, and consistency. This is especially important for horticulture value chains, where the demand for freshness and the challenge of perishability require concerted actions of many stakeholders. Modern retailers like supermarkets constantly raise their requirements, which are difficult for small producers to meet. In Russia, the largest destination of Tajik horticulture export, fruit and vegetable sales are rapidly shifting toward organized retail, where Tajik products

[96] World Bank. 2012. *Tajikistan Agricultural Sector: Institutional Reform: Public Versus Private Responsibilities.* Policy Note 4. Washington, D.C. and Hofman, I. 2019. *Cotton, Control, and Continuity in Disguise: The Political Economy of Agrarian Transformation in Lowland Tajikistan.* PhD thesis, Leiden University, the Netherlands.

[97] Lerman, Z. 2012. *Agrarian Reform of the Republic of Tajikistan: Farm Reform and Restructuring and Cooperative Development.* Technical Report.

[98] *Small Family Farms Country Factsheet,* 2018. http://www.fao.org/3/I8348EN/i8348en.pdf

even now have a limited presence. The market share of modern retail chains in sales of fruits and vegetables in Russia is projected to increase from the current 40 percent to 80 percent by 2030.[99]

78. **The small and subsistence nature of production leads to social and economic losses**. Small production volumes on each land plot lead to a large number of intermediaries involved in volume aggregation to deliver product to its final destination. This results in farmers not only losing profit margin share because of increased transactions, but also not getting enough feedback about the existing market requirements and opportunities. Smallholder farmers often do not have the capacity, knowledge, or financial incentive to handle their harvest in a way that would allow for the highest yields. Farmers in Tajikistan often mix produce of different sizes, maturity, and quality, which shortens the shelf life of fruits and results in significant losses for exporters when they arrive at their final destination. Thus, the consequences of diversified production on small plots are that no benefits arise from economies of scale, aggregation by traders is expensive, the quality is inconsistent, and traceability is difficult.[100]

79. **Farm cooperation and productive partnerships between farm groups and agriprocessors (e.g., clusters), which could correct some of the abovementioned market failures, are still rare in Tajikistan.** The GoT historically focused on controlling cotton production and has neither the experience nor trust of farmers to facilitate successful productive partnerships in the horticulture sector. Several donor projects recently started to promote productive partnerships along selected value chains, but a lack of strategic support from local authorities and insufficient funding limit these initiatives. In neighboring Uzbekistan, for comparison, the government at central and local levels has been more proactive in attracting credit lines and grants to stimulate a creation of horticulture clusters; its government recently started to add tax and customs incentives to accelerate their development, recognizing the importance of market-based collective actions to overcome market failures of small and fragmented production systems.

80. **Agricultural advisory services, which could have played a large role in strengthening collective actions among smallholders, have been ad hoc, mostly provided under donor projects.** The MOA has not invested in the creation of extension/advisory services in the country. Regional departments of agriculture, run by the MOA, have officers in all oblasts and districts but their role is mostly supervisory (reporting to *hukumats*[101] and the MOA), as well as collecting data for statistical purposes. Only 30 percent of 1,200 rural households in southern Tajikistan, surveyed by the International Food Policy Research Institute (IFPRI) in September–October 2020, reported having access to agriculture-related information and the majority received it from relatives and friends, not advisory/extension services (Figure 18).[102] During the last 20 years, an ensemble of mostly uncoordinated and at times overlapping donor and project initiatives has carried out agricultural extension services. Efforts aimed at promoting a national unified system by the Food and Agriculture Organization (FAO), the United Kingdom's Department for International Development

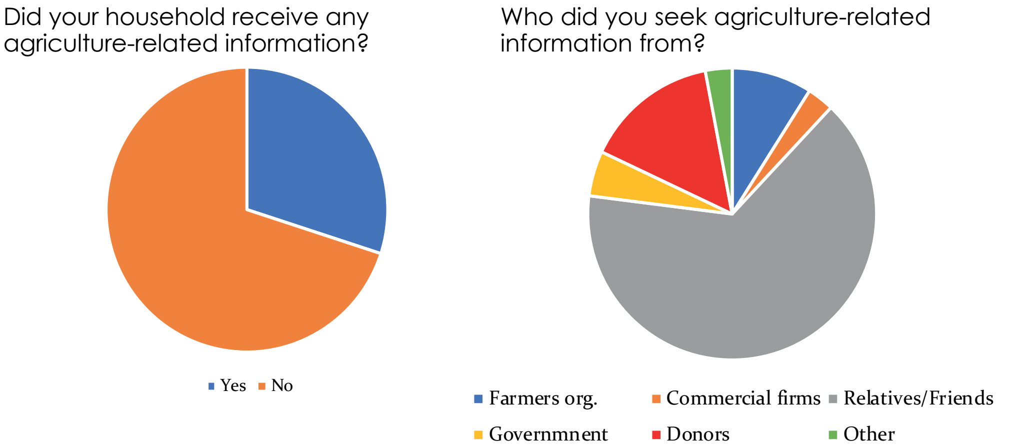
[99] World Bank. 2020. *Central Asia's Horticulture Sector — Capitalizing on New Export Opportunities in Chinese and Russian Markets*. Washington, D.C.

[100] Jaeger, P. 2017. *Opportunities for Intervention in the Agribusiness Sector in the Republic of Tajikistan and the Kyrgyz Republic*. Scoping study for the International Finance Corporation.

[101] A local form of government.

[102] Akramov, K., and K. Kosec. 2020. *Impact of the COVID-19 Pandemic on Household Welfare, Food Security, and Agriculture in Central Asia.* PowerPoint presentation, Development Strategy and Governance Division, IFPRI, December 2020.

Figure 18: Tajikistan: Access of households to agriculture-related information



Source: IFPRI survey 2020.

(DfID), German International Collaboration (GIZ), United States Agency for International Development (USAID), and the United Nations Development Programme have not been conclusive. A major outcome of the work and efforts undertaken is some capacity built in terms of professional resources and, to a certain extent, of networks and infrastructure. Among the initiatives with some evidence of sustainability is one promoted through a European Union-supported project (Tajik Agricultural Finance Facility), which launched a mechanism of Technical Advisory Groups, mostly for crop-specific technical advice and also meant to increase farmers' access to inputs and machinery services, eventually including marketing and financing.[103] USAID, Helvetas, and several other donors sponsored an e-based system in several Commonwealth of Independent States (CIS) countries (with about 200,000 users), providing advisory services to cash crop producers and small agribusinesses and creating ties along the value chain.[104]

Gender inequality

81. **Rural women disproportionately experience poverty**. For them, the responsibility for housework and provision of care is overstretched. Work performed in family plots such as feeding domestic animals, and planting, watering, and harvesting vegetables and fruits is often seen as part of their household responsibilities and is not recognized as a job (and is not paid). This results in increased workloads and time pressure.[105] As rural women are not considered formal workers, they are entitled only to a minimum social pension, which amounts to 60 percent of a contributory one. Rural women continue to be excluded from

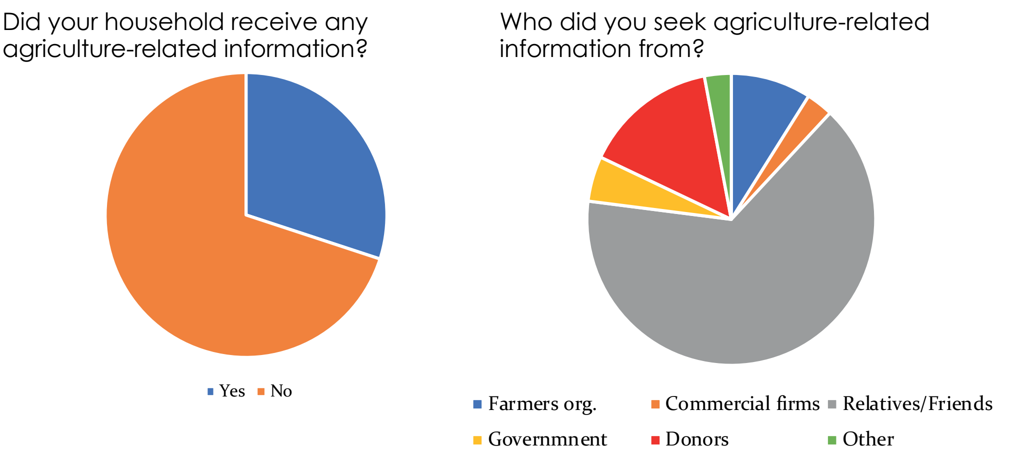
[103] NIP 2021–2030.

[104] Major outcomes of these initiatives with evidence of international acknowledgment include creation of the SAROB cooperative of independent technical advisors (to date around 250 members), which provides services to some 20,000 farmers on agreed fee bases. In the same light, another valid undertaking was the launch in 2012 of the NEKSIGOL MUSHOVIR company, which provides advisory services and a market information system (AGROINFORM-TJ) through mobile apps to the benefit of its membership (15,000–20,000). In the latter case, the obvious limitation is farmers' actual access to mobile devices and the Internet.

[105] FAO, 2016. National Gender Profile, op cit.

the land certificates of dehkan farms and from decision making, and in general they have limited access to productive resources and opportunities.[106] The so-called "abandoned wives" of migrant workers form one of the most socially and economically vulnerable groups in Tajikistan. Overall, women perform a significant portion of agricultural work and contribute to food security, but this work is invisible, unrecognized, and underpaid; thus, women form most of the rural poor.

Figure 18: Tajikistan: Access of households to agriculture-related information



Source: IFPRI survey 2020.

82. **A lack of professional advisory services undermines the inclusion of smallholder farmers (many of whom are women) in modern agrifood value chains.** In general, women tend to take up lower-level jobs, and thus have lower incomes.[107] Although exact figures vary (some sources say that the share of women's employment in agriculture was 60 percent in 2020[108]; others estimate that anywhere between 31–86 percent of women are active in the sector[109]), women are an integral part of Tajikistan's agricultural labor force.

83. **Rural women in Tajikistan disproportionately experience exclusion and face multiple forms of discrimination.** In accordance with social practices, families are patrilocal (that is, the family resides in the home of the husband's parents), and property is usually transferred through the male line. Land certificates are most often registered only in the name of the male head of household as a social practice, and the fact that social taxes for dehkan farms are calculated as a fixed monthly fee for each shareholder on the certificate is a further disincentive to register wives or daughters-in-law as shareholders. Women and men also lack information about women´s rights to land, and women face larger

[106] ADB. 2016. *Tajikistan: Country Gender Assessment: https://bit.ly/2RvHHIG; and FAO. 2011. The State of Food and Agriculture: Women in Agriculture, Closing the Gender Gap for Development*. Rome
[107] iMCworldwide. 2017. *Growth in Rural Economy and Agriculture in Tajikistan*. Evaluation for DfID, London.
[108] WDI. Accessed on November 29, 2020.
[109] USAID. 2014. *AgTCA Tajikistan: Agricultural Technology Commercialization Assessment.* USAID Enabling Agricultural Trade project.

constraints (economic and social) when willing to register land in their names. Women also face significant barriers in accessing other agricultural inputs, such as agricultural advisory services, but also transportation, equipment, innovative technologies, irrigation, finance, and networks. According to Tajikistan's Demographic and Health Survey 2017, only 1 percent of women have a bank account that they use, and slightly more than one-half of women (54 percent) own a mobile phone. Only 9 percent of women who own a mobile phone use it for financial transactions. This has a direct impact on farm productivity and agricultural development.

Weak agriprocessing and other agribusiness companies

84. **Food and cotton processing are important parts of Tajikistan's industry sector, but they remain below their potential.** In 2018, food processing, including the production of beverages and tobacco, accounted for 36 percent of the processing industry and 21 percent of the entire industrial sector.[110] The total number of food processing enterprises was 468, employing 10,500 people, or only 0.4 percent of total employment. Together with the textile and garment industry, which employed 16,300 people, agriprocessing employment in general accounted for 1.1 percent of total employment in 2018.

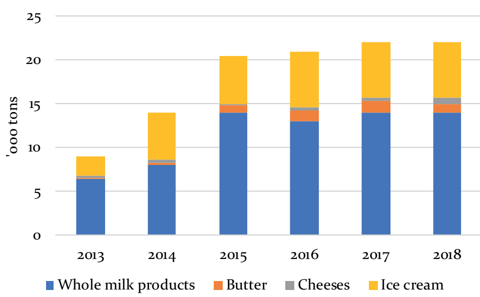
85. **The food processing industry mostly serves the domestic market**. The industry includes meat and milk processing, flour milling and baking, fruit drying and preserving, and fish preparation; only in dried fruits and fish are exports a significant proportion of total industrial product. Other agriprocessing involves cotton and its products. While there are around 20 textile companies and reportedly 30 garment companies, many are not functioning and most of the cotton, about 70 percent, leaves the country in unprocessed form as lint.[111] FDI in agribusiness has been low: between 2013 and 2017, the agrifood sector attracted 985 million Somoni of foreign investment, accounting for only 2 percent of all FDI.[112]

86. **Some food industry subsectors recently experienced high growth rates.** About 15 milk processors, for example, increased dairy production by 61 percent over the period 2013 to 2018 (Figure 19). Higher production of dairy products reduced dairy imports from 4.5 percent in 2015 to 1.7 percent in 2019. Similarly, meat processing grew by 34 percent between 2014 and 2019 (Figure 20). Chicken meat output increased fourfold and beef output doubled, while mutton and goatmeat output declined by 12 percent.

87. **Yet food production and processing remain at a low scale**. Per capita dairy and meat production in Tajikistan is much smaller than in other CIS countries (Figure 21, Figure 22). Most food processing enterprises, similar to what is observed in the farming sector, are small and fragmented. In combination with fragmentation, the sector does not achieve economies of scale. In addition, most processing companies are seasonal

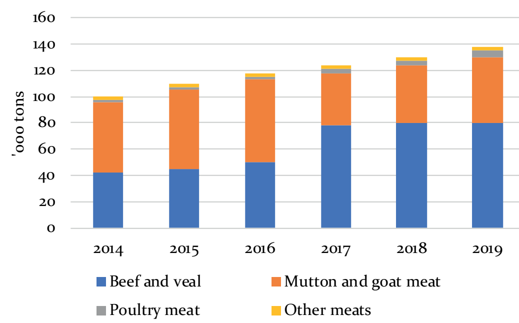
[110] TAJSTAT.
[111] Jaeger, P. 2017. *Opportunities for Intervention in the Agribusiness Sector in the Republic of Tajikistan and the Kyrgyz Republic.* Scoping study for the International Finance Corporation.
[112] MTDP 2021–2025.

Figure 19: Tajikistan: Production of dairy products, '000 tons, 2013–2018



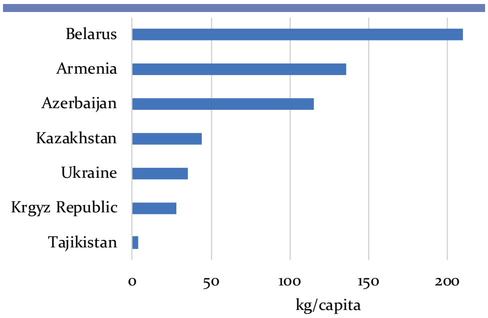
Source: TAJSTAT.

Figure 20: Tajikistan: Production of meat products, '000 tons, 2014–2019



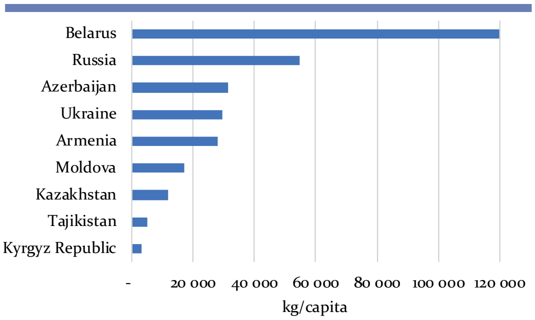
Source: TAJSTAT.

Figure 21: Per capita production of fresh dairy in CIS countries, 2018



Source: TAJSTAT.

Figure 22: Per capita production of meat products in CIS countries, '000, 2018



Source: TAJSTAT.

operators, working only in summer. Processing, storage, and related industries are not very developed, and do not help the agriculture sector to diversify away from cotton. Only about 20–30 percent of agricultural production is processed (mostly canning, fruit drying, and milk and meat processing).[113] The links between processors and farmers are weak, and productive partnerships are rare, as discussed before.

88. **Vertical links tend not to form spontaneously and need support, at least initially**. Small-scale agrifood processors are rarely successful in establishing sustainable partnerships with small farmers unless strong market signals and public programs facilitate these partnerships.[114] Such strong market signals for Tajik agrifood producers/processors are found in high-value markets, for example horticulture, that require specialized and labor-intensive agricultural production. When public programs (such as promotion of

[113] Punda, I., and E. Isaeva. 2020. Dairy and Meat Industries Development. Working Paper for NIP 2021–2030, MTDP 2021–2025, and OECD. 2015. *Private Sector Development Policy Handbook: Increasing Exports in Tajikistan – The Case of Agribusiness*. Paris.

[114] Hakobyan, A. 2015. *Negotiating Sustainable Partnerships in Food Supply Chain*. Paper presented in 24th Annual World Symposium of International Food and Agribusiness Management Association, Cape Town.

collective actions through matching grants and capacity building; focused assistance for food safety and better hygienic practices; and expansion of new financial products to small farms and agrifood processors) begin to strategically address market failures, Tajikistan's small farmers and small-scale agrifood processors can improve access to markets and have more opportunities to capture value and improve their livelihoods. So far, however, such public programs are missing, undermining some donors' efforts to scale up such partnerships.

89. **Despite these constraints, higher-value agrifood products hold export promise for Tajikistan if conducive investments and reforms are made.** Tajikistan is poised to benefit from the expected rise in population and income in its key current and potential trade markets, such as Central Asian countries, China, India, and Turkey.

90. **Tajikistan's ranking in the World Bank's Doing Business report has improved (106 out of 190 in 2020),[115] but its cost of doing business continues to be high**. Although Tajikistan is above the ECA regional average for "Starting a Business," it is below average in "Dealing with Construction Permits," "Getting Electricity," "Registering Property," "Trading across Borders," "Enforcing Contracts," and "Resolving Insolvency." These limit private investments in agribusiness and by extension hinder exports. Lack of access to advanced technologies and crumbling infrastructure are not facilitating participation in global value chains.

91. **At the subsector level, horticulture is Tajikistan's comparative advantage in agrifood export.** Increasing horticulture export would require public investment in agrilogistical centers and promotion of private investment in postharvest storage, handling, and processing, which remain limited in Tajikistan. In 2018, the estimated refrigerated warehouse capacity in Tajikistan was 0.1 million m^3, or 0.041 m^3 per urban resident.[116] In Uzbekistan, for comparison, it was 0.385 m^3 per urban resident, increasing from 0.102 m^3 in 2014.

92. **Tajikistan also needs to meet SPS protocols to be able to reap the benefits of agricultural trade**. An Organisation for Economic Co-operation and Development (OECD) survey revealed that almost 84 percent of Tajikistan's agribusiness companies view "the need to improve the food safety system as an important or very important policy to support the sector."[117] Although Tajikistan has started to implement the required steps associated with signing the International Plant Protection Convention, more work is required to practice food safety principles, and to ensure that established technical standards are followed in both agricultural imports and exports. The standards agency, TajikStandard, currently oversees all aspects related to technical barriers to trade, including drafting and adoption of standards and technical regulations, conformity assessment, accreditation, and metrology, as well as market inspection, giving rise to complaints of conflict of interest. In addition, the agency is underfunded and unequipped to test goods.[118]

[115] World Bank. 2020. *Doing Business: Tajikistan Economic Profile*. Washington, D.C.

[116] Global Cold Chain Alliance. 2018. *Global Cold Chain Capacity Report*. International Association of Refrigerated Warehouses.

[117] OECD. 2015. *Private Sector Development Policy Handbook: Increasing Exports in Tajikistan – The Case of Agribusiness*. Paris.

[118] USAID. 2014. *AgTCA Tajikistan: Agricultural Technology Commercialization Assessment*. USAID Enabling Agricultural Trade project.

93. **Public investment priorities in standardization and certification could unlock trade barriers**. There are calls for TajikStandard to be reformed, and at the very least to specifically separate the functions between those bodies that support businesses in obtaining certification, and those that award or renew such certifications. The GoT should invest in construction of modern quality-control and certification systems in the agribusiness sector; and in improvement of the food safety system, including animal and plant health systems. Efforts need to be exerted to meet international standards, too. The same OECD survey showed that more than 75 percent of agribusiness companies consider "the need to provide incentives to get international certificates of compliance as an important or a very important policy to support exports." Support or incentive mechanisms could include tax incentives, credit, or consulting to help agribusinesses and exporters certify their products.[119]

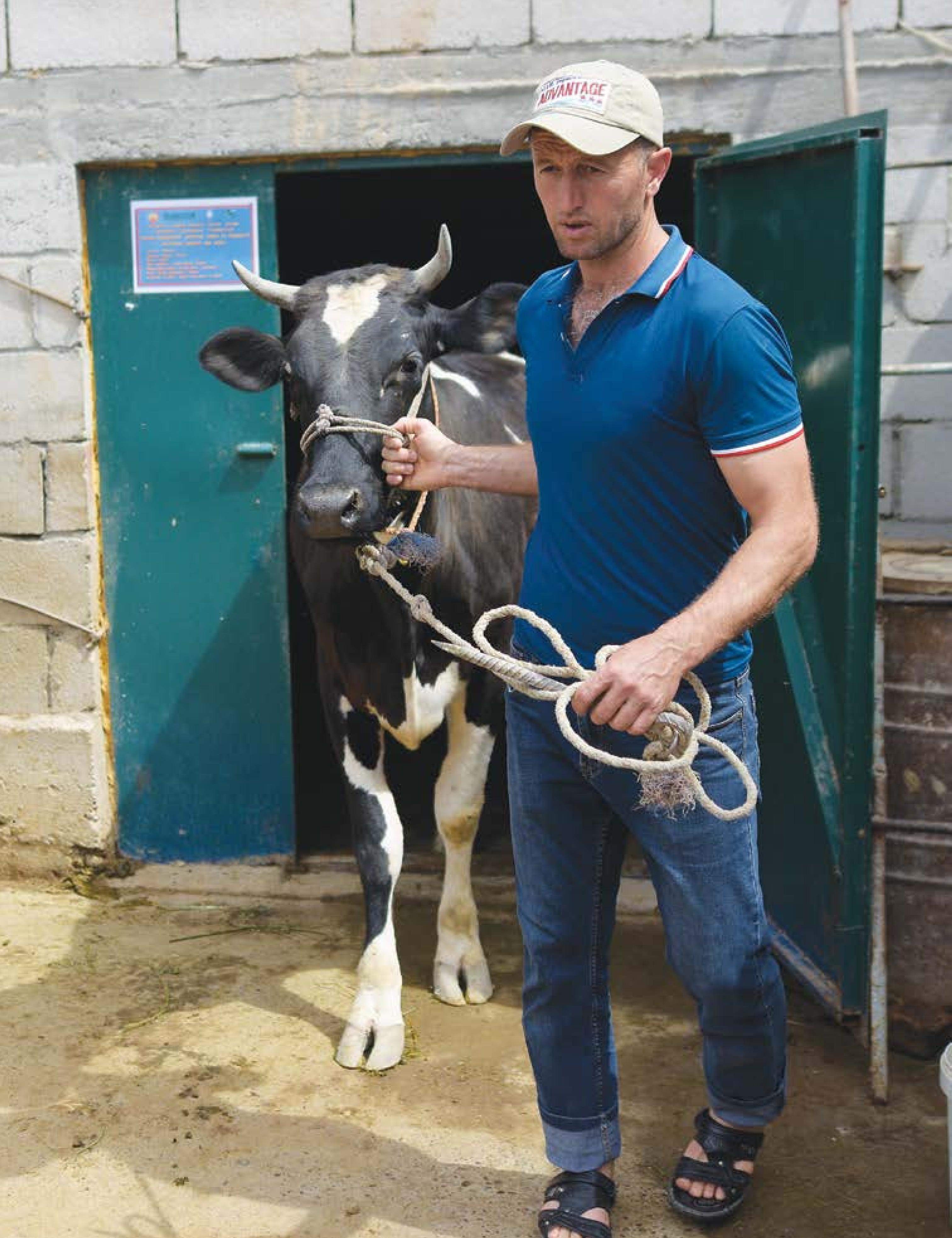
94. **The strengths of the Tajik agrifood system were tested during the COVID-19 outbreak.** They ultimately helped the sector withstand. The challenges, however, were amplified by the crisis and exposed the country's vulnerabilities. Chapter 2 presents the impact of the COVID-19 outbreak on Tajikistan's agrifood sector and its food security and informs lessons for future public policies and investments (Chapter 4).

(iv) Main takeaways

95. **Tajikistan's agriculture exhibits many strengths that can be built upon to secure a more resilient and sustainable post-COVID-19 recovery.** Relatively high rates of agricultural growth, which seem to have been driven by the increase in agricultural productivity and diversification to higher-value products, have recently been boosted by more attention from policymakers on integrated agrifood value chain development and agrifood export diversification.

96. **Many remaining challenges could reduce these gains over time if left unaddressed.** Excessive food price volatility, amplified by weak public capacity to detect and respond to various shocks, contributes to food insecurity and malnutrition, especially in more remote areas. The lack, or low quality, of agricultural public services leads to the depletion of natural resources. Farmers also incur losses due to a lack of seeds, other inputs, and agricultural extension services, which are tailored to the country's diverse agroecology and the needs of smallholders, especially women farmers. This exacerbates Tajikistan's low productive land endowment. Cotton production, which still occupies more than 20 percent of arable land, remains largely managed administratively by local governments, often at the expense of farm incomes, while textile enterprises continue exporting cotton lint, not processing it domestically. Agriprocessors and other agribusinesses remain small and fragmented because of the high cost of doing business in general and the high transaction costs of working with small farms. Industrialization targets included in recent GoT documents cannot be met without targeted programs aimed at establishment of productive partnerships, with financial and capacity-building support to both farmers and agribusinesses. The abovementioned challenges are further exacerbated by the overly weak capacity of public institutions and the lack of clarity and predictability of obligations of the state toward the private sector in Tajikistan.

[119] OECD. 2015. *Private Sector Development Policy Handbook: Increasing Exports in Tajikistan – The Case of Agribusiness.* Paris.


ADVANTAGE

2 COVID-19 CRISIS AND IMPACTS ON TAJIKISTAN'S AGRIFOOD SECTOR AND FOOD SECURITY

97. **COVID-19 has had a significant adverse impact on the global economy and global food insecurity**. It dramatically increased the number of people in food crisis in 2020, compounding multiple existing crises, with protracted impacts projected to last at least into 2022.[120] The World Food Programme (WFP) estimates that due to COVID-19, an additional 96 million people will be acutely food insecure in IDA countries by the end of 2020. This exceeds the worldwide number of COVID-19 cases. Added to the 137 million people already acutely food insecure in IDA countries pre-COVID-19, this brings the total to 223 million by the end of 2020. Projections suggest this will increase to about 330 million one year from now and further increase in 2022. These impacts come on top of a rising trend in hunger in many countries, driven by climate change, conflict, and other economic shocks. The compounding effect of COVID-19 is also likely to roll back much of the progress made over the last few decades on women and children's nutrition. Increased numbers of stunted children will compromise their future human capital and economic productivity.

98. **This chapter presents the effects of the COVID-19 crisis on Tajikistan's agrifood sector and food security**. It begins with an analysis of the impacts, differentiating between those on the supply side of food production (agriculture and value chains) and those on the demand side (food security). The analysis of impacts is followed by a review of Tajikistan's responses, through the prism of global experience.

(i) Impacts

99. **The COVID-19 pandemic had a significant adverse impact on the Tajik economy.** Real GDP growth slowed to 4.5 percent in 2020 compared to 7.5 percent in 2019 (Table 14). COVID-19 also negatively impacted the already low FDI. The volume of inward FDI fell by over 70 percent, or 1.8 percent of GDP, in the first half of 2020.

[120] World Bank. 2020. IDA: *Responding to the Emerging Food Security Crisis*. Washington, D.C.

Mining, manufacturing, and financial intermediation saw the largest drops in FDI inflows. Restrictions on labor mobility and economic activity at home and abroad resulted in low migrant remittances (15 percent lower on a year-to-year basis), weaker consumer demand, and reduced investments.[121] A growing share of the population reported reducing their household expenditures, including food consumption, and as a result, poverty in 2020 is projected to increase, reversing the past declining trend.[122]

Table 14: Tajikistan: Contributions to real GDP growth, percentage points, 2017–2020

	2017	2018	2019	2020
Real GDP growth:	7.1	7.3	7.5	4.5
Industry	3.6	2.2	2.6	2.0
Agriculture	1.6	0.9	1.5	2.4
Construction	0.5	0.8	-0.7	0.2
Services	1.4	3.3	4.1	0.7

Source: TAJSTAT.

100. **The impact of COVID-19 on the Tajik agrifood sector was more nuanced.** On the supply side, the impact on Tajikistan in 2020 was limited relative to other countries. Globally, lockdowns and mobility limits caused labor shortages in farms, processing, and packaging facilities, especially where seasonal labor and labor intensity characterize agriculture sectors (Figure 23). Disruptions upstream from the farmgate affected access to farm inputs, while downstream disruptions caused products to accumulate in storage facilities, leading to food losses. Measures between countries, such as border closures and stricter procedures and checks, disrupted transport and logistics that delayed and backed up products in transit.

101. **In Tajikistan, agricultural production increased, and the agriculture sector was among the largest contributors to overall GDP growth in 2020 (Table 13)**. Despite the locust invasion in the country's southern regions, agriculture grew by 8.8 percent, above the average of the last five years (Table 5). Farm inputs for the main spring planting campaign in 2020 were secured before the outbreak of the global COVID-19 pandemic. Favorable weather conditions,[123] some farmland restoration (which was out of agricultural use due to salination or deterioration of irrigation infrastructure), and growing production capacity in the poultry sector helped boost agriculture sector output.[124]

[121] World Bank. 2020. *Tajikistan: Economic Slowdown Amid the Pandemic*. Country Economic Update Fall 2020. Washington, D.C.

[122] Under the lower-middle-income poverty rate (US$3.2 in 2011 purchasing power parity), poverty in Tajikistan declined from 15.8 percent in 2017 to 12.7 percent in 2019. In 2020 it is projected to increase to 12.9 percent. See World Bank. 2020. *Tajikistan: Economic Slowdown Amid the Pandemic*. Country Economic Update Fall 2020. Washington, D.C.

[123] FAO and WFP. 2020. *Tajikistan COVID-19 and Food Security* – Monthly Update (July 2020).

[124] The lack of disaggregated data on valued added by commodity or at least by subsector precludes a more detailed growth composition analysis.

Figure 23: Channels of COVID-19's transmission to food and agriculture

Source: FAO.[a]
[a] *Schmidhuber, J., J. Pound, and B. Qiao. 2020. COVID-19 Channels of Transmission to Food and Agriculture. FAO Publications, Rome.*

102. **For the second planting in 2020, Tajik farmers faced higher input prices.** IFPRI's phone-based survey of 1,200 households in southern Tajikistan during September–October 2020 (the baseline survey was conducted in September 2018) revealed that travel restrictions and supply chain disruptions did not much impact the availability of seeds – more than 75 farmers reported to have had the same availability of seeds in 2020 as in 2018 (Figure 24).[125] But access to seeds for Tajik farmers was affected due to higher prices. The situation was the same for mineral fertilizers – their price increase, not availability, was the main problem. Between January–July 2019 and January–July 2020, the average price of ammonium nitrate increased by 8 percent and of superphosphate by 57 percent (Figure 25).[126] Note that the fertilizer price increase in Tajikistan occurred against declining world market prices, which dropped by 14–16 percent during the same period.[127]

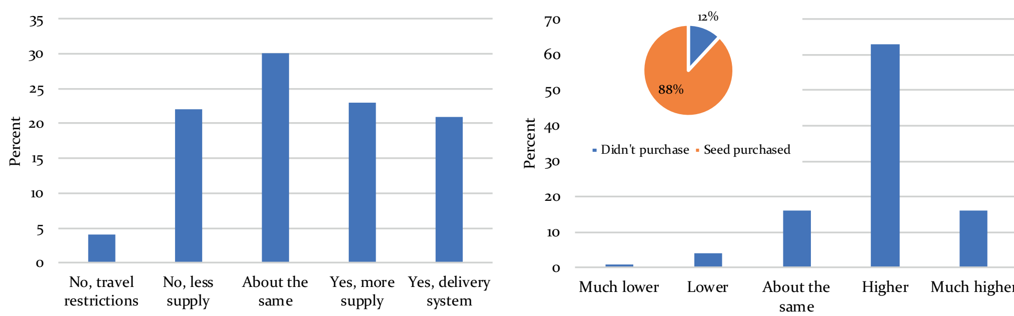
103. **Although the use of inputs in Tajikistan is highly elastic – i.e., an increase in input prices leads to their lower use or replacement with lesser quality – the 2020 agricultural production withstood this input price increase.** In addition, the emergency seed and fertilizer distribution supported by the GoT and some donors (e.g., FAO) helped mitigate some increase in farm input prices, which had a larger effect on farm profitability than disruption/unavailability of inputs during the COVID-19 pandemic. The spike in farm input prices in 2020, however, raises concern for the 2021 season.

[125] Akramov, K., and K. Kosec. 2020. *Impact of the COVID-19 Pandemic on Household Welfare, Food Security, and Agriculture in Central Asia.* PowerPoint presentation, Development Strategy and Governance Division, IFPRI, December 2020.
[126] FAO and WFP. 2020. *Tajikistan COVID-19 and Food Security* – Monthly Update (July 2020).
[127] The World Bank estimated that during the same period, urea prices on the world market declined by 14 percent and DAP prices declined by 16 percent.

Figure 24: Tajikistan: Availability of and access to seeds in 2020

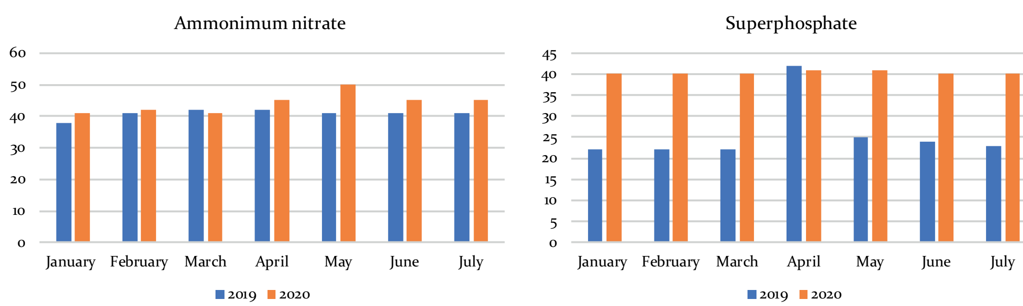
Relative to the same season last year, was it easier to get seed?

Relative to the same season last year, does this price compare?



Source: IFPRI survey 2020.

Figure 25: Tajikistan: Prices of selected fertilizers, 2019 and 2020



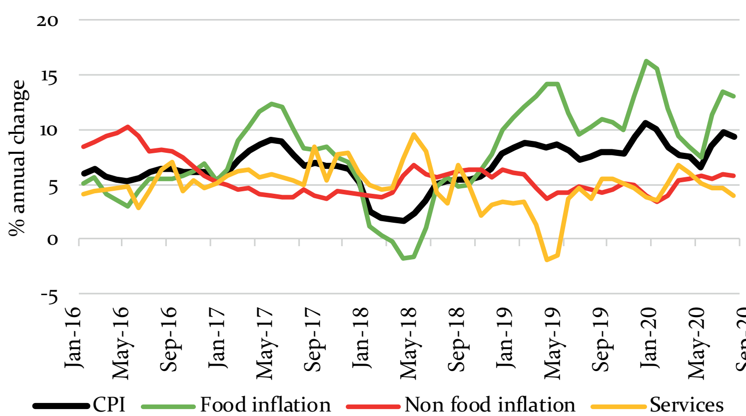
Source: MOA.

104. **The demand-side impact of COVID-19 on the agrifood sector in Tajikistan was much larger.** It heightened the risks of food scarcity during the off-season months, notwithstanding the increased production during summer and autumn. The drop in household income caused by job losses, lower remittances, and business closures (temporary or permanent) reduced food consumption in a context of prepandemic high consumer prices. Meanwhile, some staple foods saw their prices hike up as consumers, including governments, engaged in panic buying and hoarding. The pandemic's effects on nutrition are particularly concerning for the poor and vulnerable, whose access to safe, diverse, and healthy food is jeopardized. [128]

[128] Falling income was a key driver of the increased undernourishment in Tajikistan, according to the World Bank. 2020. Economic and Social Impacts of COVID-19. Update from Listening to Tajikistan. April 2021, Washington, D.C. This was similar to global experience, with the decline of per capita GDP driving up hunger. The IMF estimated that a 1 percentage point decrease in GDP growth increased the global rate of undernourishment by 0.95 percent. The COVID-19 pandemic, therefore, absent policy interventions, increased the global number of hungry people by 62 million. IMF. 2021. *World Economic Outlook: Managing Divergent Recoveries.* April 2021, Washington, D.C.

105. **The consumer price index (CPI) for foodstuff has been elevated**. Although the CPI for foodstuffs was reported to be disproportionately high since mid-2019, it still jumped by 5.0 percent and 3.1 percent in April and October 2020, respectively (month-on-month increase). Increases in market prices of wheat flour, potatoes, and eggs were mostly responsible for this increase.[129] During the same months, the CPI for nonfood items and services decreased by 0.1 percent and 0.5 percent, respectively, due to the decline in prices of gasoline and diesel (Figure 26).

Figure 26: Tajikistan: Changes in CPI composition, 2016–2020 (% annual change)



Source: World Bank staff estimates based on FAOGIEWS data.

106. **The price of key staple foods increased.** The average national retail wheat flour prices in Somoni were 38 percent higher in 2020 than in 2016–2019 (Figure 27, A), while the average national retail potato prices were 47 percent higher during the same period (Figure 28, A). Prices spiked between April and May 2020, dropped after that, and increased again in November and December 2020. Increased consumer demand fueled by the pandemic, Kazakhstan's export quotas,[130] and depreciation of the Somoni all put upward pressure on food prices during the pandemic. According to the WFP Alert for Price Spikes,[131] the food basket cost was rated as "crisis" for March, April, May, and June 2020. The cost was highest in the most remote region of the country, Khorugh, where in June 2020 it was 20 percent higher than the national average.[132]

107. **In US dollars, the food price increase was less drastic.** Wheat flour national prices increased by 18 percent in 2020 compared to the average of 2016–2019 (or 20 percentage points lower than in nominal Somoni), with the highest (23 percent) price increase observed in Khujand and Sughd (Figure 27, right side). Potato national prices increased by 27 percent, with the highest price increase observed in Khatlon (34 percent)

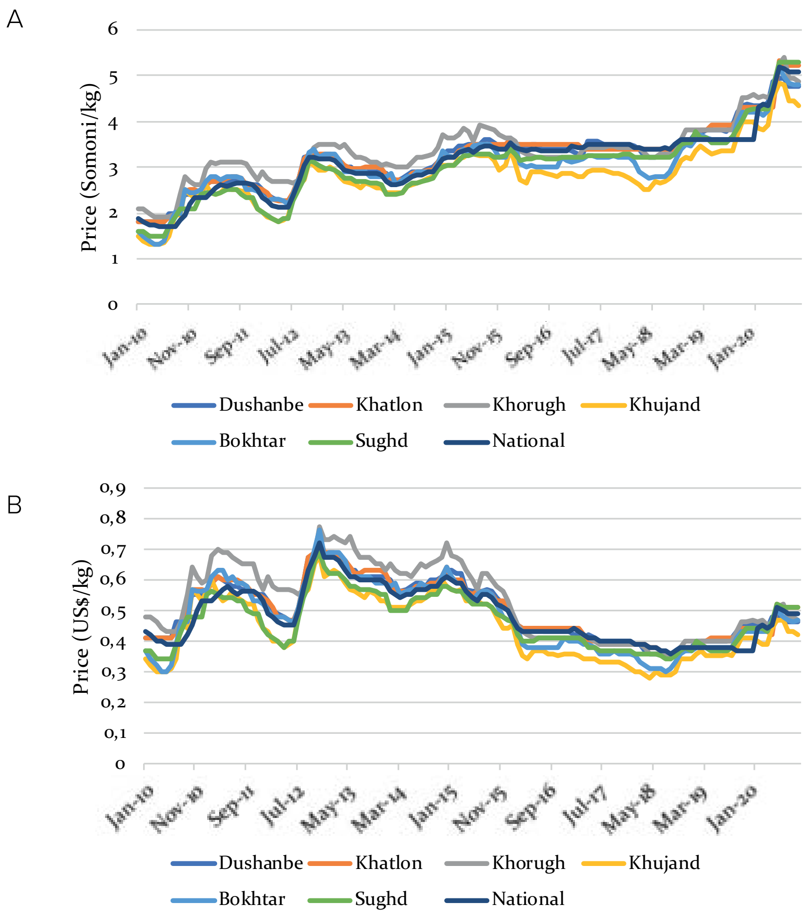
[129] FAO, WFP, and USAID. 2020. *COVID-19: Note on Impacts on Agriculture, Food Security and Nutrition in Tajikistan* (April 2020).

[130] Almost 60 percent of Tajik consumption of wheat and flour is dependent on Kazakh imports.

[131] The Alert for Price Spikes "detects abnormally high levels of local food prices for selected staple commodities and indicates the number of markets experiencing high food prices in a country." https://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp264186.pdf

[132] FAO and WFP. 2020. *Tajikistan COVID-19 and Food Security* – Monthly Update (July 2020).

Figure 27: Tajikistan: Retail prices of wheat flour, in Somoni and US$, 2010–2020



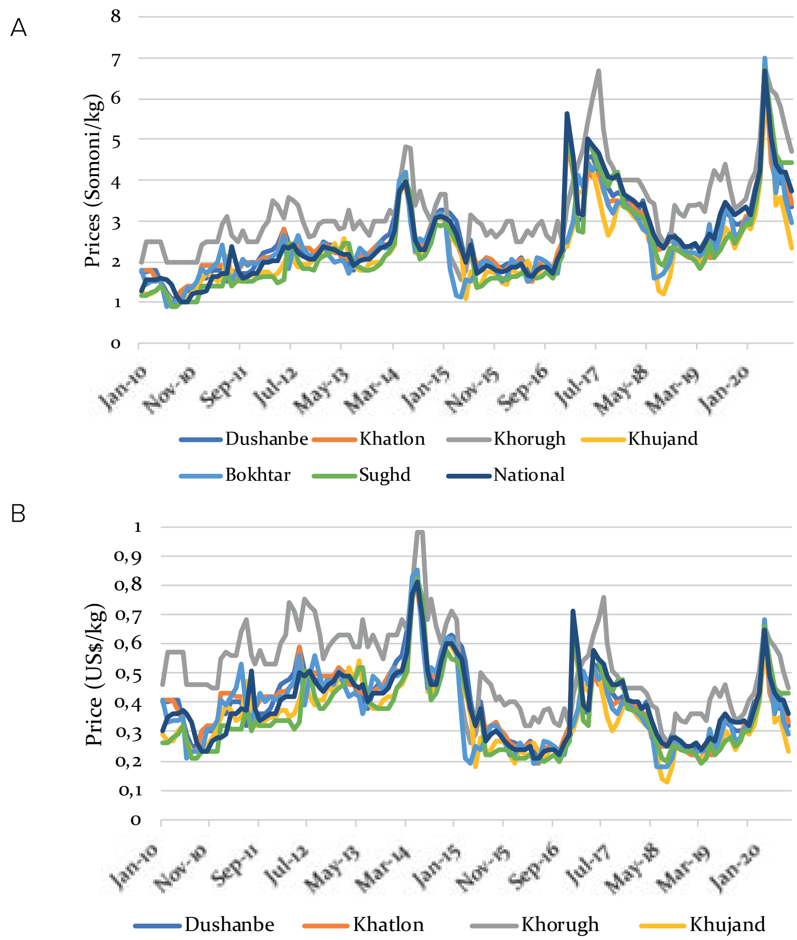
Source: World Bank staff estimates based on FAOGIEWS data.

and Sughd (46 percent) (Figure 28, right side). This implies that in the short run, agriculture by itself was less responsible for food price increases in Tajikistan than external factors amplified by the COVID-19 crisis. In the long run, however, the resultant high food import bill due to the underperforming agriculture sector was more responsible for rising food prices.

108. **Other food prices showed less growth and even declined.** Horticulture export increased by 8 percent in 2020 on a year-to-year basis, despite severe travel disruptions and recurrent border closures caused by COVID-19 and political uncertainty in the Kyrgyz Republic, forcing exporters to look for more expensive routes through Uzbekistan and Kazakhstan. Nevertheless, retail prices of many fruits and vegetables remained moderate and even lower than in 2019. More specifically, onions, tomatoes, cucumbers, apples, melons, and grapes were cheaper.[133] Higher production of many horticulture products and a lack of cold storage and postharvest handling facilities against the lower disposable household income put downward pressure on horticulture products' prices.

[133] *Reasons and Implications of Cheap Fruits and Vegetables in Tajikistan in 2020*. East Fruits, July 20, 2020.

Figure 28: Tajikistan: Retail prices of potatoes, in Somoni and US$, 2010–2020



Source: World Bank staff estimates.

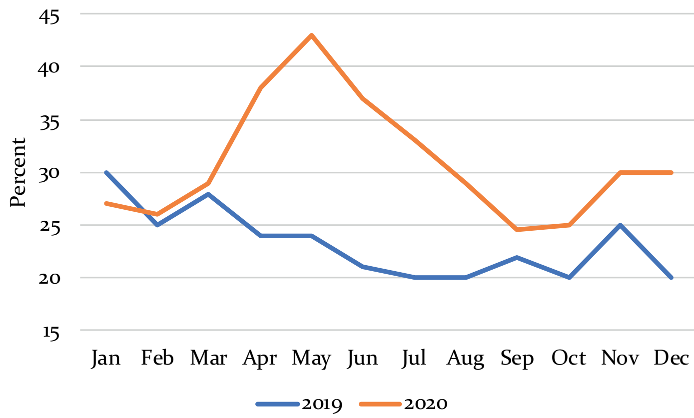
109. **Overall, due to the large share of staple foods in household consumption, food security deteriorated and food consumption declined.** Food security measured with a variety of indicators declined, and an increasing number of households reported going hungry, reducing dietary diversity, and worrying over obtaining enough food between January and May 2020 (Figure 30). Respondents to the World Bank's Listening to Tajikistan (L2T) survey reported reduced food consumption for 41 percent of the population in May 2020 (compared to 25 percent in May 2019). That number declined to 25 percent from May–October 2020, before increasing again to 30 percent of the population (Figure 29)[134] in November–December 2020.

110. **Poor households were affected most by fewer unskilled labor wage opportunities and lower remittances, especially in the context of rising food prices**. More than 80 percent of households that receive remittances reported that their primary

[134] World Bank. 2020. *Economic and Social Impacts of COVID-19*. Update from Listening to Tajikistan. April 2021, Washington, D.C.

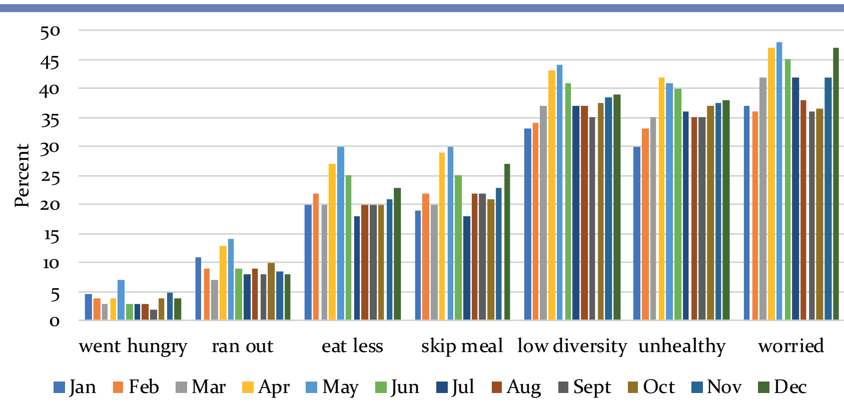
expenditure was on food and other necessities,[135] and all reported lower remittances in 2020.[136] Moreover, it was estimated that as of June 2020, the wage for one day's labor would no longer afford a nutritious food basket for a family for a day.[137]

Figure 29: Tajikistan: Reduced food consumption in 2019 and 2020



Source: World Bank staff estimates.

Figure 30: Tajikistan: Hunger situation in 2020



Source: World Bank staff estimates.

111. **COVID-19 had outsized food insecurity impacts on women.** Women play a key role in agriculture in Tajikistan, making up a large percentage of farm workers, food vendors, and food traders. Women were significantly affected by the lower remittances. In IDA countries, the crisis forced businesses owned by women to close at higher

[135] World Bank. 2020. *Tajikistan: Economic Slowdown Amid the Pandemic*. Country Economic Update Fall 2020. Washington, D.C.

[136] Akramov, K., and K. Kosec. 2020. *Impact of the COVID-19 Pandemic on Household Welfare, Food Security, and Agriculture in Central Asia*. PowerPoint presentation, Development Strategy and Governance Division, IFPRI, December 2020.

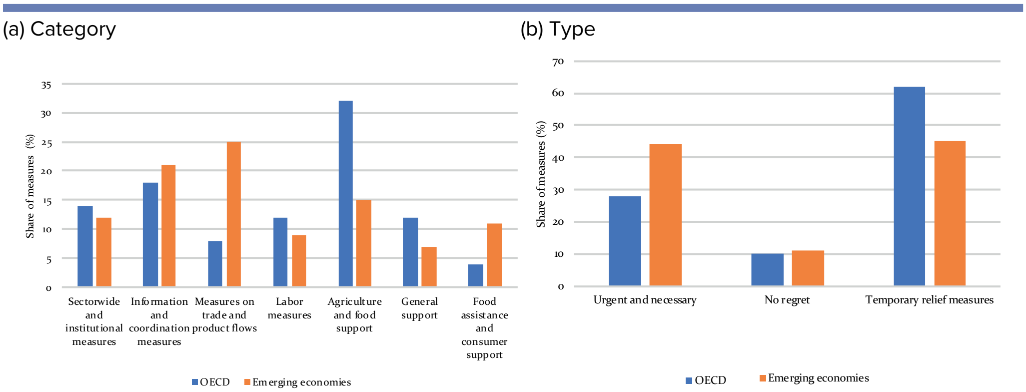
[137] FAO and WFP. 2020. *Tajikistan COVID-19 and Food Security* – Monthly Update (July 2020).

rates than those owned by men.[138] Tajikistan was not an exception. The pandemic also exacerbated existing gender inequalities, resulting in income losses and negative impacts on households' food security.

(ii) Responses

112. **Tajikistan's responses were in general similar to the categories and types enacted by the emerging economies**. An OECD analysis of 496 measures from 54 countries between January 1 and April 23, 2020, related to agriculture and food policy responses to the COVID-19 outbreak[139] found that emerging economies,[140] which on balance had more stringent lockdowns than OECD countries, focused on trade and market interventions, information and coordination and food assistance measures, and more particularly on measures that were urgent and necessary (Figure 31). By contrast, OECD countries relied more on support measures, be that in form of agrifood sector support, general economic assistance, or temporary relief measures.

Figure 31: Distribution of agriculture and food policy measures responding to COVID-19 by category and type



Source: OECD.

113. **To ameliorate the economic fallout, the GoT took several fiscal and monetary mitigation measures**. It deferred tax collection, boosted health and social spending, and eased monetary policy.[141] The GoT established an interagency taskforce to address health challenges emerging from the pandemic. It amended the 2020 state budget, substantially increased health care expenditure, and expanded social assistance transfers to the population. Specifically, social safety nets were scaled up to protect the poor and vulnerable against food price spikes. Despite low budget revenues, the GoT managed to consolidate the state budget by scaling up spending cuts in maintenance and repair works, purchasing

[138] World Bank. 2020. *IDA: Responding to the Emerging Food Security Crisis*. Washington, D.C.

[139] Gruere, G., and J. Brooks. 2021. *Characterizing Early Agricultural and Food Policy Responses to the Outbreak of COVID-19.* OECD, Food Policy.

[140] Argentina, Brazil, China, Colombia, Costa Rica, India, Indonesia, Kazakhstan, Philippines, Russia, South Africa, Ukraine, and Vietnam.

[141] World Bank. 2020. *Tajikistan: Economic Slowdown Amid the Pandemic*. Country Economic Update Fall 2020. Washington, D.C.

new equipment, and deferring low-priority projects. New borrowing needs triggered by COVID-19 increased the level of public debt to 40.0 percent in September 2020, up from 36.6 percent in 2019. Deferred tax payments and postponement of administrative price increases provided liquidity support to firms and households. The GoT increased public sector wages and pensions as was committed before September 2020. Monetary authorities cut the policy rate and asked banks to restructure loans and waive penalties for corporate and individual borrowers. The pandemic and associated slowdown in economic activity increased nonperforming loans from 27 percent of total loans at the end of 2019 to 31 percent by the end of June 2020. Yet the pandemic has had little impact on the banking sector's capital levels, as the systemwide capacity adequacy ratio stood at 20 percent.

114. **The GoT focused on additional areas specific to agriculture and food security.** Together with FAO and WFP, the MOA monitored food production, food prices, and food security through field missions and surveys. Following the food export restrictions imposed by Kazakhstan and the Kyrgyz Republic, the GoT banned some food export too, but this had only a symbolic impact due to higher domestic food prices than in neighboring countries and/or the lack of exportable surplus. The GoT beefed up its (small) public food stocks and introduced temporary core food and medicine price controls, which had little effect on food prices. Food wholesale and retail outlets were kept open. Supporting next season agricultural production was prioritized, including emergency seed and fertilizer distributions through coordinating with donors, increasing potato-growing areas, and scaling up planting of second/summer crops. Constraints on agricultural labor mobility were kept at a low level, preventing supply chain disruptions. The response also included mitigation of the impacts and spread of locusts to reduce compounding effects on households.

115. **In retrospect, Tajikistan followed good global practices in responding to the COVID-19 crisis within its means and tools available**. General advice from the development community was based on lessons learned from previous crises to prevent major setbacks on food security, which included focus areas to: (i) ensure continued international trade flows of food and avoid costly panic reactions; (ii) avoid disruptions in domestic food supply chains; (iii) protect the purchasing power of poor households to continue to access food; and (iv) ensure access to key inputs and labor for the upcoming planting season (Table 14).

116. **While Tajikistan's COVID-19 responses to meet food security covered all focus areas outlined in Table 15, a number of specific actions and their scale were relatively limited, due to**: (i) the country's tight fiscal space, amplified by the increased needs for spending on health care and social protection; and (ii) lack of preparedness and shortage of instruments available for effective crisis response. Some actions, such as export bans and food price controls, were antimarket. They were driven by the lack of alternatives caused by the limited fiscal space, which did not allow sufficient compensation of consumers – even the poor eligible for safety net support – for the loss of income and higher food prices, as was done in the majority of higher-income countries. Use of export restrictions and food price controls by nearby countries with higher income per capita and lower food expenditures, such as Kazakhstan and Russia, encouraged Tajikistan to temporarily adopt these instruments. Import tariffs on food products were low to begin

with, so their reduction would have had little impact on the cost of food. Tajikistan does not have a modern early warning system coupled with remote sensing agriculture sector monitoring to be informed about and prepared for agricultural production shortfalls, price and market volatility, and food stock depletion. The tight fiscal space limited credit/grant support to farmers and agribusinesses, together with a lack of operational advisory/extension service system – which could have linked the MOA with donor-supported initiatives on agricultural extension and agrometeorological services – prevented rapid scaling up of technology and information dissemination among farmers. Information about public food stocks is kept secret, limiting the impact of public stocks on food security of the poor. Seed stocks at public institutions and local communities do not exist, so when seed supply is disrupted, seed stock is not readily available for emergency programs. Storage infrastructure is limited, leaving small room for better managing horticulture export disruptions. Digital preparedness is also limited, which has hampered the use of digital solutions for trade facilitation and dissemination of agriculture-related information to farmers and agribusinesses.

Table 15: Global recommendations on responding to COVID-19 for food security

Focus areas	Suggested actions
Ensure continued international trade flows of food and avoid costly panic-based reactions	- Remove trade and other policy restrictions, and avoid bans on exports and imports - Avoid food stockpiling or "hoarding" beyond normal levels - Improve management of strategic food stocks - Increase use of digital technology for trade facilitation
Avoid disruptions in domestic food supply chains	- Keep supply chains fully operational without any transport and logistics breakdown or shutdown of food wholesale or retail outlets - Help farmers connect to new markets - Ensure worker and food safety - Support small and medium enterprises (SMEs), which form the backbone of food supply chains in most developing countries
Protect purchasing power of poor households to continue to access food	- Scale up safety net programs where these exist - Adjust school meal programs for continued access by vulnerable children - Reduce the cost of food
Ensure access to key inputs and labor for upcoming planting season	- Make agricultural inputs and related services "essential" to keep them fully functional - Remove constraints on labor mobility for timely production operations (especially labor-intensive production and logistics) - Promote business continuity by supporting businesses, most of which are SMEs in the food sector, to retain solvent and skilled and semi-skilled workers

Source: World Bank.[a]

[a] *World Bank. 2020. IDA: Responding to the Emerging Food Security Crisis. Washington, D.C.*

117. **To build a better future in the aftermath of the pandemic, Tajikistan could follow the OECD's recommendations to their member states and other countries**. They recommend removing temporary relief measures imposed during the crisis and investing

in "no regret" measures. The OECD review shows a large diversity of measures, some of which were urgent and necessary, some that may continue to be beneficial once the pandemic has subsided, while others are potentially disruptive to the functioning of markets or damaging to the environment (Figure 30). *Urgent and necessary measures* (28 percent of the total) are those necessary to safeguard the safety of workers and ensure minimum functioning of the agrifood value chains. Examples include declaring that the food sector is exempt from lockdown and setting up green corridors to facilitate markets. These measures are unambitiously meant to be eliminated as soon as either lockdown is removed or the safety of workers is guaranteed. *No regret measures* (10 percent of the total) are those that would be beneficial for the agrifood sector even outside of the crisis period, such as establishment of digital solutions to ease marketing, trade, and training. And *temporary relief measures* (62 percent of the total) included those deemed necessary to contain the impacts of the crisis on producers, consumers, and other agents along agrifood value chains for their proper functioning. These measures need to include sunset clauses to avoid their translation into systematic support in the long run. Without sunset clauses, they are potentially harmful. The review found that 16 percent of the measures taken by OECD countries could be potentially harmful, in the sense of disrupting markets and trade or leading to negative environmental outcomes. The ultimate impacts of these measures are not yet possible to evaluate, but one thing is clear – Tajikistan was not alone in being taken by surprise by the COVID-19 outbreak and in using a wide range of responses.

118. **COVID-19 pushed Tajikistan into both food and economic crises in 2020, with its full impact still to be felt in 2021 and beyond**. The pandemic exposed some weaknesses and vulnerabilities of the Tajik agrifood system. These should be urgently addressed before any new crises strike Tajikistan, albeit in the environment of the tighter fiscal space. Chapter 3 analyzes the country's agricultural public expenditures, which underpin the policy recommendations for future public policies and investments presented in Chapter 4.

(iii) Main takeaways

119. **COVID-19 has had a significant impact on Tajikistan's economy and people**. The increase in agricultural production in 2020 was not able to fully mitigate the shock to the demand side and led to increased food insecurity and malnutrition. As most food is imported, the increase in regional agrifood prices led to an increase in local food prices for key staples in Tajikistan. The drop in household income caused by job losses, lower remittances, and temporary or permanent business closures further reduced food consumption. The pandemic's effects on food security and nutrition were particularly concerning for the poor and vulnerable, whose access to safe, diverse, and healthy food was jeopardized even before the pandemic.

120. **In retrospect, Tajikistan followed good global practices in responding to the impact of the COVID-19 crisis on food security**. The GoT sought to ensure a continued international trade flow of food, avoided disruptions in domestic food supply chains, helped protect the purchasing power of poor households, and ensured access to key inputs and

labor for the upcoming farming season. Yet the scale of response was limited due to Tajikistan's tight fiscal space, amplified by the increased needs for spending on health care and social protection, and the lack of preparedness and shortage of instruments available for effective food crisis response. COVID-19 again showed the importance of having crisis preparedness and response tools, and a mechanism in place before a crisis, to be able to respond to crises effectively.

3 AGRICULTURAL PUBLIC EXPENDITURE REVIEW

121. **Public expenditures matter for agricultural growth.** They can help accelerate it by correcting economic inefficiencies resulting from market failures and inequalities in the distribution of goods and services. A study of 10 Latin American countries, for example, found that a 10 percent increase in agricultural public expenditures lifted agricultural growth by 0.6 percent during the period 1985–2000.[142] Yet the same study found that which programs are actually financed matters a lot. It concluded that public spending on public goods is much more productive than public spending on private goods – the reallocation of 10 percentage points of total public expenditures from subsidies to public goods was found to increase per capita agricultural income by 2.3 percent. This was obtained without increasing total expenditures. Those impacts were significant mainly because they captured both the positive effects of increasing the budget for public goods and of reducing the distortions created by subsidies, which negatively affected the quantity and quality of private investments.

122. **This chapter reviews Tajikistan's agricultural public expenditures during 2015–2020.** Its objectives are to: (i) take stock of recent expenditures; (ii) understand potential reasons for their low/insufficient impact on agricultural productivity; and (iii) propose expenditure repurposing and other solutions for increasing value for money of agricultural public expenditures (presented in Chapter 4). The chapter begins with an analysis of the level of agricultural public expenditures. It is followed by a review of the fiscal impact of agricultural public spending, its actual use (execution), and its allocative efficiency (i.e., functional and economic composition).

(i) Level of agricultural public expenditures

123. **The definition of agricultural public expenditures in this report follows the internationally recognized Classification of the Functions of the Government (COFOG) to allow cross-country comparisons.** Agricultural public expenditures under COFOG include spending on crops, livestock, fisheries, and irrigation. They do not cover spending on rural development (e.g., rural infrastructure), food safety, nutrition health programs unrelated to agricultural production, and social safety nets. In a broader sense, these

[142] Lopez, R. 2005. *Why Governments Should Stop Non-Social Subsidies: Measuring the Consequences for Rural Latin America.* University of Maryland at College Park, Revised version: February 4, 2005.

expenditures can also be considered agricultural. To make international comparisons and for benchmarking, however, such expenditures are not included in the agriculture budget in this report.

124. **In absolute terms, Tajikistan's agricultural public expenditures grew annually in most years between 2015 and 2020**. On average, they grew annually by 21 percent in nominal terms and by 15 percent in real terms (Table 16). The average annual growth in US dollars was 4 percent. Except for 2018, when they declined compared to the previous year, nominal agricultural public expenditures increased each year, reaching an estimated 721 million Somoni (US$65 million) in 2020.[143]

Table 16: Tajikistan: Level of agricultural public expenditures, 2015–2020

	2015	2016	2017	2018	2019	2020*	Average
Agricultural public expenditures (million Somoni)	368	470	712	600	734	721	601
Agricultural public expenditures (million US$)	59	60	83	63	68	65	66
% annual change in:							
Nominal Somoni		28	52	-16	22	-2	21
Real Somoni		20	42	-19	15	-9	15
US$		1	39	-24	8	-5	4

Source: World Bank staff estimates based on MOF data.
*Note: * Estimate. For all other years, reported expenditures are actual.*

125. **Several sources finance Tajikistan's agricultural public expenditures.** During 2015–2020, they included five sources: (i) central government budget; (ii) local government budgets; (iii) Special Funds[144]; (iv) donors; and (v) tax/customs exemptions. Most funds were provided by donors, accounting for 59 percent of the total (Table 17). The second largest source of financing was the central government, contributing 23 percent of total expenditures. Special Funds and tax exemptions added 8 percent, and the share of the latter increased significantly over time– from 0.4 percent of the total in 2015 to 7.4 percent in 2020.

126. **Aggregate public spending in agriculture was a bit higher when accounting for all funding received from donors, including both recipient- and donor-executed funds**. Table 16 shows only the funds that go through the MOF's Treasury, i.e., recipient-executed

[143] Total agricultural expenditures reported here are about 2 percent bigger on average than reported by the MOF. The MOF excludes several expenditures from sectoral budgets to avoid double-counting in the aggregate total budget. They exclude social and pension taxes charges from wages as well as recurrent grants for special funds and mutual account payable.
[144] Special Funds are financed by the recipients/users of services provided by state-owned enterprises.

Table 17: Tajikistan: Source of agricultural public expenditures, 2015–2020

	2015	2016	2017	2018	2019	2020	Share in total, %
Central government	106.0	111.2	164.3	143.1	156.1	170.7	24
Local governments	58.5	80.2	87.0	44.5	36.2	25.9	9
Special Funds	12.7	15.3	15.2	20.2	27.2	32.3	3
Donor-financed projects	189.6	261.2	441.1	380.1	432.1	434.2	59
Tax and customs exemptions	1/6	2.2	4.9	12.3	82.7	57.9	4
TOTAL (million Somoni)	**368.4**	**470.1**	**712.4**	**600.1**	**734.3**	**721.0**	**100**

Source: World Bank staff estimates based on MOF data.

projects.[145] Funding received from donor-executed projects included in this review is estimated to add up to 85 million Somoni per year on average during 2015–2020, or 12 percent of total agricultural public expenditures (Table 18).[146] This is a large amount, equal to the combined contributions from local governments and Special Funds. Note that the actual value of all agriculture-related public expenditures financed by donor-executed projects is likely to be even larger.

Table 18: Tajikistan: Source of agricultural public expenditures, 2015–2020 – revised for donor financing estimates

	2015	2016	2017	2018	2019	2020	Share in total, %
Central government	106.0	111.2	164.3	143.1	156.1	170.7	21
Local governments	58.5	80.2	87.0	44.5	36.2	25.9	8
Special Funds	12.7	15.3	15.2	20.2	27.2	32.3	3
Donor-financed, recipient-executed projects	189.6	261.2	441.1	380.1	432.1	434.2	52
Donor-executed projects	45.0	60.0	80.0	92.0	99.0	129.0	12
Tax and customs exemptions	1.6	2.2	4.9	12.3	82.7	57.9	4
TOTAL (million Somoni)	**413.4**	**530.1**	**792.4**	**692.1**	**833.3**	**850.0**	**100**

Source: World Bank staff estimates based on MOF data.

[145] The MOF official estimates include the recipient-executed donor projects financed by ADB, the Islamic Development Bank, IFAD, the World Bank, and other donors that channel funds (loans and grants) through government systems. But they exclude donor-executed projects financed by the Agha Khan Foundation, the European Union, FAO, WFP, GIZ, and many other projects (Caritas, Helvetas, etc.) financed by foreign governments and nongovernmental organizations. Funds in these projects are not channeled through government systems, which is why they are not reported in the official estimates.

[146] While the major projects are included in the analysis, some projects were not covered due to the lack of detailed project-specific data.

(ii) Fiscal impact

127. **To generate long-term agricultural growth, spending on agriculture needs to be done in a fiscally responsible manner**. Global experience shows that excessive agricultural public spending can lead to high budget deficits that can create various types of macroeconomic imbalances, such as higher inflation and misaligned exchange rates, causing lower economic growth and weaker demand for farm products.[147] Thus expansion of agricultural public expenditures needs to be balanced with fiscal discipline.

128. **Assessing the fiscal pressure of agricultural public expenditures requires their estimation in percent of GDP and total expenditures**. During 2015–2020, agricultural public expenditures averaged 0.90 percent as a share of total GDP and 2.82 percent of total public expenditures (Table 19). In 2020, they accounted for 0.81 percent of GDP and 2.77 percent of total public expenditures. Including donor-executed projects increased the shares of agricultural public expenditures in GDP by 0.13 percentage points (to 1.03 percent) and in total expenditures by 0.38 percentage points (to 3.20 percent).

Table 19: Tajikistan: Relative level of agricultural public expenditures, 2015–2020

	2015	2016	2017	2018	2019	2020	Average
% of official agricultural public expenditures in:							
GDP	0.76	0.87	1.17	0.87	0.95	0.81	0.90
Total public expenditures	2.36	2.65	3.20	2.73	3.19	2.77	2.82
% of full estimated agricultural public expenditures in:							
GDP	0.85	0.97	1.30	1.01	1.08	0.96	1.03
Total public expenditures	2.64	2.99	3.56	3.15	3.61	3.26	3.20
Agricultural value added	3.42	4.17	5.48	4.81	4.87	4.44	4.53

Source: World Bank staff estimates based on MOF data.

129. **It is worth emphasizing that not all agricultural public expenditures in Tajikistan contribute to accumulation of public debt, which reduces fiscal space**. Many donor projects, even recipient-executed ones included in the reports of the MOF and the State Investment Committee, are still largely financed by grants, not loans, which do not need to be repaid by taxpayers. Furthermore, credit lines in recipient-executed projects are repaid by subloan beneficiaries, i.e., also not by taxpayers, unless they are defaulted by subloan beneficiaries. [148] Local governments' budgets are mainly financed by the transfers from the central government. And Special Funds originate from payments made by farmers and agribusinesses for provided services, again not financed by taxpayers. As a result, the net burden of agricultural public expenditures on public debt in Tajikistan is much smaller than

[147] World Bank. 2011. *Practitioners Toolkit for Agriculture Public Expenditure Analysis*. Washington, D.C.

[148] Credit lines could be financed by both grants and loans. Detailed information about the source of financing credit lines in each project is lacking, but World Bank experience in financing credit lines reveals that they are likelier to be financed by loans than grants. In this analysis, therefore, loans are assumed to be the main source of a credit line's financing.

the aggregate figures reveal. Agricultural public expenditures contributing to public debt are estimated to average 0.30 percent of GDP during 2015–2020 (Table 20), less than one-third of the total agricultural spending estimate (1.03 percent of GDP).

130. **Many countries spend less on their agriculture as a share of GDP than Tajikistan, but they are not its suitable peers**. High-income countries, such as the OECD members, spent on agriculture 0.2 percent of GDP on average in 2015–2017 (Table 21). In 1995–1997, they spent not much more than they spent in 2015–2017, on average 0.3 percent of GDP. Other countries spent a bit more, depending on the size of the agriculture sector in their economy and their fiscal space. Countries with a relatively large fiscal space such as China and Kazakhstan spent on agriculture close to that in Tajikistan (0.8–0.9 percent of GDP) in 2015–2017. Many others spent 0.4–0.6 percent of GDP.

Table 20: Tajikistan: Fiscal impact of agricultural public expenditures, 2015–2020

	2015	2016	2017	2018	2019	2020	Average
Grants and expenses paid by farmers, subloan beneficiaries, and others (not taxpayers)							
Local governments	58.5	80.2	87.0	44.5	36.2	25.9	55.4
Special Funds	12.7	15.3	15.2	20.2	27.2	32.3	20.5
Credit lines in recipient-executed donor projects	0	43.9	47.8	52.1	53.4	58.2	51.1
Grant-financed recipient-executed donor projects	153.7	218.6	364.0	242.6	294.9	269.2	257.2
Donor-executed projects	45.0	60.0	80.0	92.0	99.0	129.0	84.2
Tax and customs exemptions	1.6	2.2	4.9	12.3	82.7	57.9	26.9
TOTAL (million Somoni)	**271.5**	**420.2**	**598.8**	**463.7**	**593.5**	**572.5**	**486.7**
Expenditures added to public debt							
Central government	106.0	111.2	164.3	143.1	156.1	170.7	141.9
Loan-financed recipient-executed projects (less credit lines)	35.8	10.0	29.3	85.3	83.7	106.8	58.5
TOTAL (million Somoni)	**141.8**	**121.2**	**193.6**	**228.4**	**239.8**	**277.5**	**200.4**
Agricultural public expenditures contributing to public debt, % of GDP	**0.29**	**0.22**	**0.32**	**0.33**	**0.31**	**0.31**	**0.30**

Source: World Bank staff estimates based on MOF data.

Table 21: Tajikistan's agricultural public spending in global comparison: Selected countries in % of GDP

	1995–1997	2015–2017
OECD countries, average	0.3	0.2
Selected non-OECD countries:		
Brazil	0.7	0.2
China	1.1	0.8
Israel	0.4	0.1
Kazakhstan	0.1	0.9
Philippines	0.4	0.6
Russia	1.8	0.3
South Africa	0.4	0.2
Ukraine	1.2	0.3
Uzbekistan (2018)	n/a	1.8
Vietnam	1.0	0.4
Tajikistan (2019)	**n/a**	**1.0**

Source: World Bank staff estimates using data from OECD, the MOF of Uzbekistan, and the MOF of Tajikistan.

131. **The importance of agriculture in the economy, in terms of GDP and employment, greatly varies across countries**. Agriculture is "small" in OECD countries, where in 2016 it accounted for 3 percent of GDP and 6 percent of the labor force (Table 22). It is also

Table 22: Importance of agriculture in selected countries, 1995–2016

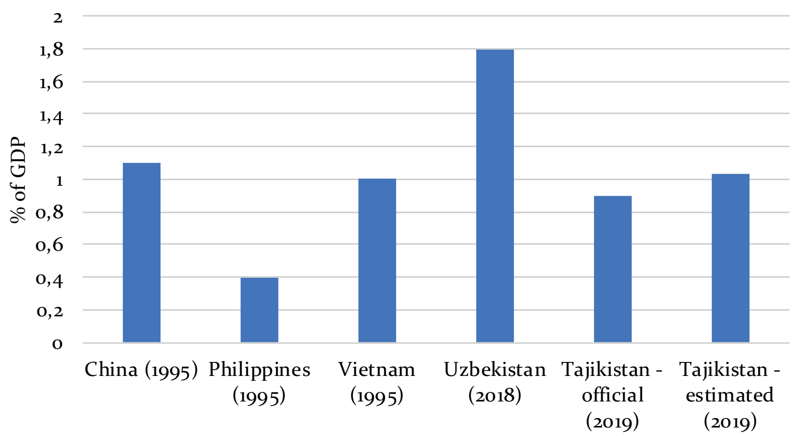
	Agriculture in % of GDP		Farm labor in % of total labor	
	1995	**2016**	**1995**	**2016**
OECD countries (average)	5.1	3.1	12.0	6.2
Brazil	5.8	5.0	26.1	13.9
China	19.8	8.9	52.2	27.8
Israel	2.0	1.3	2.9	1.0
Kazakhstan	12.9	4.8	26.7	18.0
Philippines	21.6	9.7	44.1	29.1
Russia	7.2	4.7	15.7	6.7
Tajikistan	36.7	20.1	65.0	42.0
Ukraine	15.4	13.7	22.5	15.3
Uzbekistan	28.0	30.8	26.8	25.0
Vietnam	27.2	18.1	70.0	43.6

Source: World Bank estimates using data from OECD and the State Statistics Committees of Uzbekistan and Tajikistan.

relatively small in other countries, especially in 2016 and especially regarding farm labor compared to Tajikistan. China and the Philippines in 1995 and Vietnam and Uzbekistan in 2016 are more suitable peers for Tajikistan, with its very high share of agriculture in GDP and employment.

132. **When compared to these peers, Tajikistan does not seem to overspend on its agriculture**. In this context, it can be considered an average spender by global comparison, even after donor-executed funds are added to total agricultural expenditures (Figure 32). Moreover, more than one-half of its agricultural public expenditures do not contribute to the accumulation of public debt, moderating fiscal pressure and creating space for more spending.

Figure 32: Benchmarking Tajikistan's agricultural public expenditures with its peers



Source: World Bank staff estimates.

133. **This extra fiscal space is very much needed for future agricultural development and food security.** The draft NIP 2021–2030 – prepared by the MOA with the support of FAO and other donors – advocates for more agricultural public spending to accelerate inclusive and resilient agricultural growth. The draft NIP provides a rationale for increasing annual expenditures on agriculture and related sectors from US$121 million in 2015–2020 (including US$67 million for agriculture sector expenditures; US$26 million for agricultural education, environmental protection, and forestry; and US$27 million in private sector investments) to a range between US$150 million (low scenario) and US$210 million (medium scenario) during 2021–2030.[149]

[149] NIP 2021–2030.

(iii) Execution of public expenditures

134. **The agriculture sector can absorb more funds, judging from the current rate of budget execution.** The execution of central and local government funds has been consistently better than that of total funds (Table 23). What needs to improve is the budget planning and absorption of Special Funds and donor-financed projects. Their actual expenditures in 2019 were up to 70 percent of planned ones.

Table 23: Tajikistan: Planned vs. actual agricultural and total budgets by source, in %, 2016–2019

	2016		2017		2018		2019	
	Agr.	Total	Agr.	Total	Agr.	Total	Agr.	Total
Central government	98	90	95	92	92	89	99	91
Local governments	95		97		95		83	
Special Funds	100	100	100	100	57	73	66	76
Recipient-executed donor projects	100	100	100	100	84	99	61	100
Total	**99**	**92**	**98**	**94**	**85**	**88**	**68**	**91**

Source: World Bank staff estimates based on MOF data.

(iv) Allocative efficiency of agricultural public expenditures

135. **Adherence to fiscal discipline calls for selectivity or allocative efficiency in public expenditures.** Global experience shows that the public programs best positioned to address market failures and bring the highest economic and social benefits support: (i) generation of technologies; (ii) dissemination of knowledge and building of human capital; (iii) reduction of transaction costs; and (iv) removal of constraints to attract private capital. In other words, not all public expenditures are productive. Many empirical studies find a low impact of aggregate spending on agricultural growth,[150] implying that all investments are not equal. Governments sometimes spend on things that are not public goods, for example output and input subsidies without conditions. In addition, even when market failures exist, government spending will not necessarily improve the situation. Interventions can sometimes lead to government failures, which exacerbate the original problems caused by market failures and produce unintended adverse effects.

136. **Global experience shows that investments in public goods bring the highest rates of economic and social return**. As discussed in Chapter 1, the most impactful investments include natural resource management, Agricultural Knowledge and Innovation System (AKIS), integrating education, research, and advisory/extension services, market information and early warning systems, disaster risk management, irrigation and drainage infrastructure and management, other rural market infrastructure, SPS measures, food safety, and collective actions of farmers and agribusinesses. Public investments in these

[150] IFPRI. 2012. *The Impacts of Public Investment in and for Agriculture: Synthesis of the Existing Evidence.* Prepared by T. Mogues, B. Yu, S. Fan, and L. McBride. IFPRI Discussion Paper 1217, Washington, D.C.

areas are necessary to initiate sustainable, inclusive, and resilient agricultural growth, but the impact depends on the quality of implementation of public programs, discussed more below.

137. **In Tajikistan, slightly more than one-half of funds in the total agricultural budget were allocated to irrigation/drainage infrastructure and management.** The irrigation/drainage budget was more dependent on donor financing than other parts of agriculture. Donor financing accounted for 63 percent of the total irrigation budget, compared to 53 percent of the agricultural budget (Table 24). This represents high risks for the agriculture sector, and especially for the irrigation sector, if alternative financing mechanisms are not considered.

Table 24: Tajikistan: Agriculture and irrigation official budgets, 2015–2020

	2015	2016	2017	2018	2019	2020	Share in total, %
Agricultural budget							
Central government	45	51	98	74	70	77	**30**
Local governments	21	21	19	17	17	18	**8**
Special Funds	13	15	15	20	27	32	**9**
Recipient-executed donor projects	95	131	114	139	102	155	**53**
Total (million Somoni)	**174**	**218**	**246**	**250**	**216**	**282**	100
Irrigation and drainage budget							
Central government	61	60	66	69	86	94	**25**
Local governments	37	59	68	27	19	8	**12**
Recipient-executed donor projects	95	131	225	193	255	214	**63**
Total (million Somoni)	**193**	**250**	**360**	**290**	**360**	**316**	100

Source: World Bank staff estimates based on MOF data.

138. **Similarly, more than one-half of recipient-executed donor projects financed irrigation and drainage expenditures.** These expenditures were financed by the Asian Development Bank (ADB), the Islamic Development Bank (IsDB), and the World Bank (Table 25). Twenty-six percent of donor-financed expenditures supported agricultural programs through International Fund for Agricultural Development (IFAD) and World Bank projects, while 20 percent supported land management, environmental protection, disaster risk management, and rural livelihoods, mainly through World Bank projects.

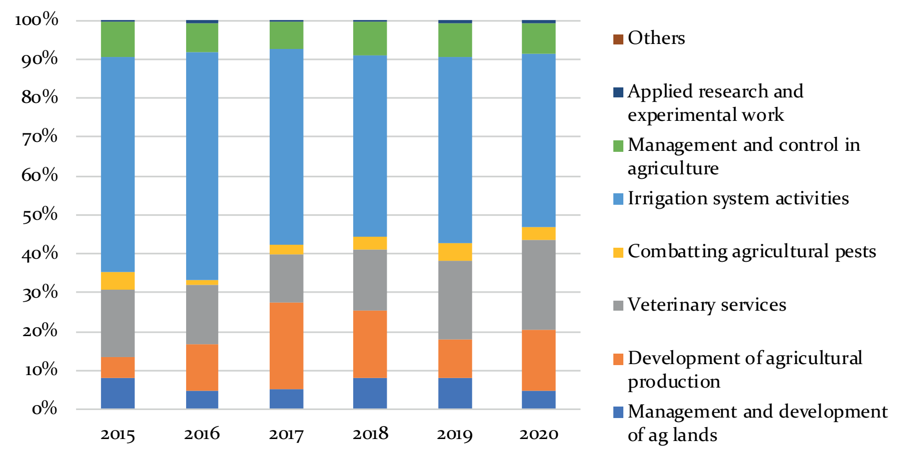
139. **The GoT spends its budget resources on agriculture along eight areas.** The largest programs are irrigation (50.2 percent of the total), veterinary services (17.1 percent), and support to agricultural production (14.3 percent) (Figure 33). Differences arise in what various sources of funds financed. The central government budget was spread across many programs, with most funds allocated to irrigation, support to agricultural production,

Table 25: Tajikistan: Functional composition of recipient-executed donor funds, 2015–2020

	ADB	IsDB	IFAD	World Bank	Others	Total	% of total
Agriculture	0	0	301.3	223.6	25.4	**550.3**	**25.7**
Irrigation	350.4	273.2	0	547.0	0	**1,170.5**	**54.7**
Natural resources	0	0	0	407.3	9.8	**417.5**	**19.5**
Total (million Somoni)	**350.4**	**273.2**	**301.3**	**1,178.2**	**35.2**	**2,138.3**	**100.0**
% of total	**16.4**	**12.8**	**14.1**	**55.1**	**1.6**	**100.0**	

Source: World Bank staff estimates based on MOF data.

Figure 33: Tajikistan: Functional composition of government funds, 2015–2020



Source: World Bank staff estimates based on MOF data.

management and control of the agriculture sector, and land management and reclamation (Table 26). Local government budgets mainly financed veterinary services and irrigation, while Special Funds largely financed veterinary services and management and control of the agriculture sector.

140. **Many ministries, agencies, committees, and state enterprises are involved in executing agricultural programs.** The programs for land management and reclamation are managed by the State Committee on Land Management and Geodesy (SCLMG) and the Agency for Land Reclamation and Irrigation (ALRI).[151] The programs supporting agricultural production are managed by institutions under the MOA, including the state station on technical inspection for farm machinery, sheep breeding stations and livestock breeding organizations, committee for crop selection, laboratory for immunogenic control, seed inspectorate, phytosanitary inspections, and pastoral melioration enterprises. The veterinary and other livestock services are provided by institutions under the MOA, mainly veterinary and sanitary controls and centers for veterinary diagnostics, which in 2018 were

[151] In 2016 and 2017, the MOA also received funds in this category and the Executive Office of the President executed some related programs in 2017, but in 2018–2019 they no longer received those funds.

transformed into the FSCT under the GoT. Plant protection is managed by institutions under the MOA, such as the Locust Control Expedition and State Enterprise for Crop Protection. The irrigation programs are executed by the Ministry of Energy and Water Resources (MEWR) and by ALRI. The programs for management and control of agriculture are managed by departments similar to the programs supporting agricultural production plus SCLMG. Applied agricultural research includes programs executed by the MEWR and SCLMG.

Table 26: Tajikistan: Functional composition of government funds by source, average in 2015–2020

	Central budget	Local budgets	Special Funds	Total	% of total
Management and development of agricultural lands	10.8	1.4	1.8	**14.0**	**6.4**
Farm price and income support	0	0	0.1	**0.1**	**0.1**
Support to agricultural production	29.3	0.1	1.7	**31.1**	**14.3**
Veterinary services and other livestock programs	9.7	16.7	10.7	**37.2**	**17.1**
Plant protection, including locust eradication	6.2	0.4	0.1	**6.6**	**3.0**
Irrigation	72.6	36.6	0.1	**109.3**	**50.2**
Management and control of agriculture	12.1	0	6.1	**18.2**	**8.4**
Agricultural research	1.1	0	0.1	**1.2**	**0.5**
Other activities	0.1	0	0.1	**0.2**	**0.1**
Total (million Somoni)	**141.9**	**55.4**	**20.5**	**217.7**	**100.0**
% of total budget	***63.5***	***26.5***	***10.0***	***100.0***	

Source: World Bank staff estimates based on MOF data.

141. **Central government funds were allocated across many functions, but to a different degree.** Table 27 presents a detailed functional breakdown of the central government funds. In addition to irrigation, which accounted for 50.2 percent of the total budget, most of the funds for management and development of agricultural land were used for land cadaster (10.6 percent of the total budget on average). Veterinary services accounted for a large part of the support to agricultural production (8.2 percent of the total budget). Financing of phytosanitary measures (plant protection and quarantine) was relatively high (4.7 percent of the total central government agricultural budget), while expenditures on livestock breeding (1.5 percent) and seed programs (1.3 percent) were small. Pasture management was marginally financed, while administrative and other associated costs accounted for a large share (19.8 percent) of the total budget. The central government does not finance agricultural advisory and extension services, which are provided on a self-financing basis under Special Funds, resulting in these critical services' very low outreach.

Table 27: Tajikistan: Detailed functional composition of central government funds, 2015–2019

	2015	2016	2017	2018	2019	Share in total, %
Research	0.8	1.0	1.0	1.1	1.2	**0.8**
Land reclamation and development	1.9	2.2	5.6	2.6	2.6	**2.2**
Land management and cadaster	12.5	9.5	13.6	16.3	20.4	**10.6**
Pasture management	0.8	0.8	1.0	0.7	0.8	**0.6**
Development of seeds and seedlings	2.0	2.1	2.3	1.2	1.2	**1.3**
Livestock breeding	2.2	2.2	2.4	1.8	1.9	**1.5**
Plant protection and quarantine (phytosanitary)	8.2	2.8	5.7	5.8	9.4	**4.7**
Veterinary services (sanitary)	12.2	11.5	12.6	8.5	10.8	**8.2**
Inspection of machinery and equipment	0.3	0.3	0.3	0.3	0.3	**0.2**
Irrigation	60.7	59.8	66.2	69.4	85.8	**50.2**
Administrative and other costs	4.5	19.1	53.7	35.6	21.7	**19.8**
Total (million Somoni)	**106.0**	**111.2**	**164.3**	**143.1**	**156.1**	**100.0**

Source: World Bank staff estimates based on MOF data.

142. **The analysis carried out for this report shows that donor funds were spread across many more functions than were government funds**. Yet many important public goods were still underfinanced. The largest spending item of donor projects was irrigation programs (Table 28). The second largest spending item was support to community organizations, farm cooperatives, and productive partnerships/clusters, closely followed by credit lines, which sought to improve access to agricultural finance complemented by business development services. Substantial donor funds were also spent on pasture management, agricultural advisory and extension services, disaster risk management, and mechanization. Much smaller budgets were allocated for agricultural research, seed and seedling production, agricultural policy support, SPS measures, food safety, food emergency distribution, and early warning systems. Combining GoT and donor financing did not change the narrative (Table 29).The positive aspect of Tajikistan's agricultural public expenditures is that they were largely allocated to core public goods, not to input and output subsidies. But donor funds financed a wider range of public goods than government funds.

Table 28: Tajikistan: Detailed functional composition of donor funds, 2016–2020

	Total	Share in total, %
Agricultural research	1,479	1.0
Agricultural extension	6,712	4.3
Seed and seedling programs	1,095	0.7
Support to mechanization	3,733	2.2
Pasture management	15,016	8.9

	Total	Share in total, %
Animal husbandry, feed quality assurance, other livestock programs	2,156	1.3
Veterinary services, including vaccination	692	0.4
Plant protection and quarantine	479	0.3
Food safety	500	0.3
Farm cooperatives, community organizations, clusters	29,474	17.4
Access to finance (credit lines)	28,133	16.7
Business development	1,250	0.8
Policy support	871	0.5
Public stocks/food emergency distribution	866	0.5
Disaster risk management/ crop forecasting	6,948	4.2
Irrigation	54,500	33.3
Other activities	753	0.5
Total ('000 US$)	**155,672**	**100.0**

Source: World Bank staff estimates based on data from donors.

Table 29: Tajikistan: Aggregate functional composition of all funds, 2016–2020

	Government funds*	Donors	Total	% of total
Agricultural research	5.2	8.4	**13.6**	**0.7**
Agricultural extension	-	47.6	**47.6**	**2.4**
Land reclamation, development, cadaster	27.7	-	**27.7**	**1.4**
Seed and seedling programs	8.7	7.9	**16.6**	**0.8**
Support to mechanization	1.4	22.6	**24.0**	**1.2**
Livestock breeding	10.5	0	**10.5**	**0.5**
Pasture management	4.1	105.5	**109.5**	**5.6**
Animal husbandry, feed quality assurance, other livestock programs	-	14.0	**14.0**	**0.7**
Veterinary services, including vaccination	156.7	6.7	**163.4**	**8.3**
Plant protection and quarantine	33.9	-	**33.9**	**1.7**
Farm cooperatives, community organizations, clusters		192.1	**192.1**	**9.7**
Access to finance (credit lines)	-	197.3	**197.3**	**10.0**
Business development	-	6.0	**6.0**	**0.3**
Policy support	-	3.9	**3.9**	**0.2**
Public stocks/food emergency distribution	-	0.6	**0.6**	**0.1**

	Government funds*	Donors	Total	% of total
Disaster risk management/ crop forecasting	-	41.5	**41.5**	**2.1**
Irrigation	516.4	363.9	**880.3**	**44.6**
Administration and other costs	169.1	20.0	**179.1**	**9.6**
Total (million Somoni)	**933.7**	**1,038.7**	**1,972.4**	**100.0**

Source: World Bank staff estimates based on data from the MOF and donors.
*Note: * Government funds include the budget from the central government, local governments, and Special Funds.*

143. **Irrigation has been the single largest expenditure of both the GoT and donors**. Donors seek, through their projects, to bring a more integrated approach to modernization of irrigated agriculture, which combines upgrades/replacement of irrigation infrastructure, including pumps, with investments in WUA strengthening, cost-recovery, and agronomy/ farming practices. The ultimate objectives of the irrigation modernization include: (i) generating more agricultural income from water used; (ii) increasing cost-recovery for irrigation services; and (iii) saving electricity consumption by irrigation pumps and making it available for export to neighboring Afghanistan and Pakistan, which brings more income.[152] Yet leadership from the GoT in pursuing an integrated approach to irrigation modernization has been lacking. So far, the GoT has invested in the existing irrigation systems without a geographic prioritization of investments to agricultural potential and without reforms in cost-recovery and electricity subsidization. They also hardly promoted integration of irrigation investments with tailored agricultural/agronomy support to farmers in these irrigation systems, which would need to be provided by the MoA. As a result, the developmental outcomes of irrigation investments remain suboptimal,[153] as described in Chapter 1.

144. **Priorities of the government and donors do not always converge in other areas, too.** Some programs were financed by both the government and donors, including applied research, seed sector development, pasture management, veterinary services, and irrigation, creating a basis for coordination and collaboration. In most cases, however, donor-financed programs were different from those financed by the GoT. For example, agricultural advisory/extension services, animal husbandry, agricultural finance, business development programs, support to farm cooperatives, community organizations, productive partnerships, and early warning systems with disaster risk management at the farm level were all donor priorities that received little government funding, if any. This poses a challenge for coordination with the government to ensure ownership and sustainability.

145. **The current high fragmentation of agricultural public expenditures in Tajikistan requires greater involvement of public institution staff in the design and implementation of donor-financed projects**. As donor projects financed many core public programs not

[152] World Bank. 2017. *The Cost of Irrigation Inefficiency in Tajikistan*. Report ACS21200, Washington, D.C.
[153] *Tajikistan's Irrigation Public Expenditure Review*, to be completed by the World Bank in 2022, will provide more information and examples about suboptimal outcomes of the current irrigation investments.

financed by GoT funds, government staff needed to proactively engage to: (i) maximize effectiveness of foreign grants and loans; (ii) develop sustainability arrangements for integrating knowledge generated by these projects in the government programs; and (iii) manage assets created by donor projects over the long run, including to secure operation and management budget from government budgets.

146. **A big weakness of the allocative efficiency of public expenditures in Tajikistan is the small allocation to agricultural R&D.** Chapter 1 shows that public spending on agricultural R&D tends to generate a consistently high rate of economic returns in both developing and developed countries.[154] No country in the world could generate long-term growth in agricultural total factor productivity without such investments; they are the key to increasing yields, and to developing and supporting adoption of location-specific, climate-smart technologies on both on- and off-farm segments of agrifood value chains. Many low-income countries with successful agriculture allocate about 0.5 percent of their GAO for this purpose, while high-income countries spend on average 2.5 percent. Tajikistan, on the other hand, is estimated to have spent 0.04 percent of its GAO on research and extension services in 2019, including donor projects (Table 30). Assuming that a large fraction (20 percent) of the agricultural education budget (e.g., universities) is spent on R&D increases this number to 0.05 percent. The large underinvestment in R&D explains many problems faced by Tajik agriculture, especially the high crop and livestock productivity gaps and low climate change resilience.

Table 30: Tajikistan: Public spending on agricultural research and extension, 2019

Public spending from the central government [*]	1,205 [4,188]
Special Funds	4
Donor projects	4,582
Total ('000 Somoni)	**5,791 [8,774]**
% of gross agricultural output	***0.04% [0.05%]***
For comparison, in % of gross agricultural output	
- Low-income countries	0.5%
- Middle-income countries	1.0%
- High-income countries	2.5%

Source: World Bank staff estimates based on data from the MOF and donors.
Note: [*] 20% of the agricultural education budget is assumed to be spent on R&D.

[154] World Bank Group. 2019. *Harvesting Prosperity: Technology and Productivity Growth in Agriculture*. Washington, D.C.

147. **Analysis of the economic composition of agricultural public expenditures leads to conclusions similar to those derived from the analysis of functional composition.** Agricultural public expenditures in general are well balanced between wages, nonwage recurrent expenses, and capital investments (Table 31). But as most capital and recurrent funds are financed by donors, very close involvement of public staff in the design and implementation of donor projects is required to ensure ownership, coordination, and sustainability.

Table 31: Economic composition of agricultural public expenditures, average for 2015–2020

	Central budget	Local budgets	Special Funds	Donors	Total	Share in total, %
Wages	53.7	14.5	3.3	0.0	71.9	**12.5**
Nonwage recurrent expenditures	45.7	10.0	7.0	123.2	191.0	**33.0**
Capital investments	16.8	30.9	9.3	230.4	288.0	**49.9**
Subsidies to other organizations	26.1	0.0	0.1	0.0	27.2	**4.7**
Total (million Somoni)	**142.3**	**55.4**	**19.6**	**353.2**	**577.0**	**100.0**
% of total	***25***	***10***	***4***	***61***	***100***	

Source: World Bank staff estimates using data from the MOF and donors.

(v) Main takeaways

148. **Tajikistan spends slightly above 1 percent of GDP on agriculture**. While more spending on agriculture is needed in the future, as advocated by the draft NIP 2021–2030, in the context of tighter fiscal space a priority for Tajikistan should be to increase the impact of public spending already allocated to agriculture. Additionally, the high dependence on donor financing (more than one-half of the sector's total budget) calls for a strategy to gradually increase the GoT's financing (as a share of the overall agriculture budget) to manage the future potential decline in donor-financed spending.

149. **Most donor-financed projects are government-executed, but many donor-executed projects still provide direct support to farmers and finance general support services.** A large share of donor financing requires the high attention and proactive engagement of public staff to address planning, coordination, and implementation challenges associated with donor-financed projects.

150. **The allocative efficiency of agricultural public expenditures should be adjusted to generate better value for money.** Public spending on agricultural research and advisory/extension services is extremely low, explaining the low technology adoption and productivity of Tajik agriculture. Spending more on agricultural research and extension is a high priority for future investments. There is also too little public expenditure on natural

resource management, seed/seedling sector development, SPS measures, agrilogistics, and digital agriculture. Where the funds are relatively large, such as for irrigation, land cadaster, and veterinary services, public investments tend to support traditional activities rather than modernization and integrated approaches or public-private delivery of agricultural services. Insufficient amounts are spent on strengthening public institutions to respond to short-term volatilities and crises such as COVID-19, a situation that needs to be reversed going forward.

4 POLICY RECOMMENDATIONS

151. **The agrifood sector in Tajikistan is a potential engine of growth for the country but faces important constraints to doing so in a resilient, inclusive, sustainable, and efficient (RISE) manner.** Over recent years, Tajikistan achieved a high rate of agricultural growth, increased agricultural production and export diversification, and increased attention to integrated agrifood value chain development. It also took steps to address the persistent food insecurity and malnutrition problems in the country. However, a series of structural, institutional, and policy issues impede achievement of higher and sustained economic growth in the sector and poverty reduction. Depleted natural resources (soil, water, pastures), limited arable land availability, and overreliance on either imported farm inputs (often not adjusted to the local agroecology) or locally produced, low-quality inputs, coupled with inadequate public expenditures have resulted in still low agricultural productivity. Opportunities and incentives for much-needed agricultural investments are further limited by: unfinished cotton reforms; fragmented, small-scale agricultural production systems, with many small actors, especially women, excluded from modern agrifood value chains; weak agrifood processing, export, and other agribusiness companies; and weak institutional capacity to detect and respond to various shocks (food price spikes; climate risks; pests and disease outbreaks).

152. **"What to do" in the areas of agricultural development and food/nutrition security is well covered in the MTDP 2021–2025 and the NIP 2021–2030.** While achievement of agricultural and food/nutrition outcomes continues to be greatly affected by general economic reforms that could deliver lower inflation, interest, and tax rates, the concrete agrifood sector-specific public policies and investments outlined in the MTDP 2021–2025 and the NIP 2021–2030 are confirmed by this report to be critical. Together they will provide a strategic framework for further reforms, reflecting in retrospect the RISE pillars, highlighted below:

a. The MTDP 2021–2025 outlines the following key tasks for accelerating agriculture to improve food security and contribute to broader economic and social development of the country: (i) improving policies and regulations and the capacity of public institutions; (ii) enhancing farmers' access to inputs, advisory services, and information; (iii) strengthening farmers' capacity; (iv) improving food security and access to high-quality food products through supporting climate-smart and green agriculture; (v) modernizing irrigation and drainage infrastructure and management; and (vi) supporting development of agrifood value chains. MDTP 2021–2025 emphasizes resilience and efficiency, two aspects of the RISE framework presented in Chapter 1.

b. The NIP 2021–2030 groups specific measures for food and nutrition security and sustainable agricultural development into five development pillars: (i) sustainable development of the natural resource base; (ii) development of sustainable agrifood systems (or value chains); (iii) sustainable services for agrifood systems; (iv) ensuring social inclusion; and (v) enabling the business environment. The first three pillars are divided into 22 directions, which are the key subsector intervention areas of NIP: (i) land, water, forestry, and pasture management; (ii) seeds/seedlings production and multiplication, field crops (cereals, cotton, oil crops and pulses, horticulture, greenhouses, logistical infrastructure, export promotion), dairy and meat, poultry, fisheries, beekeeping, agroforestry; and (iii) food safety, SPS measures, mechanization, input use, AKIS, access to finance, digitalization, food security monitoring, and crisis prevention and management. NIP also includes social inclusion programs, which is the fourth pillar. The fifth pillar represents cross-cutting issues on enabling the business environment, which will play a key role in achieving NIP priorities. Overall, the NIP 2021–2030 emphasizes all four RISE aspects of sustainable economic and social development.

153. **Effective implementation of the identified public policies and programs will be the key to achieving results on the ground. In other words, as "what to do" has been largely identified, "how to do it" is a priority question going forward**. The COVID-19 crisis in Tajikistan and worldwide[155] has shown the importance of balancing investments in capacity to detect and respond to crises with investments in long-term agricultural development. Four areas of emphasis are important for Tajikistan in this respect: (i) investing in short-term food security risk management; (ii) strengthening food and nutrition security; (iii) proactively crowding in private sector investment; and (iv) getting more value for money from agricultural public expenditures.

154. **Investing in short-term food security risk management:** Tajikistan is very vulnerable to various economic and natural shocks, with pronounced impacts on food security. COVID-19 was another crisis exposing these weaknesses. Going forward, more public investment is required today to strengthen the capacity of public institutions to detect and respond to short-term shocks and crises tomorrow, while maintaining a line of sight to long-term development challenges.[156] The GoT needs to have more operational tools in its toolbox ready to respond faster and more effectively to future crises. This implies: (i) investing in an early warning system for agrometeorology, locust prevention and other disasters, and information dissemination; (ii) establishing remote sensing monitoring of agricultural production and farmland use; (iii) strengthening collaboration with donor projects that support agricultural advisory services to build a system/network of service provision to farmers based on public-private partnerships; (iv) rebuilding the seed stocks of core food staples at public seed institutions to reduce the risk of future supply disruptions; (v) reducing the risk of zoonotic diseases by using the One Health approach to strengthen surveillance, epidemic preparedness, and veterinary and public

155 World Bank. 2020. *IDA: Responding to the Emerging Food Security Crisis.* Washington, D.C.

156 World Bank Group. 2020. *Saving Lives, Scaling Up Impact, and Getting Back on Track*. World Bank Group COVID-19 Crisis Response Approach Paper. Washington, D.C.

health capacity; (vi) supporting private sector investment in storage infrastructure and public investment in agrilogistics to better manage export disruptions; and (vii) improving the effectiveness of using public food stocks.

155. **Strengthening food security and nutrition: COVID-19 ignited many governments around the world to focus more on food self-sufficiency and, with it, to increase state control over production and markets.** This idea, a legacy of the Soviet Union, was present in Tajikistan even before COVID-19. However, in the recent decade the concept of food self-sufficiency in Tajikistan evolved from the objective of full import substitution to a more pragmatic approach, supported by the recognition of land and water scarcity on one hand, and the high economic cost of full self-sufficiency on the other. That implied making local production more competitive to replace/reduce some food import, especially in remote areas, while increasing export competitiveness of selected products, for example horticulture, to earn foreign exchange to finance the remaining food import. The GoT should increase its efforts to achieve food and nutrition security by continuing that approach and enhancing public programs and investments that increase agricultural productivity and production, especially in remote areas. In GBAO, which is land-constrained and isolated in winter for prolonged periods, support should be provided to develop greenhouse hydroponics and aquaponics. This includes donor support for the knowledge and capacity building required for sustainable adoption of such technologies. In addition, the GoT should refrain from using temporary market and price controls induced by COVID-19 and instead contribute to restoring trust in agricultural trade and markets and enhancing cooperation in the Central Asia region. In small economies with weak public institutions as in Tajikistan, food import substitution policies through import protection, farm subsidies, and administrative control are doomed to fail.

156. **Proactively crowding in private sector investment:** Promoting market-based development to improve food and nutrition security is the key to increasing private sector investment. It is important to remember that in the agrifood sector, farmers (small and large) are the largest representatives of the private sector, in addition to input suppliers, traders, processors, and exporters, whose full potential has been held back by the market failures presented in this report. Global experience indicates that farm incomes need to be the centerpiece of public programs to induce private sector investment and promote industrialization of agrifood value chains. In this regard, cotton as the largest subsector remains the laggard. Farmers are not yet free to make production and marketing decisions, and are forced by local governments to grow cotton for the benefit of the textile/garment industry irrespective of the cost. In the short run, the central government should ensure that local governments do not force farmers to grow cotton on soils where it is not profitable. In the longer run, any interference by local government in decisions of farmers should not be tolerated. In addition, the GoT should focus on promoting competition between ginneries and textile/garment enterprises for buying cotton from farmers, incentivizing them to increase domestic cotton processing, establishing appropriate cotton grading systems, monitoring certification and weighing procedures, and refraining from export taxation. This is the first set of tasks to be undertaken. The second task is to introduce targeted programs for supporting horizontal and vertical coordination in agrifood value chains. Inclusion of small farms in value chains does not happen spontaneously, but “forcing” farmers to join farm cooperatives and productive partnerships (clusters) is doomed to fail. Instead, market incentives are needed to achieve sustainable results. Tax and grant/credit incentives are

to be provided to food processing and textile/garment enterprises to stimulate productive partnerships/clusters with farmers, accompanied by their capacity building (agricultural extension services) and market-promotion programs. Finally, the third task is to increase the rate of industrialization of agrifood value chains in a market-based manner. Targets set in the draft MTDP 2021–2025 for the shares of agricultural products processed domestically need to be achieved through programs and regulations that increase competitiveness, including through attracting FDI and the abovementioned productive partnerships, rather than taxing export of agricultural commodities and/or forcing farmers to sell their produce only to assigned businesses. For industrialization to succeed, it should become profitable for farmers to contribute and benefit from it, not to "pay" for it.

157. **Increasing sustainability and value for money from agricultural public expenditures:** Tajikistan spends a fair amount of domestic and external funds on agriculture, slightly above 1 percent of GDP. While more spending is needed, as advocated by the NIP 2021–2030, in the context of the tighter fiscal space a priority must be to increase the impact of the public spending already allocated to agriculture. Agricultural public expenditures originate from various sources, with 64 percent coming from donor projects. Most donor-financed projects are government-executed, but many donor-executed projects still provide direct support to farmers and finance general support services. A large share of donor financing brings planning, coordination, and implementation challenges, requiring the high attention and proactive engagement of public staff in donor-financed projects. In addition to paying more attention to coordination between the GoT and the donor-financed programs, the GoT should prepare to receive a smaller share of grants in the future (assuming continued growth in per capita GDP) and to replace the future shortfall in donor funds with its own expenditures. The allocative efficiency of agricultural public expenditures would also benefit from several adjustments to generate better value for money. Public spending on agricultural research and advisory/extension services is extremely low, explaining the low technology adoption and productivity of Tajik agriculture. Spending more on agricultural research and extension is a high priority for future investments. Too little is spent on natural resource management, seed/seedling sector development, SPS measures, agrilogistics, and digital agriculture. Where the funds are relatively large, such as for irrigation, land cadaster, and veterinary services, public investments tend to support traditional activities rather than modernization and integrated approaches (e.g., the One Health approach for human, animal, and ecological health or modernization of irrigation with integrated investments in irrigation assets, services, WUA strengthening, and agronomy underpinned by reforms of irrigation services' cost-recovery and electricity subsidy) or public-private delivery of agricultural services. Insufficient amounts are spent on strengthening public institutions to respond to short-term volatilities and crises such as COVID-19, a situation that needs to be reversed going forward.

158. **The post-COVID-19 year of 2021 is when many important decisions will determine whether Tajikistan can turn this crisis into an opportunity to build a better future**. The tighter fiscal space resulting from several consequent financial and economic crises amplified by COVID-19 will make the task harder, but not impossible. The key to unlocking an effective crisis response — one with minimal upfront costs and future benefits to the budget — is found outside the government's direct scope of control: if the state strengthens its partnership with farmers, agribusinesses, and (potential) investors, with clear and uniform rules, Tajikistan could tap into the considerable potential of

sustainable economic dynamism. In fact, considerable preparatory work has already been done to put in place the required economic reforms[157] to boost private sector confidence, local production, export, and jobs. With profit opportunities in domestic and neighboring markets (of which there are many) and the clarity and predictability of the government's role and obligations, the private sector is certain to exploit these.[158] This, in turn, will open doors to addressing a long list of priority challenges influencing economic policymaking, including development of the agrifood sector and food and nutrition security.

[157] The MTDP 2021–2025 is the latest government high-level policy document recognizing the significant role of the private sector and that efforts are needed from the state to crowd in private sector investments. The NIP 2021–2030 also strongly emphasizes these points for agrifood sector development.
[158] *Tajikistan: Building Blocks for a Dynamic Post-COVID-19 Recovery*. Asia Plus News, January 7, 2021.

TAJIKISTAN

AGRIFOOD SECTOR AND PUBLIC EXPENDITURE REVIEW

Tajikistan's agrifood system has had a steady and growing presence domestically and in the Central Asia region, but still faces many constraints. Agriculture is significantly affected by climate change due to the high vulnerability of its natural environment and the low adaptive capacity of both farmers and the public sector. COVID-19 disruptions amplified these vulnerabilities and highlighted the need for more constructive relationships between public policy and the private sector, not only to respond to imminent challenges brought by the current crisis, but also to implement longer-term solutions for resilient development. This report reviews key issues characterizing the agrifood sector in Tajikistan (Chapter 1), assesses how the agrifood sector fared in the face of COVID-19 (Chapter 2), and discusses key findings regarding agricultural public expenditure policies (Chapter 3). Chapter 4 presents recommendations for building a better future.

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