



UZBEKISTAN

Third Agriculture Public Expenditure Review

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ACKNOWLEDGMENTS

This report was written by **Irina Klychnikova** (lead agriculture economist, World Bank) and **Sandjar Babaev** (consultant), with inputs by **Pierre Gerber** (senior agriculture economist, World Bank), **Valentina Pernechele** (FAO), **Volha Rakhanskaya** (consultant, expert on the WTO), and **David Egiashvili** (consultant, expert on land policy). The report references findings from a Climate Smart Agriculture Rapid Field Assessment by **Sandjar Babaev**, **Farhod Nazarov**, and **Botir Khaitov** (consultants, World Bank). Peer reviewers **Sergiy Zorya** (lead agriculture economist) and **Vanina Daphne Forget** (senior agriculture economist) provided helpful guidance, and **Milos Milovanovich** (FAO) provided comments. **Rosalie Trinidad** assisted in producing the report. A team at Communications Development—led by **Bruce Ross-Larson** and including **Joe Caponio** and **Mike Crumplar**—provided editorial support. The report was prepared with overall oversight by **Holger Kray** (Agriculture and Food Department Manager, World Bank). Financing from the Food Systems 2030 Trust Fund is gratefully acknowledged.

The World Bank team expresses its deep gratitude to the Ministry of Economy and Finance and Ministry of Agriculture of the Republic of Uzbekistan for their comprehensive support in the preparation of this report. We are also grateful to Asian Development Bank (ADB), the EU ASK Facility, and other development partners for their active participation in the discussion of the report.

ABBREVIATIONS AND ACRONYMS

AgPER	Agricultural Public Expenditure Review
AKIS	Agricultural Knowledge and Innovation Systems
AoA	Agreement on Agriculture
CCDR	Climate Change and Development Report
CSA	Climate-Smart Agriculture
DFP	Direct Farm Payments
GAO	Gross Agricultural Output
GDP	Gross Domestic Product
GoU	Government of Uzbekistan
GSS	General Services Support
M&E	Monitoring and Evaluation
MoA	Ministry of Agriculture

MoEF	Ministry of Economy and Finance
MoHESI	Ministry of Higher Education, Science, and Innovations
NGO	Non-Governmental Organizations
OECD	Organisation for Economic Co-Operation and Development
PER	Public Expenditure Review
PSE	Producer Support Estimate
SOB	State-Owned Banks
SOE	State-Owned Enterprise
SRI	Scientific Research Institute
USD	United States Dollar
UzEX	Uzbek Commodity Exchange
UZS	Uzbekistani Som
VAT	Value-Added Tax

EXECUTIVE SUMMARY

1. Agriculture is a cornerstone of Uzbekistan's economy, accounting for 24.3 percent of GDP, 23.9 percent of employment, and 20.4 percent of exports¹ in 2023.² It plays a vital role in reducing rural poverty, ensuring food security, and mitigating climate change risks. Despite its importance, the sector holds significant untapped potential, as shown in comparative analyses both internationally and domestically. Uzbekistan's agricultural sector faces pressing challenges, particularly from climate change and natural resource depletion. As part of a broader set of policy reforms for agriculture, the Government of Uzbekistan (GoU) is reassessing how it supports agriculture to determine how it can better stimulate growth, productivity, and climate resilience.

2. Uzbekistan has made significant progress on agricultural policy reforms over the past decade. Some of the key achievements include liberalizing state procurement for cotton and wheat, which has given farmers access to more competitive market prices and has led to a 15 percent increase in farm incomes in these sectors. Resource allocation has improved by introducing market pricing mechanisms and gradually removing distortive subsidies, such as those for livestock outputs. Horticulture exports have grown by 12 percent annually since 2018, with the support of targeted investments in infrastructure and technology. Recent efforts to promote water-saving technologies, such as drip irrigation, have increased water use efficiency, demonstrating the government's commitment to sustainability. Furthermore, the government has taken important steps to strengthen land tenure security.

3. Uzbekistan's agricultural policy objectives are outlined in the New Uzbekistan Development Strategy (2022–2026) and in sectoral strategies. The Agriculture Development Strategy (2020–2030) aims to deepen sector reforms, enhance agri-food competitiveness, ensure food security, and foster a favorable agribusiness climate by reducing state involvement and boosting investment. It also envisions modernizing public administration, diversifying support mechanisms,

and advancing scientific, educational, and information systems. The Water Sector Development Concept (2020–2030) focuses on water security amid growing scarcity and climate change, promoting efficient use and mitigating land degradation. Several other strategic documents provide a roadmap for green economic development.

4. Public agricultural spending in Uzbekistan can advance climate policy and build resilience to climate change, as emphasized in the strategic policy framework. Climate change is expected to cause significant losses in agricultural and livestock productivity, hydropower potential, and cotton yields, as well as infrastructure damage from extreme weather events. According to the 2022 Climate Change and Development Report (CCDR), investments in climate-smart agriculture, irrigation, drainage, and land restoration could generate benefits two to three times higher than the costs while reducing emissions from the agriculture sector, the second-largest and fastest-growing source of greenhouse gases.³ But unlocking these benefits requires deeper policy reforms, including strengthening land tenure security and promoting sustainable livestock practices. Since 2018, Uzbekistan has been reforming wheat and cotton production, but further reforms are needed to enable the adoption of climate-smart technologies and enhance productivity, while aligning public support to agriculture with climate and environmental goals.

5. Innovative technologies and diversified crop and livestock production systems in Uzbekistan have significant potential to drive job creation, especially in labor-surplus and underdeveloped regions. As estimated by a companion study to this review, the climate-smart agriculture (CSA) practices, such as water-saving technologies and modernized orchards, would increase labor demand, with an estimated 61,400 full-time jobs created under a moderate CSA adoption scenario, and 96,000 full-time jobs under an optimistic scenario.⁴ The most substantial job creation would occur in the Fergana Valley and southern regions, where the demand for labor in activities like orchard modern-

ization, drip irrigation installation, and vineyard management is high. These jobs would be particularly impactful for women and youth, contributing to higher incomes in the agricultural sector. In addition to direct labor, CSA would also stimulate demand for specialized skills in areas like agrometeorology and water-saving technology management. To fully realize CSA's job creation potential, a robust system of training, vocational education, and scientific research tailored to regional conditions is essential, particularly for regions like Karakalpakstan, where job creation opportunities are more limited.

6. This Third Uzbekistan Public Agriculture Expenditure Review, intended to inform the agriculture policy reform process, finds that public agricultural expenditures have increased significantly over the last three years, especially for variable input use, as general sector investments declined. This report finds that public agricultural expenditures have risen notably, particularly in input subsidies. Spending grew from UZS 24.9 trillion in 2020 to UZS 27.2 trillion in 2023, representing 2.8 percent of GDP or about US\$ 2.2 billion on average over this period. At 2.6 percent of the 2023 GDP,⁵ Uzbekistan's agricultural spending is among the highest globally, exceeding that of peers such as China, Kazakhstan, and Viet Nam. While this reflects

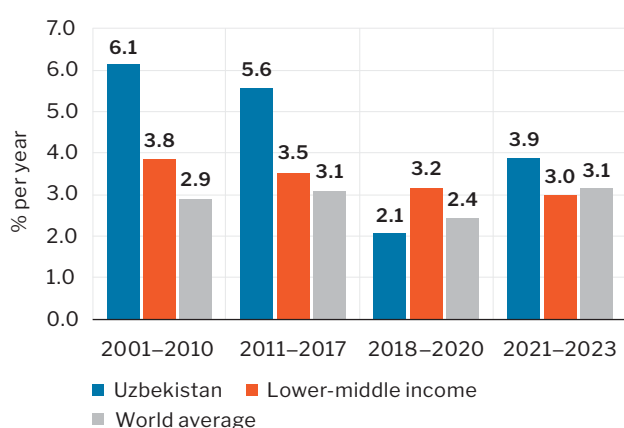
the government's commitment to the sector, it also raises concerns about fiscal sustainability, opportunity costs, and potential inefficiencies in resource allocation.

Note: This report analyzes the period from 2021 to 2023. Some in-depth topics, however, extend beyond this timeframe: it examines agricultural subsidies comprehensively for 2018 to 2023, and it also addresses certain key expenditure trends for 2024.

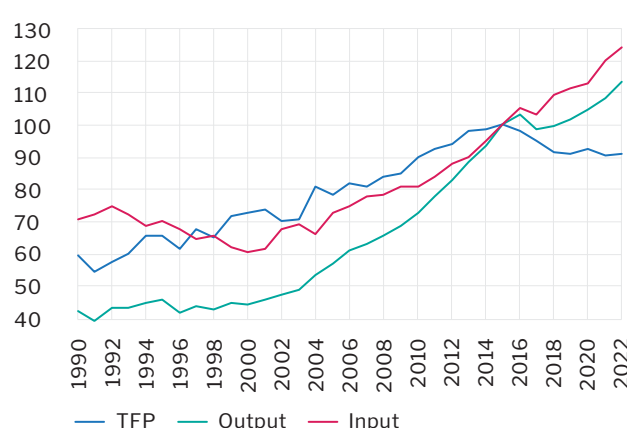
7. Despite the record state support to agriculture, those expenditures do not appear to have significantly contributed to agricultural productivity growth. On the positive side, Uzbekistan's agricultural growth has accelerated over the past three years, averaging 3.9 percent, surpassing the average for low- and middle-income countries. The period from 2018 to 2020 was marked by creative destruction, slowing agricultural growth. But growth has since gained momentum. On the negative side, this growth is primarily driven by increased input use rather than total factor productivity (TFP). Among all inputs, only capital shows significant growth, with a high capital accumulation rate. Given this capital growth and public spending almost reaching 2.5 percent of GDP, the recent agricultural growth falls below expectations (Figure ES1).

Figure ES1. Agriculture growth and its drivers

a. Annual agriculture GDP growth



b. Output, input, and TFP growth in Uzbekistan



Source: World Bank staff estimates.

Note: TFP is total factor productivity.

8. Investment in agricultural knowledge, innovation, and science (AKIS) is globally recognized as the single most important driver of total factor productivity (TFP) growth in agriculture—

accounting for over 50% of TFP gains in high-income countries, according to the OECD (2023).⁶ Countries like Brazil and Viet Nam illustrate how sustained public investment in R&D and extension

services can transform low-productivity agricultural sectors into globally competitive powerhouses. Yet in Uzbekistan, AKIS remains critically underdeveloped and underfunded. Public spending on agricultural research amounted to just 0.06% of gross agricultural output (GAO) in 2023, compared to the internationally recommended benchmark of 0.5%, and only 4% of researchers are involved in international exchange. Extension services remain fragmented, poorly equipped, and misaligned with farmers' needs, despite formal reforms. Without a substantial increase in funding, coordination, and institutional capacity, Uzbekistan risks falling behind on its goals for a climate-resilient, competitive, and knowledge-driven agricultural sector. A strategic overhaul of AKIS is urgently needed to avoid stalling rural transformation and to unlock long-term growth. Achieving this will require building a broad political consensus around a clear, forward-looking strategy for AKIS.

9. Moreover, the current level of budget expenditures on irrigation water management in Uzbekistan is low and insufficient for adequate services despite the fact that capital investment is already the highest share of the overall public agriculture spending on capital investment and public services in agriculture. That is true especially considering the mounting pressures on water resources due to climate change and the increasing risks of droughts.⁷ Over past 20 years, the budget expenditures on irrigation water management in Uzbekistan has been inadequate. Systematic under-financing of the repair and maintenance cost of irrigation and drainage infrastructure has led rapid wear-and-tear, shortening its lifespan, and increasing the demand for capital investment. The dominance of electricity expenditures (at 60 percent) in total overhead and management expenditures crowds out spending on capital repairs, leading to chronic underinvestment in capital replacement and modernization. This weakens the effect of the government efforts to increase water efficiency in agricultural water use.

10. The Government has taken important steps to promote agricultural diversification. However, agricultural subsidies are still heavily concentrated on cotton and wheat production, primarily through concessional working capital loans for inputs like fuel and mineral fertilizers. These subsidies not

only distort farmers' production choices but also contribute to excessive nitrogen fertilizer use, with Uzbek farmers applying 255 kilograms of mineral fertilizers per hectare—74 percent higher than the global average and nearly three times higher than the regional average.⁸ This support lowers farmer incomes and productivity while contributing to pollution. The heavy focus of the structure of agriculture support on cotton and wheat discourages further crop diversification and the adoption of innovative farming technologies, which is crucial for building resilience against climate shocks and soil degradation. Meanwhile, spending on the agricultural knowledge and innovation system (AKIS) remains limited, further constraining the adoption of modern technologies and innovation to enhance productivity and climate resilience.

11. Moreover, output subsidies for livestock, while intended to boost short-term production and reduce consumer prices—often have limited long-term impacts on productivity and sectoral growth. Output subsidies have been inconsistent, with a dramatic increase in recent years, before they were dropped in 2024, to be replaced by a VAT partial refund program on animal products—to effectively reduce VAT rate from 12 percent to 6 percent from April of 2025. International evidence, including studies from the European Union and Latin America, shows that output subsidies can lead to market distortions, inefficiencies, and reduced incentives for innovation. These subsidies often encourage overproduction, poor resource allocation, and environmental degradation, ultimately hindering productivity.

12. Like the outgoing output subsidies, the VAT rebate imposes a sizable fiscal cost with uncertain benefits. The government simply returns part of its tax revenues to producers, reducing its budget without requiring producers to lower their sale prices. There is no evidence yet to be able to assess whether a VAT rebate would lead to lower prices for livestock products, since the VAT rebate has not yet become effective. However, given that Uzbekistan is a large net importer of livestock products, the rebate is not expected to impact domestic food prices.⁹ Experience elsewhere shows such tax breaks often accrue mostly to producers. In Uzbekistan's case, there is no requirement that producers lower market prices

by the VAT amount, so the scheme may largely boost farm incomes rather than reducing consumer prices. The VAT exemption, like output subsidies, distorts production incentives (favoring livestock output over other sectors) and offers no guarantee of productivity gains. Although the evidence is less clear for VAT refunds than for output-based subsidies, more sustainable strategies to support the sector should focus on capital investments, feed efficiency, high-quality breeding, and improved veterinary services. This approach, as seen in Australia and Chile, would drive long-term productivity gains and sectoral resilience.

13. Governance fragmentation has undermined subsidy effectiveness, and the Government has initiated efforts to address this challenge. In 2022, of the 101 legally effective subsidies, 11 were not disbursed due to missing regulations, and 23 despite having regulations, as several remained underused. The involvement of 15 ministries and agencies in subsidy implementation has led to inefficiencies and weak accountability. Beyond selecting the right public support instruments for agriculture, their design and implementation are crucial for achieving meaningful impact. In response to the challenges in subsidy administration, the Government has initiated measures to systematize subsidies, including the cancellation of subsidies that have remained unused for an extended period and those deemed inefficient, those in which recipients showed no interest, as well as merging overlapping subsidies. These efforts need to continue to further streamline the system.

14. Despite the higher fiscal support to the sector, the efficiency of expenditures remains limited, as most of them are in areas with low returns and potentially high harmful effects, especially for the environment. To make better use of these resources, Uzbekistan needs to strengthen general support services such as rural advisory services, input supply, and finance for small farmers, while also investing in climate-resilient technologies like salt-tolerant and drought-resistant crops. Yet, as this review finds, investments in these areas fell from UZS 11.6 trillion in 2020 to UZS 9.5 trillion in 2023. At the local level, securing land tenure, removing crop restrictions, and providing financial incentives

such as low-interest loans are crucial to encourage the adoption of innovative agricultural and water management practices. Furthermore, policies should enhance smallholder access to financing, irrigation infrastructure, and market opportunities to foster crop diversification and sustainable farming.

15. Eliminating negative price support for cotton and wheat led to the official abolition of crop placement, but the transition to a fully market-oriented system remains incomplete. Farmers still face restrictions in terms of the selection of crops they may plant on specific plots of land, referred to in this report as “restricted free farming.” This creates challenges for farmers, including administrative interference, missed opportunities for more profitable crops, and slower adoption of climate-smart agricultural practices. The restricted free farming also hits both farm and state revenues. Stakeholder insights suggest that farmers may be willing to pay UZS 9.2 million per hectare in land tax for secure tenancy without crop restrictions and UZS 7.7 million if constraints to free farming are eliminated—referred to in this report as “tenant independence”.¹⁰ Given the current land tax of UZS 400,000 to 1 million per hectare, a more feasible increase may be UZS 3–4 million per hectare, particularly in high-income horticultural districts. These findings highlight the urgent need to accelerate agricultural land reforms, strengthen market mechanisms, enhance tenure security, and grant farmers greater freedom in crop selection.

16. The Government has initiated a suite of agricultural policy actions for improving land use efficiency and land tenure security. At the outset of the reforms, the Government aimed to enhance land use efficiency through traditional administrative tools. A notable example of this approach was the reduction of areas allocated to cotton and wheat cultivation on low-fertility lands by removing these plots from the mandatory crop placement system. Consequently, commercial farms established new orchards and began cultivating higher-value crops on the released land. Subsequently, the Government shifted its focus toward legislative improvements, with the objective of gradually strengthening land tenure security and fostering the development of a formalized agricultural land rental market. Key measures introduced

include: (i) the abolition of crop placement requirements and normative yield obligations from the Land Code; (ii) the replacement of non-transparent, paper-based land allocation contests with electronic auctions for distributing state reserve land plots; and (iii) the legalization of subleasing and the use of land plots as collateral by farmers.

17. Furthermore, Uzbekistan has introduced an experimental system for allocating agricultural land plots that emphasizes tenant independence and the cultivation of high-value crops. This is a major positive step toward enhancing tenure security and promoting efficient, climate-smart agricultural production. On February 3, 2025, the President of Uzbekistan issued Decree No. PF-18, which outlines further measures to improve soil fertility and create favorable conditions for attracting investment in the agricultural sector. A key component of this reform is the “Tenant Independence” principle, which grants farmers full autonomy in choosing the types, varieties, and volumes of crops they wish to grow. However, lease agreements may still include recommendations on primary and secondary crops to promote sustainable crop rotation, which could function as indirect mechanisms of control. If not carefully managed, these recommendations could undermine tenure

security which the reform seeks to strengthen. This is an important aspect which should be considered when scaling up the experimental system based upon the tenant independence principle.

18. Although Uzbekistan has made notable progress in advancing land reforms and supporting agricultural development, the transition to a fully liberalized farming environment remains ongoing.

Current regulations continue to impose certain limitations on farmers, including prohibitions on changing crop specialization and determining the size of land to be leased based on the type of authorized crop production (Land Code, Article 46-1). In addition, lease agreements may be terminated for non-compliance with broadly defined conditions such as inefficient land use, violations of crop rotation requirements, or deviations from designated land use (Land Code, Article 36). These provisions can generate uncertainty, particularly in the absence of fully modernized monitoring and enforcement mechanisms. Addressing these challenges in the forthcoming Strategy for Improving the Land Resource Management System for 2026–2030, as envisioned in the Presidential Road Map of April 2025, presents an opportunity to further strengthen tenure security and promote sustainable land use.

19. Six key messages emerge from this review

20. Message 1: Uzbekistan has significant potential to transform its agricultural sector through increasing investment in high-impact areas such as innovation, research, and extension services. But realizing this potential requires a strategic realignment of public expenditures to prioritize resilience, productivity-enhancing investments, and inclusivity. To allocate resources better, Uzbekistan should shift funds from measures such as VAT partial refund programs on animal products to higher-impact areas, such as research, extension, innovative technologies, and market infrastructure. Increasing agricultural knowledge and innovation system (AKIS) funding to 1 percent of gross agricultural output (GAO) by 2025 would align with global benchmarks and significantly improve knowledge transfer and technology adoption. An increase in AKIS funding would need to be accompanied by institutional strengthening to promote alignment of

strategic agriculture research goals with funding allocation and improve budget execution in the area of agriculture research and extension services. Greater investment in public goods—such as irrigation maintenance and agricultural marketing—would also yield higher long-term returns than VAT reductions.¹¹

21. Message 2: The approach to incentivizing investments in fixed capital should be refined.

Subsidies for fixed capital formation doubled from 2021 to 2023—a promising sign. But better delivery and targeting can enhance impacts of these programs. This review found that the agricultural incentive program for fixed capital investment, based on a rebate after an investment is made, faces significant limitations that hinder its effectiveness in supporting farmers. The program also limits the types of investments and brands of machinery, restricting farmer choices and leading to higher-than-market prices paid by farmers, eroding

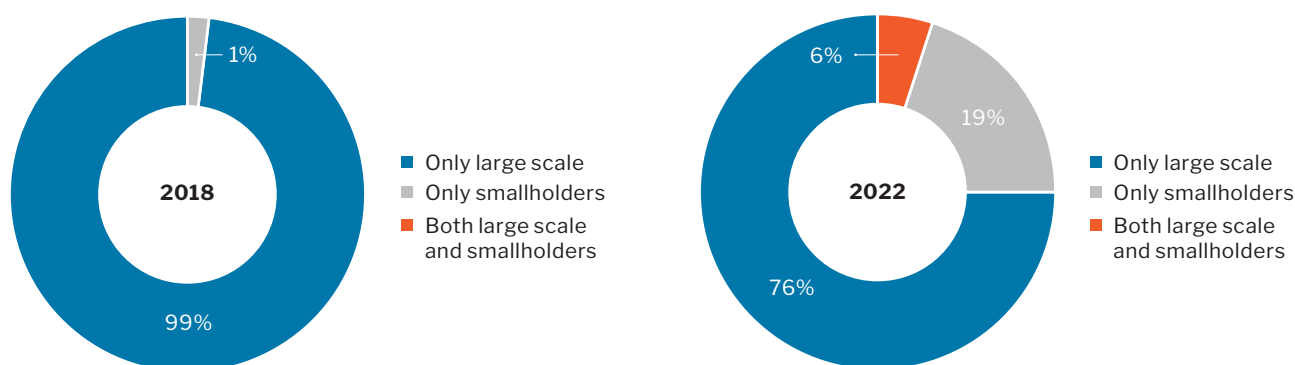
the value of the subsidy. Diversifying subsidies and investments beyond cotton and wheat to target additional crops would also enhance returns to farmers, increase water efficiency, and create jobs. Thus, redirecting the existing support schemes toward crops and livestock products that have the greatest potential to drive sustainable agricultural transformation and resilience to climate change and water scarcity would enhance the impact of subsidies on productivity and the environmental outcomes.

22. Uzbekistan needs to pivot toward performance-based instruments to address resource use and sustainability challenges. Repurposing subsidies into schemes to invest in modernizing and diversifying farms can encourage sustainable practices. These measures can be exempt from Uzbekistan's WTO reduction commitments if they meet the criteria outlined in Annex 2 of the WTO AoA, which covers non-trade-distorting support. Examples from Latin America, East Asia, and Eastern Europe demonstrate the effectiveness of matching grant programs, which provide co-financing to farmers for adopting technologies, improving infrastructure, or diversifying production. In Brazil, matching grants increased smallholder farmers' productivity and income. In Viet Nam, similar programs fostered the adoption of climate-resilient practices, while in Serbia matching grants enabled farms to modernize their machinery and mechanization. Uzbekistan can leverage these models to develop tailored performance-based instruments that support its agricultural transformation while aligning with wider policy goals.

23. Message 3: Including smallholders in policy support schemes is increasing, but they tend not to reap the full benefits of subsidies available to them. Subsidies are progressively becoming more inclusive, with the share for smallholders rising from 1 percent in 2018 to 18.7 percent in 2022, and the share for mixed beneficiaries rising to 5.6 percent. Smallholders have begun to use programs such as concessional loans under the "Every Family is an Entrepreneur" program, grants from employment-related extrabudgetary funds, and support from the Farmer's Council.

24. The primary concern lies with the de facto (final) beneficiaries of subsidies. In practice, a large share of the allocated funds do not benefit the farmers and smallholders that the subsidies target. In most cases, the conditions attached to agricultural subsidies require farmers to purchase inputs, equipment, and services, often from a monopolistic SOE supplier or a supplier designated by local authorities. So, in addition to supporting farmers, these agricultural subsidies function as mechanisms for creating demand and ensuring financial flows to SOEs. The process of privatization/liquidation of such SOEs as "Cotton Ginnery" and "National Wheat Processing Company" resulted in reduction of such leakages. However, there are still several SOEs on mineral fertilizers/fuel and some other input suppliers to agriculture. And as field interviews with several farmers conducted as part of this review suggest, they often appear to be charged inflated prices.

Figure ES2. Rising share of smallholders among the de-jure beneficiaries of agri-subsidies



Source: World Bank staff estimates based on GoU data.

25. Message 4: Diversifying agriculture and addressing the rising water scarcity and soil degradation requires comprehensive solutions.

Important measures include developing and maintaining efficient irrigation systems (both public and on-farm), renewable energy solutions, and better soil management. Investments in climate-resilient crop varieties and diversified cropping systems would reduce dependency on resource-intensive commodities such as cotton and wheat. The country can further ensure alignment with adaptation and mitigation goals by integrating climate considerations into budgeting processes, using such practices as green budget tagging.

26. Innovative agricultural technologies such as laser land leveling, drip irrigation, and salt-tolerant crops offer great potential to improve water efficiency, soil health, and climate resilience. But their adoption has been limited due to high initial costs and other barriers. Matching grants could help offset these costs and encourage broader adoption, especially when paired with reforms to secure land tenure and liberalize crop choices. A key factor for success is addressing feedstock availability, since limited access to quality feed hampers livestock sector productivity. Developing locally grown, water-efficient feedstocks like millet and sorghum would enhance livestock feed availability and support sector growth. By combining financial incentives for innovative climate-smart technologies, technical assistance to farmers, land reforms, and feedstock development, Uzbekistan has the potential to reduce water consumption by 20 percent, increase agricultural production by 60 percent, and significantly boost both crop and livestock productivity, fostering a more sustainable and resilient agricultural sector.¹²

27. Message 5: Governance improvements include simplifying and consolidating subsidy programs, enhancing accountability mechanisms of public institutions involved in agriculture, and addressing monopolistic practices. Uzbekistan can streamline the administration of water-saving subsidies, now managed by six entities. It can also enhance market efficiency by implementing robust monitoring and evaluation frameworks and enforcing anti-monopoly regulations. Digital platforms and the use of open data can improve the impact of government spending on agriculture, especially subsidies.¹³

28. To address excessive fragmentation, it is crucial to strengthen institutions, consolidate subsidy programs, and increase transparency through digital platforms and open data. As subsidies have expanded and taken new forms, proper institutional capacities to implement them seem to lag behind. Our analysis indicates that the agricultural public budget in Uzbekistan is distributed across 20 different administrative entities. Dispersed budgets can dilute the focus on key priorities, hindering progress and effectiveness of essential projects. They can increase administrative costs and thus reduce efficiency of spending. They can increase the risk of influence by interest groups and prioritization of political gains over public welfare. And they can make it more complex to assess effectiveness of policies and programs.

29. For sector-wide governance, SOEs operating in agriculture-related areas inflicted a huge financial burden on the public finance and a contingent liability. Reforming their governance structure and pursuing their effective privatization is essential. In 2020, write-offs of agricultural SOEs debts cost to the government almost UZS 3 trillion. Although these costs declined substantially in 2023 owing to large scale privatization and liquidation of “Cotton Ginnery” and “National Wheat Processing Company” during previous years. However, the causes of poor performance of the rest of SOEs need to be addressed, since these issues could easily reemerge and pull resources away from areas with a higher impact on productivity.

30. Message 6: Land market policies can drive a shift toward more diversified, high-productivity, and job-creating agriculture. This involves reforming the land-lease market to enhance tenure security and autonomy for leaseholders, as seen in recent reforms such as extending lease durations and granting more flexibility under the “independence principle.” But land fragmentation and regulatory constraints, such as the prohibition on farm subdivision and change of crop specialization when transferring lease right, hinder productivity and long-term investment. To address these issues, a comprehensive land consolidation strategy, simplified land transactions, and the modernization of land management practices, including the use of GIS and remote-sensing technologies, are essential. These measures will improve

land-use planning, enhance transparency, and foster a more dynamic agricultural sector capable of increasing productivity and creating employment.

31. Since Uzbekistan's WTO accession process is well advanced, the country should also consider the implications of its future commitments under the WTO AoA.¹⁴ Once Uzbekistan becomes a WTO member, it will be required to reduce trade-distorting domestic support above the de minimis threshold. That means that in the future, and depending on the outcome of the WTO negotiations and WTO commitments, Uzbekistan will need to reassess current subsidy programs and transition toward measures that align with Annex 2 of AoA (green box) provisions

and Article 6.2 exemptions for developing countries (assuming it secures developing status within the WTO accession process). Policymakers should thoroughly review agricultural support programs from the perspective of conformity with WTO requirements while maintaining the policy space to support sustainable agricultural development, and plan for future reforms of subsidies that are above the negotiated level and are subject to future reduction commitments. A strong institutional capacity for WTO compliance and a clear roadmap for adjusting subsidies can ensure a smooth transition into the global trade system while safeguarding Uzbekistan's agriculture.

1. AGRICULTURE SECTOR PERFORMANCE IN THE CONTEXT OF POLICY REFORMS

32. Agriculture is a cornerstone of Uzbekistan's economy, accounting for 24.3 percent of GDP, 23.9 percent of employment, and 20.4 percent of exports.¹⁵ It plays a vital role in reducing rural poverty, ensuring food security, and mitigating climate change risks. Despite its importance, the sector has significant untapped potential, as shown in comparative analyses both internationally and domestically. For instance, structural transformations combined with strategic investments could create between 700,000 to 1,300,000 jobs and drive 13–25 percent GDP growth by 2030.¹⁶ Despite these opportunities, Uzbekistan's agricultural sector faces pressing challenges, particularly from climate change and natural resource depletion.

33. As part of a broader set of policy reforms for agriculture, the government is reassessing how it supports agriculture to determine how it can better stimulate growth, productivity, and climate resilience. This Third Agriculture Public Expenditure Review (AgPER) examines whether public spending on agriculture is aligned with that objective. The review provides updated information on the trends, composition, and effectiveness of agricultural public expenditures from 2021 to 2023. It highlights key challenges and offers actionable recommendations to improve efficiency and foster sustainable growth. Its methodology is similar to that of the earlier Second Uzbekistan Agriculture Public Expenditure Review and includes additional expenditures related to policy measures that had not yet been implemented during the previous period.

34. Uzbekistan has made significant progress on agricultural policy reforms over the past decade. Key achievements include liberalizing state procurement for cotton and wheat, which has given farmers access to more competitive market prices and has led to a 15 percent increase in farm incomes in these sectors. Resource allocation has improved by introducing market pricing mechanisms and

gradually removing distortive subsidies, such as those for livestock outputs. Horticulture exports have grown by 12 percent annually since 2018, with the support of targeted investments in infrastructure and technology. Recent efforts to promote water-saving technologies, such as drip irrigation, have increased water use efficiency, demonstrating the government's commitment to sustainability.

35. The Government has initiated a suite of policy actions for improving land use efficiency and land tenure security. At the outset of the reforms, the Government aimed to enhance land use efficiency through traditional administrative tools. A notable example of this approach was the reduction of areas allocated to cotton and wheat cultivation on low-fertility lands by removing these plots from the mandatory crop placement system. Consequently, commercial farms established new orchards and began cultivating higher-value crops on the released land. Subsequently, the Government shifted its focus toward legislative improvements, with the objective of gradually strengthening land tenure security and fostering the development of a formalized agricultural land rental market. Key measures introduced include: (i) the abolition of crop placement requirements and normative yield obligations from the Land Code; (ii) the replacement of non-transparent, paper-based land allocation contests with electronic auctions for distributing state reserve land plots; and (iii) the legalization of subleasing and the use of land plots as collateral by farmers.

36. Uzbekistan has introduced an experimental system for allocating agricultural land plots that emphasizes tenant independence and the cultivation of high-value crops. This is a major positive step toward enhancing tenure security and promoting efficient, climate-smart agricultural production. On February 3, 2025, the President of Uzbekistan issued Decree No. UP-18, which outlines further measures to improve soil fertility and create favorable condi-

tions for attracting investment in the agricultural sector. A key component of this reform is the “Tenant Independence” principle, which grants farmers full autonomy in choosing the types, varieties, and volumes of crops they wish to grow. However, lease agreements may still include recommendations on primary and secondary crops to promote sustainable crop rotation, which could function as indirect mechanisms of control. If not carefully managed, these recommendations could undermine tenure security which the reform seeks to strengthen. This is an important aspect which should be considered when scaling up the experimental system based upon the tenant independence principle.

37. Although Uzbekistan has made notable progress in advancing land reforms and supporting agricultural development, the transition to a fully liberalized farming environment remains ongoing.

Current regulations continue to impose certain limitations on farmers, including prohibitions on changing crop specialization and determining the size of land to be leased based on the type of authorized crop production (Land Code, Article 46-1). In addition, lease agreements may be terminated for non-compliance with broadly defined conditions such as inefficient land use, violations of crop rotation requirements, or deviations from designated land use (Land Code, Article 36). These provisions can generate uncertainty, particularly in the absence of fully modernized monitoring and enforcement mechanisms. Addressing these challenges in the forthcoming Strategy for Improving the Land Resource Management System for 2026–2030, as envisioned in the Presidential Road Map of April 2025, presents an opportunity to further strengthen tenure security and promote sustainable land use.

38. Despite these achievements, the sector still faces substantial challenges that require continued policy reforms.

Key areas include further liberalizing the land market to improve land use efficiency, as well as introducing market-based support instruments, such as crop insurance and decoupled payments, to mitigate risks for producers. A critical challenge is integrating smallholder farmers into commercial agriculture and sustainable value chains. Smallholders make up 60 percent of the agricultural labor force but often face barriers such

as limited access to credit, inputs, technology, and advisory support. To address this, the government is exploring models such as cooperatives and producer organizations, which have shown promise for economies of scale, market access, and joint market positioning. For example, in regions with pilot cooperatives, smallholder incomes have increased by up to 20 percent due to better access to high-quality inputs and markets.¹⁷

39. Uzbekistan contributes to global efforts to reduce GHG emissions. It provided its Intended Nationally Determined Contribution (INDC) to the Secretariat of the UN Framework Convention on Climate Change in 2017, and after ratifying the Paris Agreement in 2018, the INDC became the country’s first Nationally Determined Contribution (NDC). The government’s initial target in the NDC was to reduce its GHG emissions per unit of gross domestic product (GDP) by 10 percent from 2010 levels. The target was updated to 35 percent in October 2021. In 2017, Uzbekistan’s total GHG emissions were estimated at 189 million tons of CO₂ equivalent.¹⁸

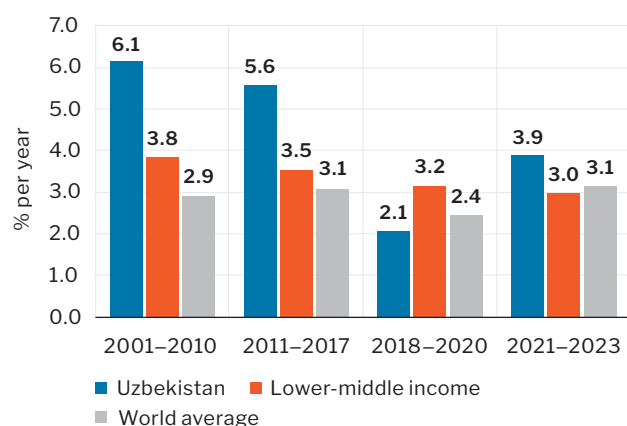
40. The country has firmly integrated climate change adaptation into its policies. For instance, the Strategy for the Transition to a Green Economy, which Uzbekistan adopted in 2019, inserted climate change issues into national and regional development programs and strategies. And the emission reduction target in the first NDC is reflected in the New Uzbekistan Development Strategy for 2022–2026 and the Uzbekistan 2030 Strategy. Several key sectoral policies incorporate climate change mitigation and adaptation, including the one for agriculture (Strategy for Agricultural Development of the Republic of Uzbekistan for 2020–2030). This sector has a strong focus on boosting water efficiency by implementing water- and energy-saving irrigation technologies. Another policy document is the Presidential Resolution “On measures to increase the efficiency of reforms aimed to transition of the Republic of Uzbekistan to a “green” economy until 2030” (2022), which focuses on climate adaptation and investment projects (Table A1.1 summarizes relevant climate change adaptation policies).

41. Uzbekistan’s ongoing accession to the World Trade Organization offers a timely opportunity to enhance the effectiveness and efficiency of its

public support to agriculture. Aligning with WTO rules requires the country to reform its agricultural policies and shift toward support mechanisms that are more market-oriented and more likely to result in higher agricultural productivity. These reforms can improve the transparency, targeting, and impact of public spending in agriculture, ensuring that support contributes more directly to productivity, resilience, and competitiveness. Beyond meeting WTO obligations, the accession process serves as a catalyst for broader institutional reforms, helping Uzbekistan modernize agricultural governance and align with international trade and environmental standards. While this report is not intended to guide Uzbekistan's WTO negotiations, it provides relevant insights about the range of measures that are effective and efficient from the perspective of attaining agriculture productivity goals while at the same time being WTO-compliant.

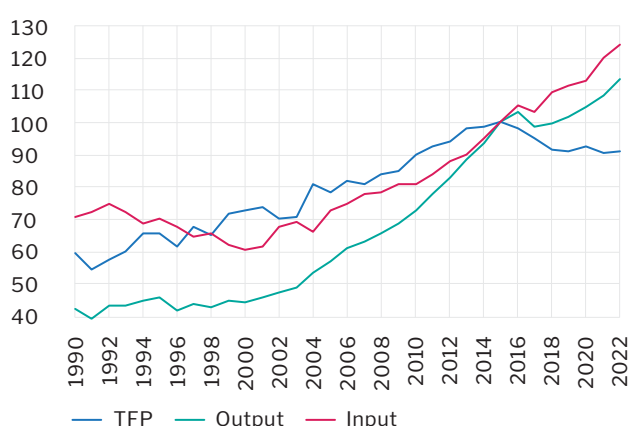
Figure 1.1. Agriculture Growth and its Drivers

a. Annual agriculture GDP growth



42. Despite the record state support to agriculture, those expenditures do not appear to have influenced the growth of agricultural productivity. On the positive side, Uzbekistan's agricultural growth has accelerated over the past three years, averaging 3.9 percent, which surpasses the average for low-middle-income countries, to which Uzbekistan belongs (Figure 1.1a). The period from 2018 to 2020 was marked by creative destruction, leading to low agricultural growth. But growth has since gained momentum. On the negative side, this growth is primarily driven by increased input use rather than total factor productivity (TFP) (Figure 1.1b). Among all inputs, only capital shows significant growth, with a high capital accumulation rate. Given this capital growth and public spending average 2.5 percent of GDP, the recent agricultural growth likely falls below expectations.

b. Output, input, and TFP growth in Uzbekistan



Source: World Bank staff estimates.

43. Agri-subsidies are dominated by subsidies for variable inputs, particularly for cotton and wheat. In Uzbekistan's resource-intensive agriculture, these incentives do not necessarily improve efficiency and competitiveness. Subsidies for cotton and wheat production, primarily in the form of concessional working capital loans, drive producers' choices and further incentivize already excessive nitrogen fertilizer application. On average, Uzbek farmers apply 255 kg of mineral fertilizers per hectare—74 percent higher than the global average and 2.9 times higher than the

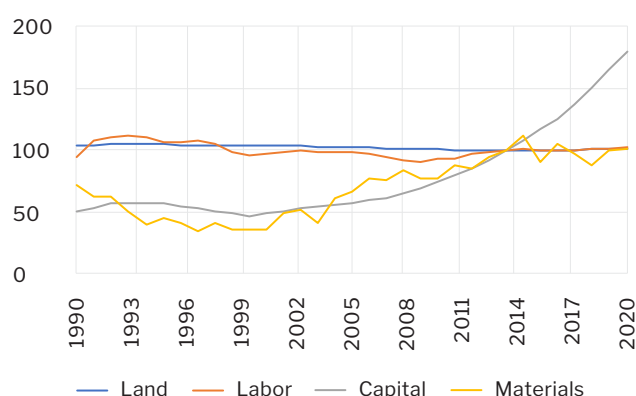
European and Central Asian regional average. Thus, continued support for cotton and wheat is “triply harmful” because it depresses farmer incomes and productivity, depletes natural resources, and distorts markets. At the same time, investments in critical infrastructure, such as irrigation and drainage, have declined, and spending on agricultural knowledge and innovation systems (AKISs) remains very limited. This constrains the adoption of knowledge, innovation, and modern technologies essential for boosting productivity and strengthening agricultural resilience.

44. Subsidies tied to cotton and wheat production primarily support mineral fertilizers and fuel inputs, discouraging farmers from adopting more diverse crop rotations. These rotations are crucial for Uzbekistan to mitigate risks from climate shocks, soil degradation, and water scarcity. Crop diversification offers benefits like disrupting weed and insect cycles and often includes legumes, which fix nitrogen. In contrast, nonrotational cropping depletes soil and increases pesticide and fertilizer use. The coupled nature of these subsidies traps farmers in monoculture practices, limiting their ability to adapt to changing climate, soil, and market conditions. Moreover, the allocation of 94.7 percent of Agri-Fund resources to support cotton and wheat production reinforces the existing crop structure and hinders agricultural diversification.

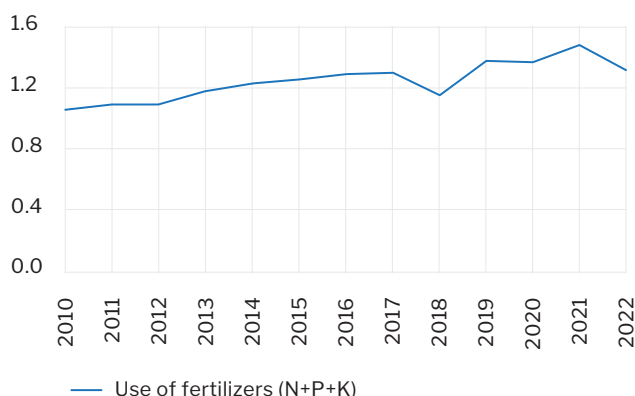
45. Despite the high share of input subsidies, the use of inputs in agriculture is not increasing. This suggests that farmers are using roughly the same amount of variable inputs but are facing higher input prices, leading to rising input costs. This is particularly evident with fertilizers, where consumption remains high, yet costs continue to climb (Figures 1.2a and 1.2b). This is a suboptimal outcome, as the government continues to subsidize the excessive use of fertilizers while creating a disincentive for farmers to shift to more diverse cropping patterns, which would be better suited to address soil degradation and climate risks. Moreover, the approach delays the necessary structural adjustment in the agriculture sector.

Figure 1.2. Trajectory of input use in agriculture

a. Input use growth (%)



b. Fertilizer application (million tons)



Note: Figure 1.2b shows the Nitrogen (N), Potassium (P), and Kalium (K) fertilizer estimated annual total.
Source: World Bank staff estimates.

46. In addition to tackling conventional challenges, public expenditures in agriculture can advance climate policy. According to the 2022 Climate Change Development Report (CCDR) for Uzbekistan, climate change is projected to impose significant economic and social costs, including a 3.5 percent reduction in agricultural labor productivity, a 16 percent decline in livestock productivity, a 9 percent loss in hydropower potential, and an 8 percent drop in cotton yields.¹⁹ And capital infrastructure damage from once-in-50-year floods could reach 2.6 percent of the total cost. But investing in adaptation could provide a “triple dividend”—

avoiding losses, stimulating economic benefits, and generating social and environmental gains. The second and third dividends offer benefits even if climate risks do not fully materialize. The CCDR analysis reveals that investments in irrigation, drainage, climate-smart agriculture, and land restoration could generate benefits two to three times higher than the costs under various future scenarios. The CCDR also identifies agriculture as the second largest and fastest-growing source of greenhouse gas emissions. Uzbekistan can reduce emissions by enhancing livestock productivity and promoting shifts in dietary practices.

47. To unlock these substantial benefits, substantial agricultural policy reforms are essential. Since 2018, Uzbekistan has made strides in reforming wheat and cotton production, which together account for 70 percent of irrigated land, 70 percent of irrigation water, and 80 percent of public agricultural spending. But more comprehensive reforms are needed, including strengthening land tenure security and ensuring free farming, as current restrictions limit farmers' ability to respond to market signals. Reforms in the livestock sector are crucial, particularly in promoting sustainable grazing practices, improving animal health, and enhancing feed and water management to increase productivity while reducing vulnerability to climate impacts. These policy reforms are critical for enabling the broader adoption of climate-smart agricultural practices, which require substantial investments in new technologies, better-quality seeds, and efficient

irrigation systems. Strengthening agricultural policies is therefore a cornerstone of Uzbekistan's green transition and its efforts to build resilience against climate change.

48. Aligning public support for agriculture, including subsidies, with climate-smart goals is also essential to catalyze the transition needed for long-term sustainability and resilience. The government is in the early stages of green budget tagging, and timely recommendations are crucial to guide climate-informed public spending in agriculture. Historically, agricultural public expenditures have not been assessed from this perspective, but this PER aims to support policy dialogue in this area. The report examines the trends in public support to agriculture in Uzbekistan and provides specific recommendations to help improve the alignment between the agriculture policy objectives and impacts of public spending on agriculture.

2. TRENDS IN AGRICULTURE PUBLIC EXPENDITURE

49. **Agricultural public expenditures include spending on crops, livestock, fisheries, forestry, and irrigation but exclude rural development, food safety, and non-agriculture-related health programs.**²⁰ The review highlights the complexity of estimating agricultural expenditures due to their distribution across various ministries, agencies, and state-owned entities, as well as the fragmentation of public expenditure management. It also addresses the challenges of insufficient budget reporting, ad hoc spending in response to crises, and expenditures hidden within broader programs. And it disaggregates agricultural subsidies, offering a detailed breakdown by program and item, and

evaluates the efficiency of fund allocation using the OECD functional classification, which focuses on the effectiveness of expenditures in addressing market failures. Note that the OECD classification with the WTO's trade-focused classification of domestic agricultural support differs in the way in which expenditures are categorized and treated under trade rules (Appendix A2).

Note: This report analyzes the period from 2021 to 2023. Some in-depth topics, however, extend beyond this timeframe: it examines agricultural subsidies comprehensively for 2018 to 2023, and it also addresses certain key expenditure trends for 2024.

Main trends in agricultural public expenditure

50. **The government increased its agriculture-related expenditures from UZS 24.9 trillion (Uzbekistani som) in 2020 to UZS 27.2 trillion in 2023 (equivalent to USD 2.3 billion).**²¹ This constitutes a nominal increase of 9.2 percent. Expressed in USD, expenditures remained relatively stable at 2.3 billion USD, but with a drop to 1.9 billion USD in 2022. This growth is principally due to escalating

direct farm payments, as debt write-offs, and general sector expenditure are instead declining significantly (Table 2.1). A sizeable and increasing share of public resources went for the repayment of IFIs loans in agriculture. This agricultural debt reimbursement, which is not included in the following public expenditure analysis to avoid double counting, reached UZS 6.7 trillion in 2023, up from UZS 1.9 trillion in 2021.

Table 2.1. Total public agricultural expenditures, 2021–2023

	2021	2022	2023
Direct farm payments, trillion UZS	13.35	10.96	17.71
of which Debt write-offs (trillion UZS)*	2.90	0.91	0.69
General sector support, trillion UZS	11.62	10.72	9.51
Total agricultural budget, trillion UZS	24.98	21.68	27.22
Total agricultural budget, million USD	2,351	1,963	2,319
Total agricultural budget, % of GDP ²²	3.4%	2.4%	2.6%

Note: *After the completion of this report, the Ministry of Economy and Finance provided updated data on debt write-offs. According to these updated data, 3.7 trillion UZS were written off in 2022 and 3.5 trillion UZS in 2023. However, because these data were received while the report was already being prepared for publication, this is not reflected in the analysis.

Source: World Bank estimates.

51. **It greatly exceeds the OECD average of 0.5 percent, the non-OECD average of 0.8 percent, and the average levels in peer countries with comparable agricultural shares and per capita**

GDP, which are also 0.8 percent. While this reflects the government's commitment to the sector, it also raises concerns about fiscal sustainability and opportunity costs. Agricultural expenditures

outpace funding for health and school education, which potentially affects broader development priorities, and inefficiencies in resource allocation limit the impact of this spending. The share of public expenditures relative to gross agricultural output

(GAO) in 2023 was 6.4 percent, and relative to agricultural value added, 10.5 percent (Table 2.2). This high level of spending puts significant pressure on macroeconomic stability.

Table 2.2. Total public agricultural expenditures, relative terms, 2021–2023

	2021	2022	2023
As % of gross domestic product ²³	3.4	2.4	2.6
As % of consolidated budget expenditures	10.2	9.2	9.7
As % of gross agricultural product	7.9	6.0	6.4
As % of agricultural value-added	12.8	9.8	10.5

Source: World Bank estimates.

52. Even in comparison with more suitable peers, Uzbekistan allocates a greater share of its GDP to agriculture. These peers' agricultural public expenditures amount to 1.0 percent of the GDP compared with Uzbekistan's average of 2.8 percent of the GDP (Table 2.3).²⁴ Countries deemed suitable peers for Uzbekistan, such as China, Kazakhstan, and Viet Nam, where agriculture makes up a substantial share of GDP and employment, also invest significantly in irrigation, with expenditures ranging from 0.3 to 0.8 percent of GDP.

53. Given this high fiscal cost, spending quality is crucial to achieving the highest possible returns in economic and social benefits. Without high-quality spending, increased agricultural public expenditure can cause macroeconomic imbalances that reduce GDP growth and suppress demand for agricultural products. Therefore, any future increase in agricultural public expenditures in Uzbekistan

Table 2.3. Uzbekistan's agricultural public spending is much above that in selected countries, % of GDP

	2015–2017	2020–2022
Brazil	0.2	0.28
China	0.8	0.6
Israel	0.1	0.1
Kazakhstan	0.9	0.8
Philippines	0.6	0.5
Uzbekistan	2.2	2.8²⁵

Source: World Bank estimates, OECD.

must be aligned with fiscal discipline. The primary emphasis should be on enhancing spending quality and redirecting public expenditures from low-impact to high-impact programs and policy measures. This strategy promotes long-term, climate-resilient productivity growth rather than merely increasing agricultural spending.

Composition of Uzbekistan's public spending on agriculture

54. The OECD framework for analyzing budgetary support to agriculture distinguishes between direct farm payments (DFPs) and general services support (GSS). DFPs include payments based on outputs; payments based on variable inputs; payments for fixed capital investments; payments for on-farm services; coupled payments per hectare or animal; decoupled payments per hectare or animal; and other payments. GSS comprises agricultural knowledge and innovation systems (AKIS); inspections and controls; development and maintenance of infrastructure; marketing and promotion; costs of

public stockholding; and miscellaneous services.²⁶

55. This classification helps differentiate public expenditure with potentially high impact on long-term agricultural growth from low-impact spending. General sector support is regarded as provision of public goods and services, meaning that, if effectively implemented, they could yield substantial returns on agricultural investments. Investments in AKIS, in particular, are considered highly beneficial for agriculture, based on extensive evidence and international experiences (Table 2.4).

Table 2.4. Anticipated impact of agriculture public expenditure on long-term agriculture growth

Type	Public goods	Impact on agriculture growth
Direct farm payments		
Output subsidies	No	Low to negative
Variable input subsidies	No	Low to negative
Fixed capital formation subsidies	Conditional yes	Neutral to positive
Subsidies for on-farm services	Conditional yes	Neutral to positive
Per-ha or -animal subsidies (coupled)	No	Low to negative
Per-ha or -animal subsidies (decoupled)	Conditional yes	Neutral to positive
Payments based on non-commodity criteria	No	Low to negative
General support services		
Agriculture knowledge and innovations	Yes	High
Inspections and control	Yes	High to low
Development and maintenance of the infrastructure	Yes	High
Marketing and promotion	Yes	High
Cost of public stocktaking	Yes	High to low
Miscellaneous	Yes	High to low

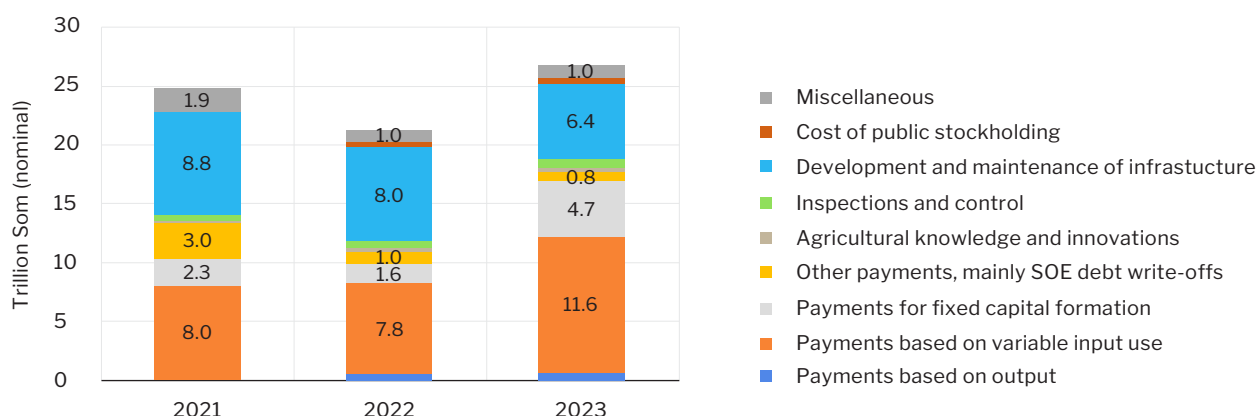
Source: World Bank 2021.

56. Most DFPs are provided as subsidies or public financing for private goods, which often distort farmer incentives and hinder long-term agricultural productivity. But some DFPs enhance agricultural productivity more effectively. For instance, payments for fixed capital formation can support farm asset modernization and mechanization, potentially promoting long-term climate-resilient growth. This is particularly so if these payments are conditional on using climate-resilient technologies or adopting sound agricultural practices, and steps are taken to prevent capture by a small group of large, typically affluent farmers. Similarly, payments for on-farm services, such as vouchers for public or private advisory services, can also foster agricultural growth. Decoupled payments—payments per hectare or animal without specific commodity production requirements—can boost agricultural growth by providing income to farmers without restricting what they produce. This allows farmers to

make production decisions based on market opportunities, access to inputs, and their knowledge and skills, among other factors. Adherence to climate-smart farming practices is often a requirement for receiving decoupled payments.

57. The Second Uzbekistan AgPER recognized progress on improving the allocative efficiency of public support in 2016–2020. But note that public expenditures were concentrated on irrigation and credit support for cotton and wheat, and GSS were low, particularly AKIS, inspection, and control services.²⁷ Agricultural public expenditure, during 2021–2023, was still skewed toward input subsidies (including payments for variable inputs, and for fixed capital formation) and infrastructure spending. The following categories of the agricultural budget are analyzed in the rest of this section: subsidies for the livestock sector, input subsidies, incentives for fixed capital formation, as well as export subsidies.

Figure 2.1. Agricultural public expenditures by major category



Source: World Bank staff estimates based on MoEF data and data from other public agencies.

Note: SOE debt write-offs were categorized as other payments/subsidies to agricultural producers in this analysis, to single them out and due to the impossibility of attributing more specific categories given the broad scope of SOE operations.

Output subsidies for livestock

58. The livestock sector has benefited both from generic agriculture subsidies and from some specific to animal production. Three lines of subsidies are specific to the livestock sector: free vaccination, output subsidies (eliminated as of 2025), and subsidies for purchasing and importing breeding animals. From a value standpoint, the latter two predominate and amounted to UZS 1.5 trillion in 2022–2024. Because output subsidies present several challenges, many countries have phased them out. They stimulate an increase in agricultural production and, in the short term, may indeed temporarily reduce livestock consumer product prices. But coupled output subsidies lose their effect on consumer prices when they remain in place for long periods.

59. Uzbekistan's efforts to phase out output subsidies for livestock products have been effective but may be reversed. After a temporary suspension, the government reinstated these subsidies in mid-2023.²⁸ The current subsidy period expired on December 31, 2023. These subsidies amounted to UZS 58.4 billion in 2021, increased to UZS 520.9 billion in 2022, and reached UZS 600 billion in 2023. In 2022, the value of these subsidies was 14 times higher than the funds allocated to high-quality breed animal import/purchase subsidies, which are intended to boost productivity in the sector. A resolution was recently adopted by the Cabinet of Ministers to introduce VAT refunds for livestock output, reducing VAT on meat, eggs, and milk from

12 percent to 6 percent. The refund program should be effective as of April 2025, with the adoption of the new budget. Both the current and proposed subsidy systems have primarily benefited a small share of registered producers who pay VAT.

60. Given Uzbekistan's role as a price-taker in global markets and the restricted number of eligible producers, VAT partial refund on animal products will likely have limited impact, with no clear evidence of their effectiveness in improving productivity or targeting the right beneficiaries. Although the evidence is less strong than for output-based subsidies, VAT refunds typically do not enhance production efficiency or long-term sectoral growth. For instance, studies from the European Union and Latin America indicate that direct production-based subsidies often lead to market distortions and inefficiencies without addressing structural challenges in the sector.

61. Like output subsidies, VAT refund can also distort resource allocation and undermine market efficiency. By reducing the pressure to innovate and optimize, and distorting price differential among food products, they encourage excessive output without regard to market demand or sustainable farming practices. This can result in overgrazing, soil degradation, and other environmental issues, as farmers increase livestock numbers beyond sustainable levels. The overproduction driven by subsidies may also lead to distorted pricing and inefficient input

use, further limiting productivity improvements. For livestock sectors to thrive, support should focus on long-term investments in infrastructure, genetics, and efficiency rather than output-driven subsidies.

62. VAT refund skews support towards large producers, does not effectively reduce consumer prices and generates forgone tax incomes. By design, only legal entities that are registered and VAT payers can benefit from VAT refunds, and they account for only 3–4 percent of meat production. This increases disparities between small holders and larger farms, and the scope of the measure is too limited to affect consumer prices. Further

partial VAT exemption represents a large resources commitment (estimated at 500 to 600 billion UZS per year), in the form of forgone tax income, that would have higher impact if directed to AKIS-type support for the sector.

63. A more effective and sustainable strategy would be to redirect public support toward capital investment and high-quality breed development.

This includes stronger investment in fixed capital, improved veterinary and advisory services, and enhanced genetic stock to raise productivity. Feed cost is among the main challenges of Uzbekistan's livestock sector (Box 2.1).

Box 2.1. Livestock growth and feed constraints

Uzbekistan's livestock sector faces major challenges due to the growing number of livestock and declining feed resources. Between 1992 and 2017, cattle numbers increased 2.3 times, meat production 2.9 times, and milk yield 2.7 times, but fodder crop areas shrank by 73 percent, and pasturelands area and productivity decreased. Many small farmers struggle with feed shortages, limiting their ability to sustain livestock and adopt better management practices. A 2019 survey found that 79 percent of respondents, including dekhkans and livestock households, cited land shortages for feed crops as a key barrier. And 50 percent of dekhkans noted limited pasture access, while 91 percent of farmers wanted to expand production but faced land constraints. Small-scale farmers often rely on expensive feed or gathering natural fodder, highlighting the need for policy changes to improve feed availability and grazing land access.

The restricted free farming also contributes to Uzbekistan's animal feed shortage. To compensate, households collect all crop residues from fodder and wheat fields instead of using them as mulch or organic fertilizer. This practice reduces opportunities to improve soil health and expand green manure crops, which are key to enhancing climate resilience.*

Uzbekistan's approach to pasture management is grounded in its 2019 Law on Pastures, which defines different types of pasturelands and assigns responsibilities for their use and conservation. This legal framework emphasizes state oversight and requires local governments to develop territorial programs for sustainable pasture utilization. Building on this foundation, Uzbekistan is currently developing a national pasture management strategy, incorporating measures to restore degraded lands and improve grazing efficiency. As part of this effort, the government is launching the Electronic Pasture platform, set to be operational by December 2025. This digital system aims to optimize pasture use through monitoring and data-driven management, ensuring more sustainable livestock farming practices.

* A companion report to this AgPER, "Uzbekistan: Pathways to Climate-Smart Agriculture," provides evidence from the field and demonstrates the financial benefits to farmers from crop diversification and a shift to a greater share of cultivation of feedstocks.

Source: Naumov and Pugach 2019.

The country should provide support to capital investment and innovation in feed efficiency gains and the development of novel feed resources that drive long-term effects on production costs and sectoral resilience. Other countries, like Australia and Chile, promoted a successful transition path from coupled subsidies toward market-oriented and innovation-driven models of support for the livestock sector, that help address both economic and environmental challenges. Uzbekistan should follow these models by shifting its focus from output subsidies to targeted investments that drive long-term productivity gains and sectoral resilience. It has initiated some of these investments, with credit lines from development partners providing funds for fixed capital investments, including high-quality breeding animal imports.

64. Temporary trade restrictions set by exporting countries pushed up domestic prices, as in July–August 2024, when meat prices surged in Uzbekistan’s market. So policies and investments to diversify import sources and improve logistics will further contribute to stabilizing domestic prices, while current subsidies for livestock production are not effective to achieve the price stabilization policy goals.

65. Subsidies for purchasing/importing high-quality breeding animals as part of livestock genetics programs can improve livestock production, though outcomes in Uzbekistan have fallen short of expectations. This subsidy dropped from UZS 69 billion in 2021 to UZS 4 billion in 2023. If combined with improved eligibility criteria and stronger investments in general animal health and sanitary services, they could prove more effective. Subsidies should be part of a broader strategy for genetically improving the cattle and sheep herds to

ensure broader benefits from imported animals with superior pedigrees. To further develop the livestock sector, the country also needs to invest more in animal health, feeding, and animal husbandry practices. As with other subsectors, the success of these programs will depend on the quality of their implementation.

66. An additional impetus to eliminate output-coupled subsidies in the livestock sector stems from the WTO requirements. Through the WTO lens, price-related measures and output-coupled subsidies must be included in the Total AMS (amber box) and form part of a country’s WTO reduction commitments. Uzbekistan’s livestock sector subsidies, particularly output subsidies, fall under these reduction commitments, as they are directly linked to production and can distort trade. By contrast, support provided through public services—such as extension and advisory services, veterinary services, pest and disease control—may fall under the green box.

67. Optimizing livestock management is essential for boosting productivity and achieving Uzbekistan’s climate goals. Climate change is expected to severely hit agriculture and livestock, with productivity losses of 2.0–3.5 percent by 2050 and a decline in livestock production by 8–13 percent by the 2040s. Rising temperatures may also increase waterborne and heat-related illnesses, leading to a 0.6–1.2 percent rise in mortality. To address these challenges, Uzbekistan must enhance animal health, management, and breeding, while shifting to lower-emission livestock (fowl) and controlling herd growth. Climate-smart livestock management is crucial to reducing methane emissions, requiring stronger monitoring and implementation mechanisms in agricultural policies and tracking farmers’ adherence to sustainable practices.

Variable input subsidies and debt write-offs

68. The share of payments based on variable input use increased from 32 percent percent of total agriculture public spending in 2021 to 42 percent in 2023. Horticulture, an emerging agricultural subsector, received a very modest UZS 40 billion of variable input subsidies, which equates to 0.1 percent of total agricultural public expenditures or 0.3 percent of variable input subsidies. The government had to inject capital into some state-owned

banks (SOBs) to continue providing working capital loans to the cotton sector. The capital injection was required due to the extended repayment period for concessional loans to cotton-textile clusters and their failure to repay previously allocated loans, which ultimately obscured underlying financial difficulties in the sector. The only objectively justified increase in variable input subsidies was for higher electricity tariffs, which nearly doubled the cost of irrigation

systems. This increase in irrigation costs accounted for three-quarters of the total rise in variable input subsidies between 2021 and 2023.

69. Recurrent write-offs of agri-value chain related SOE debts are a significant contingent budget liability, and they signal a need to speed up adjusting the industrial structure of the input supply sector by promoting competitive input markets.

SOEs benefited from frequent debt write-offs—which amounted to UZS 686 billion (2.5 percent of total agricultural budget support in 2023, down from a peak of UZS 2.9 trillion (11 percent of total agricultural budget) in 2021. These recurring write-offs and concessional loans indicated on economic governance issues, such as reliance on nonmarket mechanisms, weak SOE corporate governance, and ad-hoc administrative decisions. These write-offs declined substantially owing to large scale privatization and liquidation of “Cotton Ginnery” and “National Wheat Processing Company” during previous years. However, the causes of poor performance of the rest

of existing SOEs in the agri-food value chain (e.g. mineral fertilizer producing, fuel supply) need to be addressed, since these issues could easily reemerge and crowd out public agriculture spending in areas with a higher impact on productivity, such as AKIS and incentives for fixed capital investment and climate-smart agriculture technologies. These SOEs and monopolies might take resources not in form of subsidies, but through inflated prices for inputs that diminish net margins of agriculture and its capacity to generate on-farm investment.

70. The share of miscellaneous expenses remains high, averaging 5 percent of total agricultural expenditure.

A significant portion of this category relates to administrative costs of the Ministry of Agriculture forestry-related expenditure, general financing of state-owned enterprises for which it was not possible to attribute a more specific categorization, and other spending unclassifiable due to lack of detailed information about its nature.

Subsidies for capital formation and other investment support

71. Scarce production capital, particularly in modern machinery and mechanization equipment, is a significant challenge for the agricultural sector.

This deficiency is largely attributed to long-standing historical policy distortions and underinvestment, which have hindered productivity and efficiency. Farmers have been compelled to focus on monoculture production of cotton and wheat—crops not only less profitable but also less labor-intensive—without properly considering local growing conditions. This approach has limited the uptake of modern farming practices and technologies.

72. The agricultural sector also suffers from insufficient technology adoption and a lack of mechanization, further impeding productivity.

To address these issues, Uzbekistan needs to invest substantially to improve farming practices, upgrade machinery and mechanization, and enable access to up-to-date information on markets, weather, technologies, and agricultural techniques. Such investments are crucial to increase efficiency, stimulate productivity, and ultimately reduce poverty in rural areas. Note that investment subsidies and input support measures

targeted at low-income or resource-poor farmers can be consistent with WTO rules under Article 6.2 of the Agreement on Agriculture (AoA). If Uzbekistan secures a “developing” status, these critical investment measures can be exempt from reduction commitments, which allows developing countries to provide investment subsidies and support for agricultural inputs without subsidy reduction commitments.

73. Recent incentives for fixed capital formation are a positive development.²⁹

Uzbekistan introduced subsidies and interest payment compensation for fixed capital formation in 2021 in response to high capital demand (Table 2.5). The Entrepreneurship Fund for fixed capital and concessional loans through the Every Family is Entrepreneur program play a major role in modernizing machinery and mechanization. Uzbekistan needs to assess the effectiveness of support through those programs in order to determine their outcomes. However, these policy measures were increasingly used to support the least productive crops, with limited effect on the existing crop structure, thus curbing the potential for structural transformation in agriculture.

Table 2.5. Incentives for fixed capital formation introduced since 2021, Million UZS

	2021	2022	2023
Subsidies from the Entrepreneurship Fund for fixed capital	455,618	143,171	3,214,228
Concessional loans on agriculture within “Every Family is Entrepreneur” program	725,767	811,944	809,817
Subsidies from Orchards Fund	104,478	105,682	170 000
Tax exemptions for water saving technologies	48,416	66,432	102,693
Wells for household plots in water-scarce areas (Farmer’s Council)	25,630	95,650	65,319
Water saving subsidies from various public agencies (MoA, State Committee for Veterinary and Livestock Development (SCVLD), MoA for Khorezm and Karakalpakstan)	34,791	30,569	60,596
Support from the Fund for Attracting the Population to Entrepreneurship	-	30,780	45,012
Subsidies for water supply needs (Silk Committee)	4,440	4,920	19,876
Other (introduced before 2021)	943,037	337,071	322,597
Total incentives for fixed capital formation	2,342,177	1,626,219	4,810,137

Source: World Bank Staff estimates.

Notes: Sub-total of all other incentives for fixed capital formation, which were already used prior to 2021.

74. From the WTO perspective, such measures can be redesigned and streamlined to ensure compliance with Uzbekistan’s future WTO commitments.

If designed as structural adjustment assistance, investment support could qualify under Annex 2 of the Agreement on Agriculture as “Structural adjustment assistance provided through investment aids.” This requires that support be provided in a way that does not link benefits to specific production levels or prices. Such investment incentives could also be exempt under Article 6.2. To maintain necessary support while adhering to international trade obligations, these measures must align with WTO provisions, ensuring that capital support is targeted, transparent, and non-trade-distorting.

75. Subsidies for fixed capital formation have doubled in nominal terms, and in terms of the share of public agricultural expenditure, they increased from 9.4 percent to 17.4 percent. This type of support is particularly crucial for agricultural transformation and climate change adaptation. Notable areas of assistance included agricultural mechanization, new water-saving technologies, expansion of orchards and vineyards, purchase of breeding livestock, and support for smallholders. The volume and structure of this support fluctuated

between 2021 and 2023, primarily due to revitalized interest payment compensation for greenhouses in 2023. However, the main aim of this subsidy was not to support greenhouses—it was to keep existing ones operational by partially mitigating the negative impact of disrupted natural gas and electricity supplies during the winter of 2022/2023, which nearly bankrupted the industry. Such significant bankruptcies inevitably create major issues for SOEs.³⁰

76. Preferential loans under Every Family is an Entrepreneur, which has governance challenges and needs better transparency mechanisms, also delivered subsidies to fixed capital formation.

The program was initiated in 2018 and aimed at: supporting entrepreneurial initiatives of the population by providing preferential loans; training the population in entrepreneurial skills and providing practical assistance in launching new business; creating additional jobs by facilitating the expansion of entrepreneurial activities; and creating opportunities for the population to earn additional income through financial support for organizing home-based/freelance work entities and small producers (micro-firms). There is evidence of loan approvals without the required assessments, a high share of non-performing loans (an estimated 7.9 to 20

percent), misuse by bank officials, and designated program suppliers delivering substandard goods with inflated prices.³¹ Program innovations like transparent digital payment platforms can help address these challenges.

77. Subsidies to support on-farm water efficiency investments have increased since 2018. The largest capital investment program supported water-saving technologies, with positive effects on fruit orchards and private sector projects. Other promising climate-smart capital investment programs—such as incentives for soil fertility improvement, laser leveling, organic cropping, and support for smallholder cooperation—remained underfunded or unused despite budget allocations. Key barriers include land tenure insecurity and concerns about how applications for subsidies are managed. None of the programs monitor the impacts on productivity and targeting.

78. The agricultural incentive program for fixed capital investment faces significant limitations that hinder its effectiveness in supporting farmers.³² The program's scope is restricted, as it does not cover the construction of facilities, capacity building, or innovation uptake. Additionally, technical assistance costs are excluded, leading to the improper use of equipment like drip irrigation systems, which reduces the potential impact on farm productivity. A major challenge is farmers' lack of awareness about the program and funding opportunities, which affects both the quality and quantity of applications. The rebate-based system, which provides a 15 percent refund only after the investment is made, creates financial uncertainty for farmers who must first secure funds from their own or borrowed resources. Moreover, the absence of a clear timeline for application approval, which can range from one month to over a year, further discourages participation. Regional inconsistencies and unofficial parallel approval processes also delay the disbursement of funds, making the system inefficient and unpredictable (see details of the findings from the field mission in Uzbekistan in the Appendix A3).

79. In addition to financial and procedural challenges, the program's design limits the types of investments eligible for support. Currently,

subsidies are available only for mechanization, livestock, irrigation equipment, and fruit saplings, excluding other important on-farm investments. Farmers are restricted to purchasing equipment from a predetermined list, which not only limits choices but also forces them to pay higher-than-market prices, effectively reducing the subsidy's value. The focus on primary production, with little support for marketing and processing, further limits farmers' ability to improve profitability. The application process remains paper-based and centralized in Tashkent, creating logistical difficulties for rural farmers. Additionally, the mandatory insurance requirement, with rates higher than the market average, adds another financial burden. Poor-quality installations of technologies like drip irrigation systems often leave farmers with debt and unusable equipment, while the government struggles to hold suppliers accountable. These structural flaws prevent the program from effectively supporting farmers and driving agricultural development.

80. Capital investment in agriculture at the farm level drives growth and productivity most effectively when it responds to farmer demand rather than top-down supply-side directives. Demand-driven investments—where farmers identify and prioritize their own needs—tend to be better aligned with local agro-ecological conditions, market opportunities, and resource constraints, thereby yielding higher economic and social returns. Evidence from multiple countries confirms that supply-driven capital investment, often directed through rigid subsidy schemes can result in misallocated resources, underused assets, and limited productivity gains. In contrast, programs that empower farmers to co-invest in technology, infrastructure, or machinery of their choice—such as matching grants or decentralized credit facilities—have shown superior outcomes in terms of efficiency, adoption, and resilience (FAO, 2023).³³ These findings underscore the importance of designing capital investment programs in Uzbekistan that are responsive to farmers' actual production constraints and opportunities, rather than those assumed by administrators or suppliers. Without this responsiveness, public investment risks distorting markets and reinforcing unsustainable practices.

Export promotion subsidies and incentives

81. New subsidies for export promotion do not appear to have had a positive measurable impact on exports, and they are not WTO-compliant.³⁴

Meanwhile, ad hoc export restrictions hurt producers. Public support for export promotion should be revised and brought in compliance with the WTO, as agricultural export growth remains slow. While the textile sector's export growth in 2021–2022 was driven by favorable market conditions rather than increased competitiveness, agro-logistics remain underdeveloped, and Uzbekistan has yet to create an effective agricultural market information system. Consequently, Uzbekistan's agriculture sector struggles to capture existing opportunities in lucrative markets and diversify its agri-food exports beyond cotton fiber and yarn. In addition, it should focus efforts and resources on developing inclusive value chains, including supporting infrastructure.

82. The government established an Export Promotion Agency and allocated significant subsidies through it.³⁵

Other forms of export support include developing agro-logistics, and organic agriculture, introducing international standards, and supporting horticulture to diversify the sector and enhance exports. But the share of such support in total agricultural expenditures has fallen since

2020. Although this review does not address how efficiently these programs were implemented, the limited progress of agri-food exports is concerning. To stimulate agricultural exports other than the well-established cotton fiber and yarn, the country needs more investment in human capital and skills for participating in export markets.

83. Uzbekistan has eliminated most tariff barriers in agri-food trade.

Nevertheless, administered prices and trade restrictions such as export bans, which have occasionally been used for selected products, harm farmers and their performance. A ban on animal skin exports results in an estimated annual loss of around USD 120 million and disproportionately affects smallholders. Below-market purchase prices for silk cocoons lead to an estimated USD 50 million loss for silk farmers. And a temporary ban on poultry egg exports lowered prices by an estimated UZS 200 per piece, whereas the subsidy only provided UZS 50 per piece. More effective support for the poultry sector would involve restraining administered prices and export limitations and stimulating investment by strengthening general services. (Price incentive analysis should assess the difference between international market prices and (farmgate) prices received by farmers, as a follow-on to this PER.)

Public spending on general services support

84. The share of GSS spending fell from 47 percent of total budgetary support to agriculture in 2021 to 35 percent in 2023, primarily due to reduced capital investments in off-farm irrigation and drainage infrastructure. Note, however, that these investments were at their highest level in 2021. Inspection and control expenses remained nearly unchanged in real terms, largely due to the budgeting rules governing these organizations, which kept expenses from fluctuating significantly.

85. Managing public food reserves emerged as a major expense category in 2022 and 2023. After the country liberalized its wheat state procurement system in 2022, farmgate prices for wheat were driven by market forces for the first time in the history of independent Uzbekistan. The transition to this new system, combined with market volatility

due to geopolitical tensions, increased expenses of managing the country's strategic food stocks. Controlled stock releases helped curb rising wheat prices and avoid panic buying during the price spike in September 2023, mitigating the adverse impacts of rising food prices. The measure was effective because of Uzbekistan's well-functioning commodities exchange (including a wheat exchange), which was established as part of recent agriculture market price liberalization reforms.³⁶

86. The government provided marketing and export support through the Export Promotion Agency, established in 2018. It allocated most funding to reimbursing part of the transportation costs (a prohibited export subsidy inconsistent with WTO rules). But it also directed resources toward new market entry initiatives, including covering

some expenses for obtaining international certifications and participating in international exhibitions (if these measures meet the criteria of Annex 2 of

the WTO Agreement on Agriculture (AoA), they can be green box subsidies).

Table 2.6. Agriculture public expenditures based on OECD classification, UZS

	2021	2022	2023
Direct payments to farmers	10,357,357	9,914,414	16,903,524
Payments based on outputs	58,393	520,925	600,000
Payments based on variable input use	7,956,787	7,767,269	11,564,330
Payments for fixed capital formation	2,342,177	1,626,219	4,739,195
Payments per hectare or animal (coupled)	-	-	-
Other payments, mainly SOEs debts write-offs	2,994,900	1,044,446	808,368
General development support services	11,623,284	10,718,465	9,512,418
Agricultural Knowledge and Innovations	208,215	318,938	399,688
Inspections and Control	550,788	618,289	697,595
Development and maintenance of infrastructure	8,761,638	7,955,085	6,377,233
Marketing and promotion	199,877	398,520	479,220
Cost of public stockholding	-	474,500	557,900
Miscellaneous	1,902,767	953,133	1,000,782
Total Budget Support	24,975,541	21,677,325	27,224,311

Source: World Bank staff estimates based on MoEF and public agencies.

Note: SOE debt write-offs were categorized as other payments/subsidies to agricultural producers in this analysis, to single them out and due to impossibility of attributing more specific categories given the broad scope of SOE operations.

87. The Agriculture Development Strategy 2020–2030 called for increasing the share of expenditure on agricultural knowledge and innovation systems to 1 percent of gross agricultural output, as also recommended by the second AgPER.³⁷

However, agricultural research expenditures accounted for only 0.7 percent of total agricultural public expenditure and just 0.03 percent of GAO in 2023. The aim was for research expenditure to reach 0.5 percent of GAO by 2025 (indicator 6.2, approved by UP-5853). Combined with agricultural education, actual spending on this aspect constitutes only 1.5 percent of total agricultural expenditure and 0.09 percent of GAO in 2023. In contrast, AKIS in OECD countries constitutes 8.1

percent of total agricultural expenditure and 1 percent of the GAO, and in developing countries 4 percent and 0.4 percent, respectively, with Brazil at 8.3 percent and 0.7 percent, Chile at 29 percent and 0.5 percent, and China at 4.8 percent and 0.3 percent. In 2020 prices, AKIS expenditures decreased from UZS 659.1 billion in 2019 to UZS 183 billion in 2021, primarily due to the abolition of compulsory secondary vocational education, which reduced spending on agricultural colleges. Instead of reallocating these funds to other productive programs, the government withdrew them from agriculture. Spending on this aspect then rose to UZS 275 billion at 2020 prices but remained below the target value.

Climate taxonomy of agriculture public expenditures

88. As the GoU expanded public expenditure on agriculture, it directed more funding to climate change mitigation and adaptation. A rapid mapping to assess the intended effects of public expenditure instruments reveals growing volumes of expenditures that can be tied to both positive and negative

outcomes in this area (Box 2.2). This review has developed an initial “taxonomy” or classification of budget line items according to their likelihood to promote or hinder climate adaptation, climate mitigation, or both (Table A5.2).

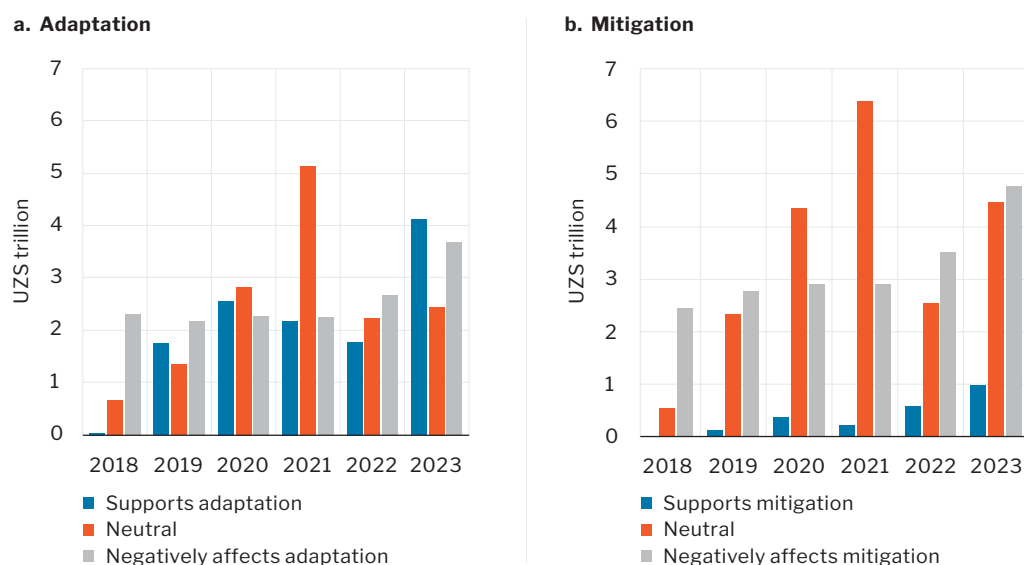
Box 2.2. Mapping current state support for climate change adaptation and mitigation in agriculture

Primary agriculture has a large natural resource footprint in Uzbekistan. It consumes 90 percent of the country's water resources and uses considerable energy resources (motor fuel and natural gas for mineral fertilizer production and 7.2 billion kWh of electricity for pumping water). Agriculture, forestry, and other land uses are responsible for 45.7 Mt CO₂ emissions and account for 19 percent of total emissions. Livestock is a main emitter, contributing to two-thirds of total agricultural GHG emissions. Inefficient and harmful resource use is a significant ongoing source of environmental pressure. Uzbekistan ranks poorly in water use efficiency, energy efficiency, and agricultural productivity. With more than 500,000 hectares of arable land affected by salinity or water-logging, the impacts of inadequate natural resource management continue to weigh on productivity.

For climate-smart agriculture (CSA) practices to be adopted at scale, the GoU must put adequate policies and incentives in place, a process which it has begun. This includes the Action Plan for Transitioning to a Green Economy and Ensuring Green Growth until 2030 and the Ministry of Agriculture's climate adaptation and mitigation plan for 2024–2026. In addition, the Agriculture Modernization Strategy priorities natural resource use efficiency and environmental protection and sets targets for 2030 for emission reduction (50 percent) and other areas. It also addresses sustainable practices, salinity, and forested area. The Livestock Development program also lays out CSA plans for livestock.

A simple green taxonomy approach (see the taxonomy matrix in Appendix A5) maps public expenditure to expected outcomes in climate change mitigation and adaptation (Box Figure 1).

Box Figure 1. Mapping state support to climate adaptation and mitigation outcomes, trillion UZS



The share of public expenditures affecting climate adaptation, whether positively or negatively, increased significantly over 2018–2023. Some of the largest public expenditures seen as positively affecting adaptation are support for cotton drip irrigation, silk production, agriculture insurance and machinery. Conversely, output subsidies in the livestock sector are the largest public expenditures with a potentially negative affect on adaptation. Funding for promising support programs—for soil fertility, improved cotton production, laser levelling, organic cropping, and supporting small-holder cooperatives—was not disbursed at all, despite being allocated in the state budget. For some programs, a very limited amount of support was disbursed, including for measures to improve pest management, agrometeorology, and so on. The main reasons: low interest from farmers and management issues.

The volume of mitigation-related public expenditure has increased but remains small. The main expenditures are related to poultry meat and egg output, silk production, and water-saving technologies. Some climate mitigation subsidies, like subsidies for generating renewable energy, were not disbursed at all, even though funds were allocated to them.

The volume of expenditures that are detrimental to mitigation has increased steadily over time. Subsidies coupled to cotton production as well as livestock (cattle and ruminant) output make up the largest share of climate-harming subsidies. These subsidies result in higher greenhouse gas emissions, reduce farmer productivity, and can cause market distortions. Subsidies coupled to cotton-wheat production—concessional working capital loans and input subsidies mainly for mineral fertilizer and fuel—encourage intensification and discourage farmers from employing more complex crop rotations. Because diversification can help to break weed and insect cycles and fix nitrogen by including legumes, nonrotational cropping patterns can require more pesticides and fertilizer. Uzbekistan's high use of fertilizer has contributed to extensive nitrate and phosphorous pollution in all major rivers and in groundwater, as well as high ammonia and nitrous oxide emissions. By removing input subsidies for these major crops, the government would contribute to much-needed efficiency improvements through diversification.

Subsidies coupled to livestock output are also particularly detrimental to climate change, since they support the most emission intensive agricultural products.

3. IN-DEPTH ANALYSIS OF AGRICULTURAL SUBSIDIES

89. **At the request of the Government of Uzbekistan, this AgPER emphasizes collecting data on and analyzing agricultural subsidies.** This category of agricultural public expenditure has grown rapidly during the reform period starting in 2018, and the GoU has expressed concerns about their efficiency and governance. Agri-subsidies are direct payments to agricultural producers, in accordance with the OECD classification.³⁸ Direct payments to agricultural producers encompass funds disbursed directly from the Consolidated Budget to farmers' accounts and support mechanisms such as concessional loans, credit guarantees, debt write-offs, and tax and customs exemptions. Subsidies in this chapter do not cover public expenditures for electricity consumed by pumping stations of the Ministry of

Water Management. According to the WTO classification, direct payments can be either trade-distorting or non-trade-distorting, depending on the criteria described in Annex 2 of the WTO AoA.

90. **Agri-subsidies consistently increased until 2021, tripling from 2018 in current prices.**³⁹ In the peak year of 2021, there were 9,530 billion UZS in agri-subsidies, equivalent to 1.3 percent of GDP⁴⁰ and 6.36 percent of state budget expenditures (Table 3.1). However, in 2022, agri-subsidies declined, primarily due to a UZS 2 trillion reduction in debt write-offs from 2021. Although net-of-debt-write-off agri-subsidies fell in 2022, their total value remained nearly equal to that in 2020. Then in 2023 they increased significantly—by 53 percent (Figure 3.1).

Table 3.1. Structure of agri-subsidies, 2021–2023, billion UZS

	2018	2019	2020	2021	2022	2023
Direct expenditures—agri-subsidies	283.5	1,157.3	3,377.2	3,485.1	1,881.5	5,099.1
Imputed agri-subsidies	2,728.3	4,104.2	4,279.2	6,045.5	4,777.9	5,131.7

Note: Imputed interest rate subsidies include the difference between market interest rates and the interest rates at which subsidized loans are extended, the imputed value of tax exemptions, and so on.

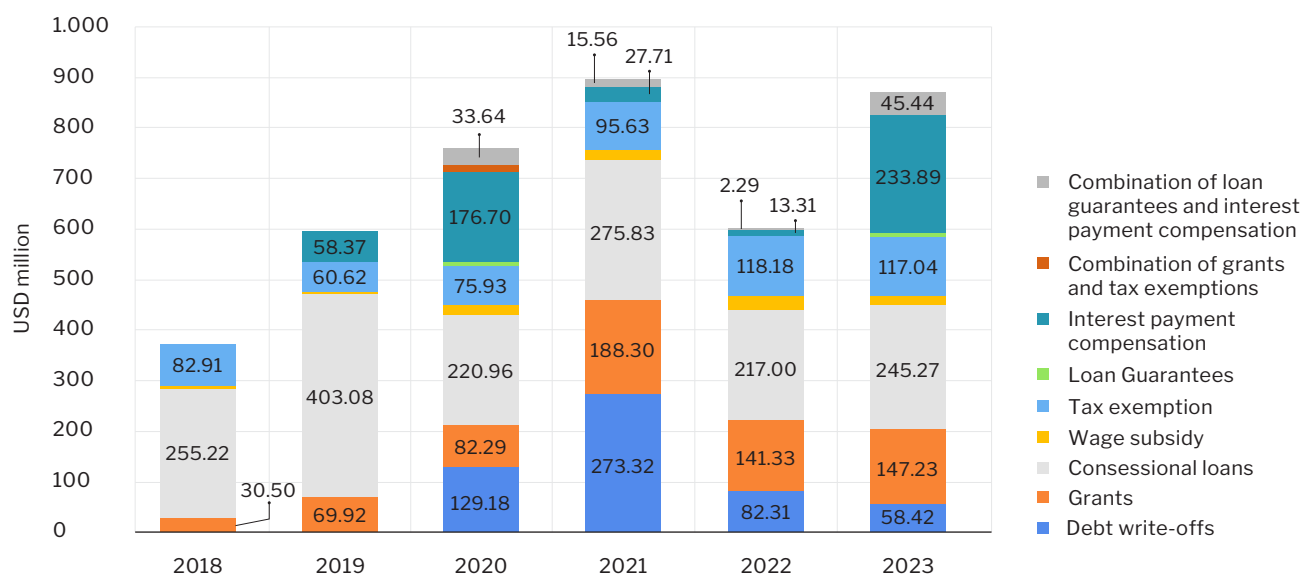
Source: World Bank staff estimates.

91. **Subsidy instruments and the agricultural subsectors they target expanded after 2017, resulting in a more diversified structure of direct farm payments.** In 2017, nearly all agri-subsidies targeted wheat and cotton production by providing low-interest working capital for input purchases. Starting in 2018, the government-initiated subsidies for the horticulture and livestock subsectors, introduced less distortive tools such as interest rate compensation, increased the scale of investment matching grants, and launched a large-scale program focused on water-saving tech-

nologies (Figure 3.1). In this context, it is especially important to develop and implement robust monitoring systems to evaluate subsidy performance and shift budgetary funds to subsidies that have the highest impact and are well targeted.

92. **As with general agricultural public expenditure, both the quantity and the quality of subsidies significantly impact the sector.** This review primarily analyzes the functional structure, tools, beneficiaries, and institutional setup of subsidies to assess their quality.

Figure 3.1. Dynamics and structure of agri-subsidies, by instrument



Note: Concessional loans include the imputed value of interest rate subsidies. The category of interest payment compensation is the amount of funding transferred from the government to commercial banks. The category of 'combination of loan guarantees and interest payment compensation' could not be split because it was provided as an aggregate amount.

Source: World Bank staff estimates.

Structure of agri-subsidies based on the OECD classification

93. The agricultural subsidy system has been transforming since 2017. Prior to 2017, it primarily focused on highly distortive administrative public support for the cotton-wheat monoculture. Since 2017, several positive shifts have emerged: to more market-based tools; to more subsectors, including livestock and horticulture, with public support extending to food processing, storage, and agro-logistics; from variable inputs to capital accumulation, such as interest payment compensation for capital loans and investment matching grants; to objectives beyond output increases, such as water saving and job creation; and to increased support for smallholders.

94. Subsidies for variable inputs dominate the agricultural subsidies structure. Their share fell until 2020 but then began to increase again. As outlined in other chapters, such incentives do not enhance efficiency and competitiveness in Uzbekistan's resource-intensive agriculture. And nearly all subsidies for variable inputs had been linked to cotton and wheat cultivation. Only in 2022 did the government begin allocating subsidies to the horticulture sector, though its share of total subsidies remains very low. From a WTO lens, such subsidies do not comply with green box requirements.

95. Subsidies tied to cotton-wheat production, such as concessional working capital loans, essentially constitute subsidies for mineral fertilizers and fuel inputs and disincentivize farmers from adopting more complex crop rotations or increasing farming productivity. Crop diversification can disrupt weed and insect cycles and often involves legumes, which fix nitrogen. Nonrotational cropping patterns, however, can lead to increased pesticide and fertilizer use. The coupled nature of these subsidies locks farmers into monoculture practices and weakens their ability to adapt to changes in climate, soil, and market conditions by disincentivizing change in what they choose to produce.

96. Variable input subsidies likely contribute to significant overapplication of nitrogen fertilizers. On average, farmers in Uzbekistan apply 255 kilograms (active content) of mineral fertilizers per hectare, 74 percent higher than the global average and 2.9 times higher than the average for Europe and Central Asia.⁴¹ Extensive fertilizer use in Uzbekistan leads to significant nitrate and phosphorus pollution in all major rivers and groundwater in agricultural areas, with crops absorbing only about 45–50 percent of all the nitrogen applied to fields.

Improving soil health to increase nitrogen efficiency to 75–80 percent would greatly reduce emissions from both agriculture and the chemical industry. Currently, there are no restrictions or prerequisites, such as soil testing, for applying mineral fertilizers purchased under subsidy programs.

97. A positive development is the notable increase in both the share and value of subsidies allocated to fixed capital formation. However, after reaching a peak in 2020, both their share and value declined sharply in 2021 and 2022 before regaining ground in 2023. Excluding subsidized loans provided under the Every Family is an Entrepreneur program—which also includes support for inputs and capital investments, the value of subsidies for fixed capital formation diminished annually after 2020. By 2022, the share declined to merely 9.1 percent of total agri-subsidies. Concurrently, the agricultural sector has significantly less agricultural machinery, logistical centers, and innovative technologies than it needs for implementing climate adaptation and mitigation strategies, enhancing food safety in the country, and developing export capacity. For instance, acquiring laser levelers alone requires an estimated investment on the order of USD 100 million (total amount, not subsidy).⁴²

98. Subsidies for on-farm services averaged approximately 2.5 percent of total agri-subsidies in recent years. But this category includes subsidies to cover the expenses of the Accounting Centers for wheat and cotton farms. These subsidies are unproductive because they are linked to the low profitability of cotton and wheat production and the de facto objective of the subsidy is to offset costs associated with administering and enforcing cotton-wheat input subsidies. Therefore, this tool could be better categorized as a variable input subsidy rather than a subsidy for on-farm services. After deducting this subsidy, the true share of on-farm service subsidies

shows a decrease over the past two years to 0.9–1.5 percent of total agri-subsidies.

99. Output-based subsidies have been phased out and replaced with VAT refund. When Uzbekistan began reforming its agriculture sector, the only output-based subsidy was for cultivating cotton in low-fertility areas. This subsidy was abolished in 2019. Subsequently, output subsidies were reintroduced to support livestock products and have experienced rapid growth, both in monetary and comparative terms. The government has eliminated these subsidies in 2025 and planned their replacement by VAT refunds for animal products as of 2026.

100. In 2021, other subsidies including debt write-offs and concessional loans to SOEs increased sharply and accounted for more than 20 percent of total subsidies. These subsidies were allocated to support highly inefficient SOEs that, despite their mission to support the farming sector, tended to implicitly penalize agriculture through elevated input prices and low quality services. Most of these SOEs (in the agri-food value-chain sector) such as “Cotton Ginnery” and “National Wheat Products Company” were in the process of gradual liquidation/privatization, that reduced the need for debts write-offs. However, outstanding debts started to accumulate for other enterprises. E.g in 2024, the government prolonged cotton-textile clusters’ outstanding debts, given their precarious financial condition and the potential for substantial debt write-offs (as referenced in Presidential Decree #103). At the end of August 2024, about 29–36 cotton-textile clusters forfeited their special status due to significant outstanding debts to the Agri-Fund. The existence and magnitude of these subsidies indirectly suggest persistent governance issues within agriculture-related value chains and the need to accelerate reforms in the agriculture sector.

Subsidy structure by type of instrument

101. In 2018, agricultural subsidies consisted of only three types of support mechanisms. Preferential lending emerged as the most significant tool, comprising 69 percent of all subsidies. The government then introduced new support mechanisms, notably grants.

102. In 2020–2021, the value of grants increased 2.5 times. Although the amount fell by 25 percent in 2022, it remained six times higher than at the initial stages of the reforms. Notably, most grant instruments are for fixed capital formation, employment, productivity growth, climate

adaptation, and related areas. But in value, the largest grants are associated with livestock output and other non-productive payments, predominantly linked to cotton and wheat.

103. Due to high demand for capital, the government introduced a new support mechanism: interest payment compensation. This tool peaked in 2020 at UZS 1.8 trillion, offering several advan-

tages. They do not distort the market. And initially, they were actively used for fixed capital formation in agricultural subsectors other than cotton and wheat, as well as for the food industry, storage, and logistics. However, following 2020, the government began allocating interest payment compensations to working capital loans for cotton-textile clusters, specifically for settling raw cotton purchases.

Box 3.1. State-owned enterprises in agricultural value chains

SOEs still constitute a large portion of the economy in Uzbekistan, with these in agricultural value chains can be categorized as:

- Fuel suppliers: UzbekOilGaz and subsidiaries.
- Mineral fertilizer suppliers: National Chemical Company with subordinate companies. However, 1–2 of these enterprises were privatized recently.
- Former SOE AgroKimyoHimoya (in the process of liquidation and assets sale) and closely affiliated private company Ifoda.
- SOEs for agri-machinery production (factories under former AgroTechSanoat Holding) and agri-mechanization services (AgroTechXizmat).
- Closed in 2021: UzCottonGinnery SOE.
- SOE National Wheat Company—liquidated and under privatization.
- Some small financial service SOEs: UzAgroLeasing, UzMashLeasing, and de-facto state owned commercial banks.
- Small scale SOEs, providing various services for farmers.

104. Debt write-offs were another support mechanism. This tool was quite traditional before 2017, when the government's inadequate payments to farmers for the cotton and wheat it purchased left farmers unable to pay taxes and inputs, so it had to write off farmers' and input suppliers' debts each year. The tool was not implemented in 2018–2019 because in 2018 the government increased the purchase price for raw cotton, which halted new debt creation and extended the repayment terms of pre-reform debts. But annual debt write-offs resumed in 2020, at an even larger scale. The lowest amount recorded was UZS 900 billion (accounting for 13.7 percent of all agricultural subsidies) in 2022, with a peak of UZS 2.9 trillion in 2021.

105. The recurrent debt write-offs suggest that significant economic governance issues persist. These challenges arise from reliance on nonmarket

mechanisms, delays in privatizing state-owned enterprises within agriculture-related value chains (Box 3.2), and similar ad-hoc administrative decisions. The government may attempt to obscure or mitigate these problems through debt write-offs or by extending outstanding debts. But if it fails to address the underlying causes, it will likely have to use this detrimental instrument repeatedly in the future—continuing to divert limited financial resources away from more efficient programs

106. Agricultural subsidies are highly concentrated in a few commodities, since the bulk of public support is for cotton and wheat, which are less productive and more resource-intensive crops. The top 10 agricultural subsidy programs/instruments account for 76 percent of the share, while the top 15 represent 85.3 percent. Notably, 7 of the top 15 subsidies, or 40.3 percent of all agri-

cultural subsidies, focus on cotton and wheat cultivation. The main support tool is subsidized loans for these crops. World Bank estimates from 2019 indicate that the value added per hectare for cotton and wheat is 2 to 10 times lower than for other crops, and net margins are 5 to 20 times lower.⁴³ This again highlights how Uzbekistan's agricultural subsidies continue to predominantly support traditional, resource-intensive practices that deplete natural resources and do not generate significant income for the rural population. Moreover, policies targeting specific commodities increase the rigidity of agri-food systems by reducing farmers' incentives to adapt their production to changing conditions, such as market dynamics, climate change, water availability, and soil conditions.

107. Only a few nontraditional (not cotton or wheat) subsidy measures rank among the largest 15 subsidies. These include interest rate compensation for greenhouses (which actually should be treated as energy subsidies as stated above), livestock, and horticulture projects; livestock output subsidies; and subsidies to cover transportation costs to domestic exporting enterprises.

108. The Every Family is an Entrepreneur program ranks as the third largest agricultural subsidy program. It provides microloans and subsidized credits to smallholders. Launched in 2018 with the goal of supporting entrepreneurial initiatives by providing preferential loans, it also aimed to train individuals in entrepreneurial skills, offering practical assistance in launching new businesses. Another key objective was to create additional jobs by facilitating the expansion of entrepreneurial activities. The program also sought to help people generate extra income through financial support for home-based work, freelance activities, and small-scale production, such as micro-firms.

109. The loan conditions were initially favorable, with an interest rate of 7 percent. But in 2020,

the rate was adjusted to match the Central Bank's refinancing rate, reaching 14 percent by 2022. Loan repayment terms extended up to seven years, including a grace period of up to three years. Individuals could also access loans of up to UZS 33 million, while legal entities could receive up to UZS 300 million without collateral, based on recommendations from "district khokim's assistants."

110. Significant financial resources—amounting to several hundred million USD—were allocated from state funds, primarily from the Fund for Reconstruction and Development. These funds were directed to state-owned commercial banks implementing the program, including People's Bank, Microcreditbank, and Agrobank. The program saw high lending volumes, with total loans issued reaching UZS 8.6 trillion in 2021, UZS 9.4 trillion in 2022, UZS 9.3 trillion in 2023, and UZS 5.5 trillion in 2024.

111. In 2022, the Oilakredit.uz platform was introduced to facilitate online applications, scoring, and review processes. The primary sectors receiving loans included sewing, greenhouse farming, gardening, beekeeping, poultry farming, rabbit breeding, fish farming, livestock farming, and self-employment in the service sector.

112. Ad hoc subsidies, such as debt write-offs for state-owned enterprises, are also large, comprising 6.6 percent of all agricultural subsidies. One major example is the debt write-off support for the AgroKimyoHimoya (Agrichemicals) Company, which by itself is the fourth largest agri-business subsidy.

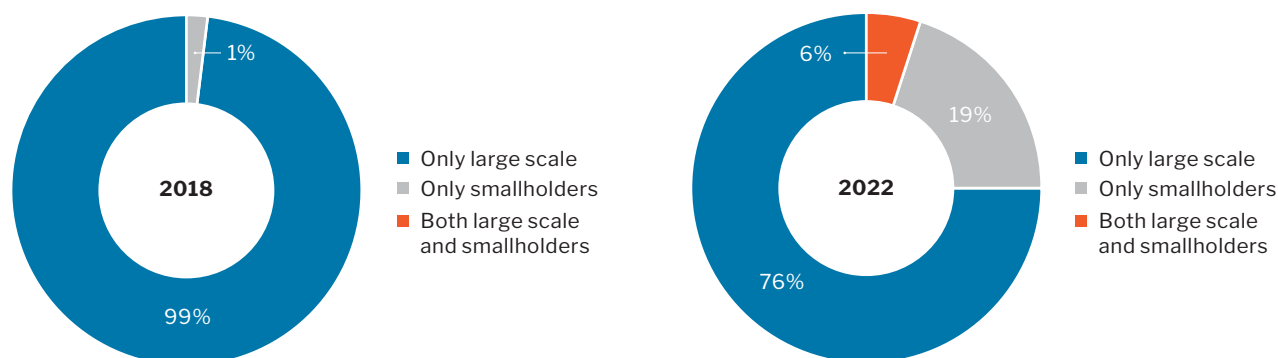
113. In 2017, the government launched substantial agri-subsidy reforms, bringing about large positive shifts, such as decreasing variable input subsidies and increasing support on capital formation. But these reforms stalled in recent years. The share of subsidies unrelated to cotton and wheat, as well as those focused on productivity growth, did not increase after 2020.

Beneficiaries of agri-subsidies

114. The true goals and political economy of agricultural subsidies come to light when examining their de jure and de facto beneficiaries. Subsidies are progressively becoming more inclusive, with the share for smallholders rising from 1 percent in 2018 to 18.7 percent in 2022,

and the share for mixed beneficiaries rising to 5.6 percent (Figure 3.2). Smallholders have begun to use programs such as concessional loans under the Every Family is an Entrepreneur program, grants from employment-related extrabudgetary funds, and the Farmer's Council.

Figure 3.2. De jure beneficiaries of agri-subsidies



Source: World Bank staff estimates based on GoU data.

115. The primary concern lies with the de facto (final) beneficiaries of subsidies. In practice, a large share of the allocated funds do not benefit the farmers and smallholders that the subsidies target. In most cases, the conditions attached to agricultural subsidies require farmers to purchase inputs, equipment, and services, often from a monopolistic SOE supplier or a supplier designated by local authorities. So besides supporting farmers, these agricultural subsidies function as mechanisms for creating demand and ensuring financial flows to SOEs. The process of privatization/liquidation of such SOEs as “Cotton Ginnery” and “National Wheat Processing Company” resulted in reduction of such leakages. However, there are still several SOEs on mineral fertilizers/fuel and some other input supply to agriculture. Furthermore, farmers are often charged inflated prices.

116. The advantages farmers receive from low-interest preferential loans for cotton and wheat cultivation are largely offset by elevated domestic input prices. For instance, diesel fuel prices are 25–30 percent higher than in neighboring countries. Farmers’ losses due to high diesel prices were estimated at \$125 million in 2023. Meanwhile, the benefit derived from the subsidized loan rate for cotton and grain cultivation was UZS 1.370 billion in 2024, or USD 110 million, a difference in fuel prices of 5 US cents per liter. And some practices push up the prices of mineral fertilizers supplied by chemical state-owned enterprises. Additionally, there are numerous signs that the quality of mineral fertilizers produced by some SOEs is lower than declared. Almost all large SOE input suppliers lobby for market protection through tariff and non-tariff

barriers against foreign competition and impose significant licensing requirements on potential domestic producers.

117. Three-quarters of agricultural subsidies for smallholders are provided in the form of preferential lending under the Every Family is an Entrepreneur program, which suffered from some implementation issues. These issues had to do with administration (particularly a lack of supporting advisory services) and a high rate of nonperforming loans (up to 25 percent by some estimates).⁴⁴ Smallholders receiving preferential loans are compelled to purchase tools, equipment, and other items exclusively from designated suppliers, often at prices higher than the market ones. Although there is officially a marketplace, local khokimiyats⁴⁵ decide which business entities may participate. Furthermore, the current design and administrative structure of the Every Family is an Entrepreneur program, which involves key roles for the makhalla-related⁴⁶ public agency and state-owned commercial banks, has increased administratively allocated loans within the economy, reduced profitability in the banking sector, and delayed the privatization of state-owned commercial banks. On a more positive note, the volume of loans directed toward the ‘Every Family is an Entrepreneur’ program has been decreasing over the past three years.

118. Given these issues, it would be more efficient and beneficial for the government to remove both export and import nontariff barriers, enforce quality control over inputs, implement robust anti-monopoly policies, and adopt other tools to sustain competitive input and output markets than to continue implementing the agricultural subsidies in their current form.

Investment matching grants for purchasing agri-machinery

119. **Several programs to support fixed capital formation through matching grants.** They include support for purchasing locally produced agricultural machinery, adopting water-saving technologies, investing in the orchards/viniculture sector, and land reclamation. They are designed to modernize farm assets, promote modern technology, and enhance productivity. Based on lessons from international experience, they can be considered more advanced forms of direct farm payments than output or variable input subsidies. Recently, some of these matching grants were made available for the first time to smallholders, such as dekhan and household plot farms.

120. **Uzbekistan has low agricultural mechanization rates,** experts estimate the unmet demand for agricultural machinery at 23,000 units for cotton/wheat farming, 16,500 units for melons and vegetables, 18,000 units for orchards and grapes, and 14,500 units for livestock.⁴⁷

121. **The government is attempting to incentivize mechanization by providing subsidies to cover 15 percent of the cost of agricultural machinery (30 percent for laser levelers).** Starting in 2024, it began subsidizing the purchase of rice planters as well. It also provides interest rate subsidies for securing commercial loans and leasing agricultural machinery.

122. **Farmers expressed satisfaction with the program, noting its efficiency during a rapid field assessment visit.** The subsidy facilitated agricultural machinery purchases—improving productivity and field processing quality, reducing fuel consumption per hectare and repair costs, and creating opportunities to earn additional income by providing mechanization services to other farmers. Farmers also highlighted the limited scope of the subsidy. In 2022, 11,700 units of agricultural machinery were purchased. The Agricultural Fund subsidized the purchase of only 1,446 units, amounting to UZS 72 billion (with UZS 47 billion as a matching grant and the remainder as interest payment compensation).

123. **The program covered only 12 percent of purchased agricultural machinery units and 4 percent in their value.** The main reasons of low coverage include:

- Farmers can receive the subsidy only once.
- Before October 2023, the subsidy was allocated only for domestically produced agricultural machinery. The program now also applies to imported machinery but is limited to the list defined by the authorities.
- The prices of machinery available through the program are often higher than market prices, which reduces public support and disincentivizes farmers from applying.
- Smallholders are not eligible.

124. **A key reason for the low coverage is that the Agri-Fund has to allocate most of its financial resources to providing concessional loans for working capital to growing cotton and wheat.** In 2022, these resources amounted to an estimated UZS 1,563 billion, or 95 percent of all public support delivered through the Agri-Fund. This situation was driven by the cotton-textile clusters' problems repaying previously allocated loans. About 10–15 percent of these clusters, which were the main recipients of concessional loans in 2021–2022, did not repay loans on time, creating additional financial pressure on the Agri-Fund and limiting its ability to finance other programs. This problem may worsen after 2024, as around 29–36 cotton-textile clusters lost their status due to large unpaid loans to the Agri-Fund.

125. **Meanwhile, some public policies—such as the major portion of subsidies benefiting SOEs (especially in the area of agricultural finance and leasing) and producer price penalization—deplete financial resources from farmers.** That significantly reduced their ability to invest, including the purchase of agricultural machinery. A more effective combination of subsidies incentivizing mechanization and eliminating the market distortions could yield the best results.

126. **From a WTO compliance standpoint, investment matching grants for purchasing agricultural machinery can be streamlined to qualify as green box support under Annex 2 of the WTO AoA, if they meet the required conditions and are not directly or indirectly linked to production.** Full liberalization of machinery eligibility would improve WTO compliance, since limiting eligibility to domestically produced

agricultural machinery violates WTO nondiscrimination principles. The limited list for eligible imported

machinery is still subject to government control, which may be challenged as a trade barrier.

Subsidies for livestock output and high-quality breed livestock purchases

127. One of Uzbekistan's most pressing issues is the high cost of feed. It can be addressed by improving feed supply and feed use efficiency across species and farming systems. Uzbekistan is a net importer of livestock products due to agro-ecological constraints, limited natural resources, and a business environment that fails to meet domestic demand. The government's policy of prioritizing cotton and wheat production effectively "taxes" fodder production. Land recently freed up from cotton cultivation is more likely to shift to horticulture not forage, which is less attractive to farmers. For smallholders (who own more than 90 percent of the nation's ruminants, according to official statistics), low availability of land and water constrains feed production, and grazing in rangelands on public lands is limited by pervasive land degradation.

128. The livestock sector benefits both from generic agriculture subsidies and from some subsidies specific to animal production. Generic subsidies address, for example, feed production, export support, and interest rate compensation for machinery investments. Three lines of subsidies are specific to the livestock sector: free vaccination, output subsidies, and subsidies for purchasing and importing breeding animals. From a value standpoint, the latter two predominate and have amounted to UZS 1.5 trillion since 2022. Output subsidies have been dropped and will be replaced as VAT refund, effectively reducing VAT on meat, eggs and milk from 12 percent to 6.⁴⁸ This replaces the former scheme of payment per kilogram of product, which had higher implementation costs. Subsidies for importing high breeding (pedigree) animals are implemented as payments per head (UZS 2 million for cattle, 400,000 for sheep, and 15,000 for day-old chicks).

129. Output subsidies present several challenges, which is why many countries have phased them out. In the short term, they may indeed stimulate agricultural production and temporarily reduce livestock consumer product prices. But even if introduced as temporary measures, they tend to remain in place for long periods and lose their effect on

consumer prices. They typically do not induce efficiency gains but rather drive up animal numbers, resulting in negative environmental impacts. Only a few successful examples exist.

130. By design, only legal entities that are registered and VAT payers can receive livestock subsidies, and they account for only 3–4 percent of meat production. This increases disparities between small holders and larger farms, and the scope of the measure is too limited to affect consumer prices.

131. The subsidy for importing high-quality breeding animals aims to improve productivity by gradually replacing low-quality animals with imported productive breeds and their offspring. Imported herds have higher performance than local ones, but the increase in offspring is less than expected. The main reasons include poor-quality general services support leading to high mortality and fewer offspring—and inappropriate subsidy criteria that leave out breeding indicators. In some cases, the incentive was not properly monitored, and subsidies were allocated for animals imported from neighboring countries for slaughter.

132. Simultaneously, price and market distortions, sometimes induced by trade policy measures adopted by the government, penalize livestock producers. The temporary export ban on poultry eggs in the first half of 2024 is illustrative: the subsidy per egg is four times lower than the price reduction due to the export ban. Moreover, a preliminary analysis of price trends indicates that a ban on animal skin exports in 2019 resulted in very low domestic market prices for animal skins, reducing the incomes of livestock smallholders.

133. From a WTO perspective, the livestock sector subsidies, particularly output subsidies and breeding animal import subsidies, fall under reduction commitments, as they are directly linked to production and can distort trade. However, tax-related measures are often excluded from Total AMS. The AoA stipulates that all revenue forgone should be included in the Total AMS, but in practice, WTO

members usually exclude tax incentives such as VAT rebate and tax exemptions on outputs, inputs or fuels from their notifications on domestic support in agriculture. Recent WTO accession cases demonstrate that tax-related support measures are typically negotiated separately and do not count toward AMS reduction commitments.

134. Trade restrictions from a few exporting countries heavily affect domestic prices, as was evident in July-August 2024 when meat prices surged in Uzbekistan's market. So policies and investments to diversify import sources and improve logistics will further contribute to stabilizing domestic prices, while output-based subsidies for livestock production are not an effective way of achieving the price stabilization policy goals.

Marketing subsidies

136. The Export Promotion Agency allocated as much as UZS 479.2 billion through it in 2023. This type of support is new for Uzbekistan and was introduced after 2018. Most of the subsidies were in the form of partial compensation of transport costs of exporters. This subsidy was discontinued from January 1, 2025 in order to ensure harmonization with WTO rules. Other forms of support focus on developing agro-logistics, organic agriculture, introducing international standards, and supporting promising horticulture to diversify the sector and enhance exports. But the share of such support has

135. A more sustainable way to increase livestock production would be to support investments in fixed capital formation, including through matching grants and general services support programs for livestock sector development. Uzbekistan has initiated some of these investments, with credit lines from development partners providing funds for fixed capital investments, including high-quality breeding animal imports. The required number of breeding animals to be imported—and thus the negative trade and budget balance—might be reduced by combining this subsidy with other measures. These could include developing a local breeding program and increasing producers' access to high quality genetics through animal embryo transfer technology and an online trading platform for breeding animals.

fallen since 2020. This review does not address how efficiently these programs are implemented, but the slow progress of agri-food exports is concerning. For example, the growth in textile sector exports in 2021–2022 was primarily due to favorable prices rather than increased competitiveness. This category of exports declined in 2023–2024 in response to cotton yarn price adjustments in the international markets. Exports of textiles totaled USD 3.2 in 2022, USD 3.1 billion in 2023 and USD 2.8 billion in 2024; and the decline was 3.1% in 2023 and 6.7% in 2024 relative to prior year.⁴⁹

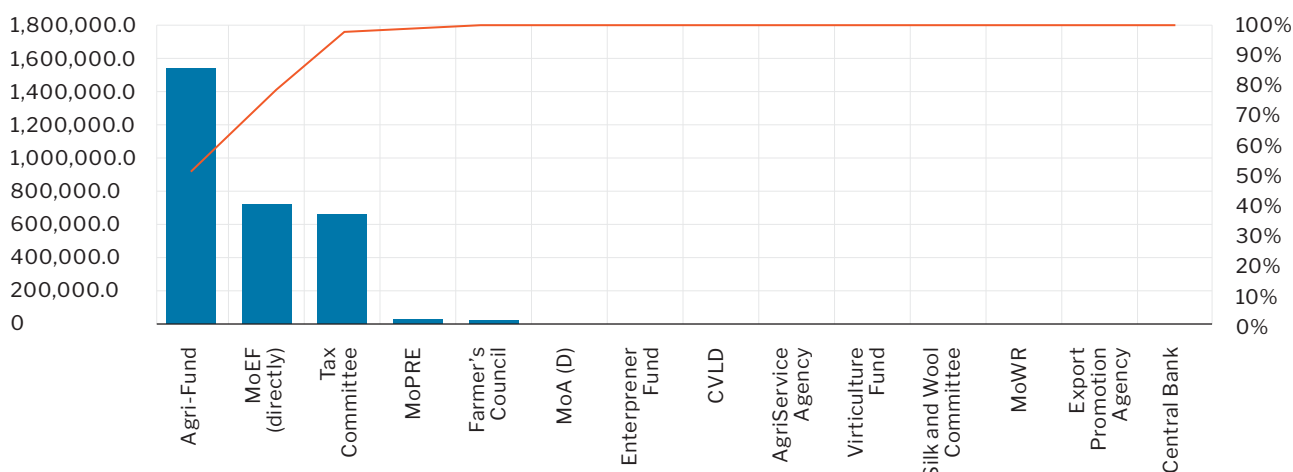
Governance and administration of agri-subsidies

137. In the beginning of the recent reform period, the number of institutions involved in governing and disbursing agricultural subsidies increased. In 2018, the Ministry of Economy and Finance (MoEF) and the Agricultural Fund it controls accounted for 75.3 percent of the total subsidies. The next largest participant was the Tax Committee, at 22.2 percent (Figure 3.3). Other public agencies collectively managed only 2.5 percent of agricultural subsidies. As new subsidies were introduced, the share managed by other public agencies began increasing: by 2022, the MoEF and two extrabudgetary funds under its control disbursed only 44.8 percent of agricultural subsidies. Despite this shift,

the Tax Committee remained the public agency with the second largest share, at 19 percent. This sizable share was primarily a result of increased tariffs for manual cotton picking—an important tax exemption—and to a lesser extent, new tax exemptions for implementing water-saving technologies. The state-owned commercial banks occupy third place, reflecting the government's priority to provide agriculture with preferential loans. The Ministry of Agriculture (MoA) and the organizations it controls have a 12 percent share, dominated by the Veterinary Livestock Development Committee, which includes subsidies for livestock production.

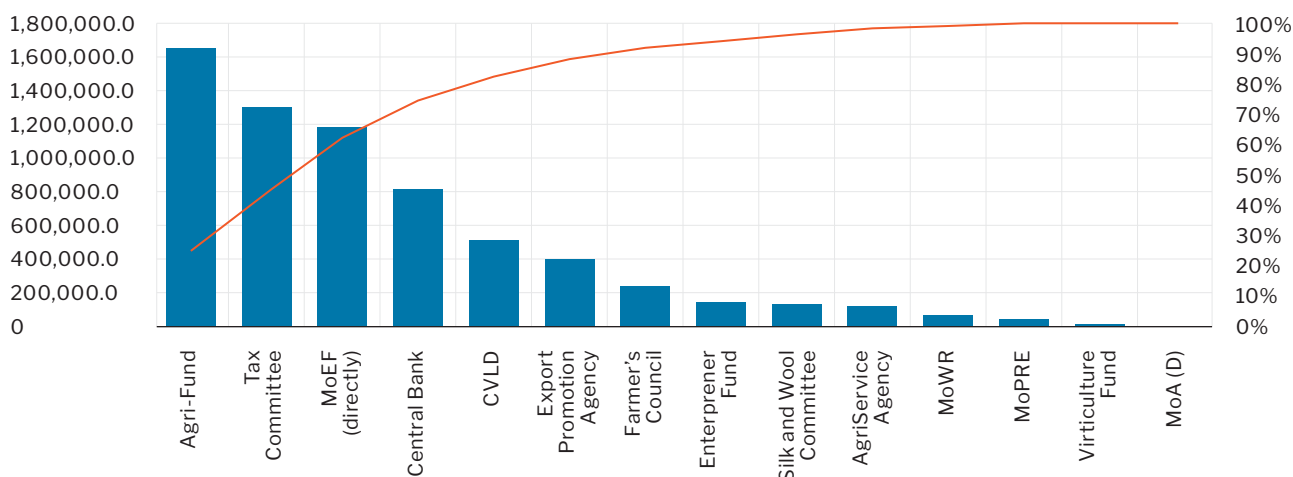
Figure 3.3. Subsidies disbursed, by institution

a. 2018



Note: The left axis is subsidies disbursed (millions UZS), the right axis is cumulative share of agri-subsidies (in percent) among the public agencies administering/dispersing them.

b. 2022



Note: The left axis is subsidies disbursed (millions UZS), the right axis is cumulative share of agri-subsidies (in percent) among the public agencies administering/dispersing them.

Source: World Bank staff estimates based on GoU data.

138. In the peak period agricultural subsidies were disbursed and administered through eight ministries and committees, seven subordinate agencies and funds, and a government-controlled NGO, the Farmers' Council. This expansion of tools and public agencies has resulted in several governance challenges, such as ensuring coordination and developing capacity to design, administer, budget, disburse, report on, and monitor subsidies. Most of these challenges are inevitable when first developing a sophisticated subsidy system but need to be addressed during the current stage of agriculture subsidy reforms. Because of fragmented and limited

governance capacities, agricultural subsidies were launched in an ad hoc and unsystematic manner. This has resulted in a proliferating tools, some nonfunctioning subsidies, and fragmented governance.

139. In 2022, of 101 "legally effective" subsidy tools, 11 were not disbursed due to regulatory voids (Table 3.2). Unfortunately, most of these subsidies supported smallholders and created agricultural jobs. These subsidies are meant to be administered by the Ministry of Poverty Reduction and Employment. But 23 subsidy tools were not disbursed despite having

regulations. The reasons include low interest from farmers, refusal by state authorities to disburse due to eligibility criteria that allowed for possible misuse or fraud, and a weak regulatory framework. Most of these subsidies focus on sustainable development and boosting productivity. And some programs had very limited disbursement, such as measures to

improve pest management and agrometeorology. The main reasons include low interest from farmers and smallholders and concerns about possible allegations of fraud or manipulation, which deterred public agencies from processing subsidy claims. For example, providing evidence that fields had been laser-levelled was challenging in some cases.

Table 3.2. Functionality of agri-subsidy tools, 2022

	2022
Not yet launched or cancelled	16
Regulations not issued, therefore funds not disbursed	11
Regulations are in place, but funds not disbursed	23
Fully implemented and disbursed	67

Source: World Bank Staff estimates.

140. In response to the challenges in subsidy administration, the Government has initiated measures to systematize subsidies, including the cancellation of subsidies that have remained unused for an extended period and those deemed inefficient, those in which recipients showed no interest, as well as merging overlapping subsidies.

For example, according to Presidential Decree No. UP-193 “On measures to improve the system of financial support for small and medium-sized businesses” dated November 11, 2023, 12 agricultural subsidies were canceled. Additionally, Presidential Resolution No. PP-64 dated February 18, 2025, “On additional measures to improve the system of providing financial assistance to promote entrepreneurship and ensure employment of the population,” canceled 29 types of subsidies, including 8 related to job creation and small-scale entrepreneurship in the agricultural sector. Furthermore, efforts have been initiated to simplify allocation procedures, promote better targeting, and gradually digitize most subsidies.

141. Overall, several issues impair the performance of agricultural subsidies in Uzbekistan. The main ones are:

- **Complex and fragmented subsidy offerings.** The many types of subsidies, some of which overlap and make it difficult for farmers to understand their funding possibilities and which option would best fit their needs. Different insti-

tutions distribute these subsidies: for example, subsidies for implementing water-saving technologies are distributed by four different ministries, committees, and agencies, their implementation practices still vary, and procedures have changed each year since large-scale implementation began in 2019. As stated above, the Government has initiated efforts to overcome this challenge.

- **Lack of evidence-based design.** Some subsidies were unneeded or had no demand because their design was not based on evidence. For instance, subsidies for supplying handicraftsmen with angora and merino wool were undermined when these breeds of sheep and goats, after being imported, produced substandard wool in the local climate. Despite allocations by the MoEF, these subsidies were not claimed. Moreover, subsidy design rarely considers a cost-benefit analysis, financial analysis, alternative tools, return rates, or sector-specific impacts. For example, there is no evaluation of which sector would provide the most mitigation impact per dollar spent.
- **Lack of participation in the design stage.** Subsidy are often designed without broadly consulting with farmers, academies, agribusinesses, and other stakeholders.
- **Inadequate farmer training.** Due to weak extension services, farmers do not receive

enough capacity-building on productive technologies. As a result, they do not always select or implement the best solutions.

- **Inappropriately defined criteria.** Some subsidy criteria are not clearly defined.
- **Inflexible application of technology.** Some procedures are inflexible and require specific technologies from designated suppliers without considering their performance.
- **Weak administrative capacity and M&E.** Ineffective application review processes and decision-making underscore administrative weaknesses. There are also concerns about enforcing subsidy-related rules and requirements. Agricultural subsidies are inadequately evaluated, and rely largely on theoretical expectations rather than real measurements, especially for climate-smart initiatives. Limited monitoring and evaluation hinder efforts to improve subsidy design and allocation during reform efforts.
- **Non-verifiable reporting.** Some reporting is not verifiable.
- **Misalignment with innovation policy.** Most of subsidy programs and the government's innovation priorities do not align. There are no established minimum requirements for innovative activities and technologies. As a result, investment subsidies do not preferentially select projects that use innovative technologies, and financial instruments do not offer more favorable terms to innovative projects. Thus, state policies do not clearly promote innovative activities, and outdated technologies can receive the same subsidy level as modern, environmentally friendly equipment. At the same time, some innovative and modern agricultural technologies promoted by new subsidies are not properly regulated or not available on the market.
- **Lack of digitization.** The Government has taken steps to digitize subsidies' administration, especially through the Agroplatforma and Agro-Subsidy information systems. Subsidies that are already digitized will be gradually transferred to the system, streamlining procedures and reducing governance risks stemming from the lack of transparency.

4. ALIGNING PUBLIC SUPPORT WITH CLIMATE ADAPTATION AND MITIGATION POLICY OBJECTIVES

142. **Uzbekistan's agricultural sector faces major risks from climate change, including declining precipitation, more frequent and severe droughts, and degraded soil.** Projections indicate a 20 percent reduction in rainfall by 2050, while flows in the Amu Darya and Syr Darya rivers could decrease by 15 percent and 5 percent, respectively.⁵⁰ Soil degradation is equally alarming: more than 46 percent of soils are salinized to some degree, reducing yields by up to 70 percent in highly affected areas. Outdated irrigation systems further exacerbate water shortages because they lose up to 50 percent of water during distribution, creating an urgent need for sustainable and efficient agricultural practices.⁵¹

143. **Deeper analysis reveals major potential to scale up incentives and policy reforms that support innovation and climate adaptation in the context of water scarcity.** Uzbekistan has integrated climate adaptation into national policies, such as the Strategy for Agricultural Development 2020–2030 and the

Green Economy Strategic Framework 2022–2030, but the adoption of innovative technologies that help build resilience to climate shocks and water scarcity remains low. Interviews with farmers across Uzbekistan, especially smallholders, revealed significant challenges driving this low adoption, including limited access to credit, insecure land tenure, and underdeveloped infrastructure for storage, processing, and marketing.⁵² For example, water-saving irrigation technologies such as drip irrigation can improve water use efficiency to 50 percent, but only 30 percent of irrigated land in Uzbekistan currently employs these systems. To encourage the population and farmers to adopt water-saving technologies, the country would benefit from implementing support programs where participants must use these technologies to receive aid. If these programs are decoupled from particular production outputs, they could be consistent with WTO Annex 2 of the Agreement on Agriculture (green box) measures (Box 4.1).

Box 4.1. The WTO and investments in climate-smart agriculture

From a WTO perspective, payments under environmental programs for developing and applying climate-oriented productions and agricultural practices are classified as “green box” measures when not tied to specific types of products. Environmental programs are actively utilized by WTO members and may be highly relevant for Uzbekistan.

Infrastructure for scaling CSA can also be considered green box support under the General Services measures of Annex 2 of the WTO AoA. In all cases, the expenditure must be for providing or building capital works only and must exclude the subsidized provision of on-farm facilities other than for the reticulation of generally available public utilities.

144. **Uzbekistan's agriculture can become more resilient by scaling up innovative practices to cope with its arid conditions.** Laser land leveling, for instance, increases water efficiency by 25

percent and cotton yields by 10 percent, boosting farmer incomes by 41 percent within two years. Similarly, salt-tolerant crops like licorice and millet offer both environmental and economic

benefits. Millet, for instance, requires only 1,450 cubic meters of water per hectare, compared with 3,000–4,000 for other secondary crops. Sustain-

ability and resilience in agriculture could also be improved by using renewable energy for irrigation and agro-forestry.

Scaling up climate-smart agriculture

145. **Collectively, these innovative technologies, soil cultivation practices, crops that increase farm profit margins and address water scarcity or soil degradation, and efficient water use technologies and practices are commonly referred to as climate-smart agriculture (CSA).** A rapid CSA field assessment, carried out as part of a companion study to this review, identified significant barriers

to adoption of climate-smart technologies (Box 4.2). The World Bank conducted interviews across various agro-climatic zones and regions of Uzbekistan to estimate profitability and water-use reductions for representative crops, CSA portfolios, and agro-ecological zones—and identified a range of suitable technologies.

Box 4.2. Findings from the field: Innovative Agricultural Technologies for diverse agro-ecologies

Uzbekistan has a broad range of innovative agricultural technologies tailored to its diverse agro-ecological regions, but their adoption remains limited due to financial, institutional, and technical barriers. These technologies aim to enhance water efficiency, improve soil health, and increase climate resilience, yet they are not widely implemented at scale.

Key technologies across regions

- **Laser land leveling.** Reduces water use by up to 25 percent, increases cotton yields by 10–15 percent, and improves net income by 41 percent. However, high equipment costs and subsidy access hinder widespread use.
- **Sprinkler and drip irrigation.** Boosts water use efficiency to 80–95 percent compared with 60 percent for traditional furrow irrigation. Adoption is slow due to high initial investment costs.
- **Automated irrigation management.** Enhances irrigation efficiency and water use monitoring but requires significant investment.
- **Portable chutes for water efficiency.** Piloted in the Syr Darya region, these devices reduce irrigation water use by 25–33 percent and increase crop yields by 10–15 percent.
- **No-till and minimum-till technologies.** Improve soil fertility and moisture retention but are not well-suited for all soil types in Uzbekistan.
- **Salt- and drought-tolerant crops.** Millet, sorghum, and licorice require less water than traditional crops and improve soil conditions, yet weak seed supply chains and limited processing infrastructure restrict their expansion.
- **Rice seedling planting.** Saves 30 percent of water and increases farmer profits by 34 percent, but requires additional mechanization and skills.
- **Agroforestry (oleaster cultivation).** Helps combat desertification and wind erosion but faces market and land tenure challenges.
- **Growing lemons in unheated greenhouses.** A promising technique in southern regions, but high initial costs and water demands, and unpredictable frosts limit expansion.

If implemented at scale, the suitable packages of CSA technologies can generate nearly 100,000 full-time jobs, reduce on-farm water consumption by nearly 20 percent, and increase the gross value added of agricultural production by 60 percent relative to the 2023 level in an optimistic scenario of the level of technology adoption.

Despite their benefits, these technologies face financial barriers (high investment costs), weak extension services, lack of farmer awareness, insufficient water availability (or available at the wrong time in the planting season or of poor quality) and insecure land tenure coupled with the restricted free farming. Expanding financial incentives, improving technical training, and strengthening institutional support are essential to scaling up adoption and ensuring sustainable agricultural development in Uzbekistan.

Source: World Bank (2026). "Pathways to Climate-Smart Agriculture in Uzbekistan". Washington, D.C.

146. Farmers highlighted the need for financial support mechanisms, such as subsidies, low-interest loans, and matching grants, to offset the high initial costs of introducing CSA practices.

Public extension and advisory services should provide robust technical training to help farmers acquire the skills they need to implement these practices effectively, while enabling private advisory services to develop in the country. For example, programs should address knowledge gaps in millet and sorghum cultivation in regions like Karakalpakstan through targeted training programs and local seed multiplication systems.

147. In addition to financial and technical support, infrastructure investments are essential for scaling CSA adoption.

Improved storage, processing facilities, and agro-logistics networks can reduce post-harvest losses and enhance market access for CSA-related products. A national agricultural market information system would help farmers make informed decisions about crop planning and would connect to both domestic and international markets.

148. Reforming land regulations is another critical area for CSA.

Insecure land rights discourage long-term investments in sustainable practices. Stronger tenure systems would encourage farmers to adopt CSA technologies and diversify their production. Restricted free farming hinders agricultural diversification and a shift from a cotton-wheat crop rotation to high value crops like fruits and vegeta-

bles. A more diversified crop rotation system will boost soil quality, water use efficiency, and farmers' profit margins. But regulatory changes alone are not sufficient to achieve a diversified crop rotation system. That will require regulatory reforms, access to finance, technologies and innovation, and capacity-building for farmers. Achieving crop diversity will also require on-farm investment promoted through matching grants implemented through transparent digital platforms and a competitive tender process accessible to farmers of different sizes, including small farmers and farmer cooperatives—and accompanied by technical assistance through the AKIS and a removal of regulatory constraints on crops that farmers can choose to plant.

149. Research and innovation must deliver services to farmers.

Region-specific adaptations of CSA technologies, such as zero tillage techniques or climate-resilient crop varieties, are crucial for maximizing their effectiveness. For instance, demonstrations with zero-tillage in Khorezm have shown success on sandy soils but faced challenges in Bukhara, underscoring tailored approaches.

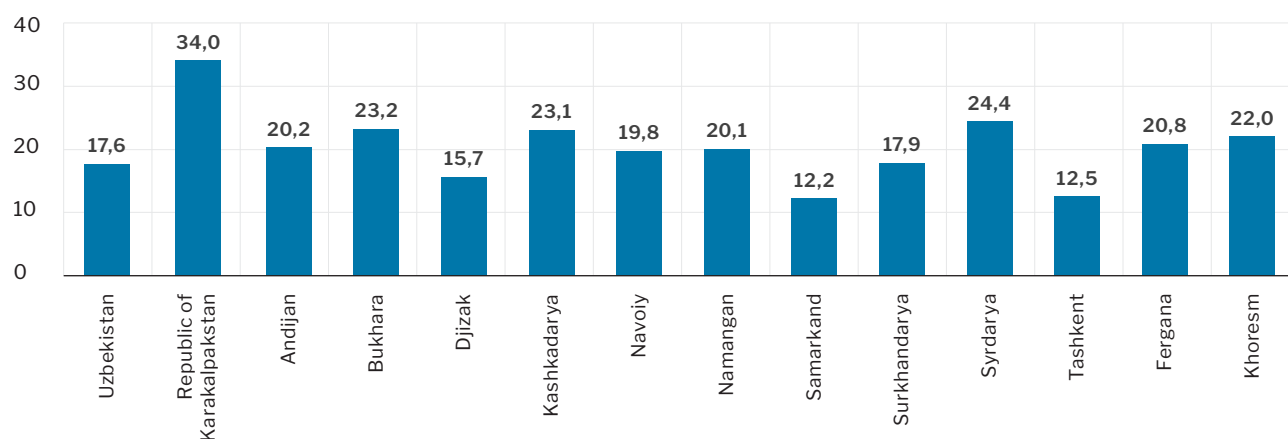
150. Transitioning to climate-smart agriculture, combined with moderate land-use shifts, is a viable adaptation strategy.

Simple scenarios for land use change and application of CSA technologies, based on feasible assumptions from the rapid CSA field assessment, show that the adverse impacts of climate change and water scarcity can potentially be fully mitigated. Water use in agriculture could be reduced

by 20–25 percent without reducing economic performance or agricultural GDP. In Karakalpakstan specifically, farmers could use approximately 34 percent less water while earning 50 percent more profits under an optimistic CSA adoption scenario (Figures 4.1 and 4.2). Uzbekistan should roll out regulatory and financial incentives to catalyze this transition

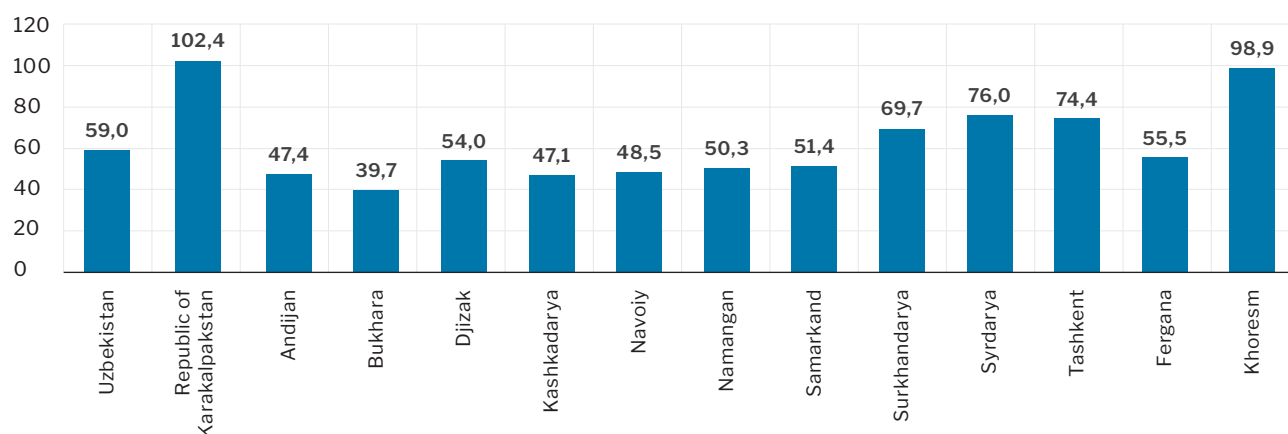
and accelerate a shift away from the wheat-cotton crop rotation driving soil degradation and unsustainable water use. Farmer interviews revealed a need for significantly better soil testing, advisory, and market information services to overcome barriers to adopting CSA technologies and more diverse crop rotations, especially among small farmers.

Figure 4.1. Reduction in water consumption (optimistic scenario), percent relative to baseline, 2023



Source: World Bank (forthcoming).

Figure 4.2. Growth in gross value added of crop production (optimistic scenario), percent relative to baseline, 2023



Source: World Bank (forthcoming).

151. Significant barriers to CSA adoption include limited access to financing, inadequate training, restrictions on land use, and insufficient irrigation water supply. Farmer interviews highlight that CSA adoption and interest remain low due to these challenges. A comprehensive approach to addressing these barriers is proposed, including increased investment in agricultural extension services and new incentive mechanisms as part of a

broader effort for more effective and efficient public agriculture spending.

152. The most impactful and large-scale subsidy programs that are CSA-aligned focus on: implementing water-saving technologies, supporting horticulture, improving livestock genetics, and fostering cooperation among smallholders. However, the rapid CSA field assessment found that promising programs for improving soil fertility in

cotton fields, laser leveling, implementing organic cropping, and supporting smallholder cooperation were not disbursed at all, despite having funds allocated from the state budget. For other programs, such as measures for better pest management and agrometeorology, only very limited funding was disbursed. The main reasons include low interest from farmers and smallholders, and concerns over possible misuse or manipulation of funds, which deterred public agencies from processing subsidy claims. These trends highlight the need for institutional capacity building to improve the design, implementation, and monitoring by public agencies.

153. To drive the adoption of innovative technologies and encourage diversified crop rotation in Uzbekistan, the country needs to more effectively align public support for agriculture with these objectives, and farmers need the right economic incentives and technical assistance. Enhancing both the quantity and quality of investment in the agricultural knowledge and innovation system (AKIS) is a key priority. However, a meaningful shift toward climate-resilient agriculture will require a comprehensive ecosystem of incentives, finance, capacity building, and continued agricultural policy reforms.

Reforming the land lease market to overcome constraints to adopting CSA

154. Establishing the land lease market, which remains stalled, will play the vital role in CSA promotion. Although the land lease market was officially opened in January 2024, allowing farmers to sell their lease rights, an important milestone in land reform and a forward-looking policy measure, it remains largely nonoperational due to delays in the approval of the necessary regulatory framework and limited public awareness. And two structural constraints continue to hinder its efficient operation. One is the prohibition on subdivision where lessees are required to sell an entire farmland holding, rather than having the flexibility to subdivide and sell portions of their farm. The second is the restricted scope of transferability, since the ability to sell land use rights is currently limited only to lease rights, excluding other legally recognized tenure types such as lifetime inheritable possession and other legally recognized rights.

155. Practicing enhanced lease terms and ensuring independence for farming continues to be a challenge. In February 2025, the lease duration for agricultural land was extended from 30 years to up to 49 years, and participation in land auctions was opened to all, including Uzbek legal entities with foreign investment. An experimental program was introduced, granting new leaseholders who acquire land through auctions full autonomy under the “independence principle,” allowing them to

determine the types, varieties, and volumes of crops they cultivate. But while this reform aims to enhance farmer autonomy, the requirement to follow recommended crop rotations and ensure efficient land use to maintain and improve soil fertility may impose an additional layer of control, potentially undermining tenure security and limiting true independence in farming decisions.

156. The current land use monitoring system faces significant challenges due to outdated institutional arrangements and technological deficiencies, undermining its effectiveness. While the Ministry of Agriculture has taken initial steps to improve land use monitoring, the system still relies heavily on physical site inspections rather than leveraging advanced Geographic Information System (GIS) technologies and remote sensing methods. To enhance efficiency, accuracy, and transparency in agricultural land management, the monitoring system should be modernized by integrating GIS-based technologies, remote sensing, and real-time data tracking. These advancements would allow for continuous observation of land use changes, improve data accuracy, and strengthen enforcement mechanisms against illegal land occupations, degradation, and unauthorized constructions. And ensuring the regular publication of land use data and analytical reports will foster greater transparency, accountability, and public trust in land governance.

5. PRICE DISTORTIONS AND MARKET INEFFICIENCIES⁵³

157. **Public expenditures in agriculture do not guarantee a strong impact unless they are supported by market-friendly agricultural policies.** This chapter examines the outflows from agriculture caused by market-distorting policies. Such outflows occur in the form of price distortions that penalize farmers; domestic monopolies at various stages of agriculture-related value chains; and unrealized opportunities due to restricted free farming and insecure land tenure (institutional failures). These forms of implicit taxation and market distortion may even counteract the generous budgetary support provided to some sectors, in input and output subsidies.

158. **These adverse conditions significantly diminish farmers' opportunities to invest in innovations, including climate-smart agriculture (CSA),** reducing their resilience to climate change, growing water scarcity, natural resource depletion, and other challenges.

159. **This analysis provides preliminary insights on how trade and market policies and inefficiencies along the value chain can distort market prices and disincentivize the production and commercialization of certain commodities.** This has been the case of wheat and cotton in the past, and it is still an issue for other commodities, such as silk cocoons, animal skins, and eggs, more recently.⁵⁴

Price distortions penalizing farmers

160. **The government has long implicitly "taxed" some key agricultural commodities by setting administrative procurement farmgate prices for certain agricultural outputs, primarily cotton and wheat, well below market levels.** Before 2017, Uzbek farmers were losing 1.6 percent of GDP annually from artificially low state procurement prices for cotton and wheat, as the government spent 2.0 percent of GDP on various agricultural programs. Due to depressed farmgate prices and the focus of public services on producing cotton and wheat at any cost, the rate of return on public expenditures for agriculture was very low. Cotton and wheat yields stagnated, reducing cotton exports and driving up imports of wheat, the main food staple.⁵⁵ Since 2017, the government committed to reform and ending the primary driver of price penalization for cotton and wheat. Although the COVID-19 pandemic partially delayed these reforms, Uzbekistan has made significant progress.

161. **The government significantly reduced public wheat procurement in 2021 and abolished it in 2022, when it liberalized farmgate prices.** In 2021, the difference between market and public procurement prices was UZS 769,400 per tonne (up from UZS 551,700 in 2020), yet total losses fell from UZS

1.7 trillion (USD 165 million) in 2020 to UZS 1.6 trillion in 2021 due to reduced procurement volumes (which fell from 3.1 million tonnes to 2.1 million). So, the total loss to farmers was equal to 0.22 percent of GDP. In 2022, the government transformed the public procurement system for wheat into a tool to stabilize domestic market prices. Prices for public stocks were determined on the Uzbek Commodity Exchange (UzEX), with price adjustments based on market fluctuations during July–September 2022. This approach brought significant incentives to wheat farmers.

162. **Similarly to wheat, since 2020, the government embarked on important policy reforms in the cotton sector.** The core objectives of these reforms were to shift from full government control to market-based value chain development, support cotton processing and export of higher-value textile products, and boost investments in climate-smart technologies. The cotton state order system was phased out and cotton prices liberalized, after 2020. The government also abolished the subsidy for cotton production on plots with low-quality soil, in 2019, and launched the matching grants program to promote water-efficient irrigation in cotton and horticulture production.⁵⁶

163. To boost domestic cotton processing and value addition, the government imposed an export ban on cotton fiber in 2019, which was replaced by an export tax of 100% in July 2025.

At the same time, a minimum producer price was introduced to avoid farmgate price's downward pressure from limited options of selling raw cotton outside the assigned textile companies. The methodology for the minimum price setting was recalibrated a few times during the 2021-2023 period to respond to international market volatility; then, in 2024, this policy was abolished. Estimating the effects of the minimum price on farm revenues was not possible at this stage, as this requires a fully-fledged price incentives analysis, which is recommended as a follow-up analysis.

164. Further measures were recently taken to address the power imbalance between cotton-textile clusters and farmers. In the 2024 season, the government began transferring the advance funds to buy inputs for cotton production directly to farmers' bank accounts, ending the practice of delegating input purchase by the assigned textile clusters, who later distributed these inputs to farmers.⁵⁷ In January 2025, the government published a Presidential Decree on "Measures on Further Improvement of Market Mechanisms for Production and Sale of Raw Cotton," which encouraged more competition among cotton buyers, stimulated primary cotton processing by farm cooperatives and individual businesses, promoted mechanized cotton harvesting, and

aligned farmgate price determination with market dynamics.

165. The government has also been enhancing climate resiliency of cotton production, by supporting water saving technologies such as drip irrigation and soil laser levelling, piloting introduction of foreign drought- and disease resistant cotton varieties, soil testing and mapping.

166. These attempts to establish a competitive and open market for cotton set the right direction, even if they were not yet fully successful given the complexity of policy making in this key important sector and due to external factors and shocks. Aligning policy incentives from the fiscal (i.e. subsidies) to the price side (i.e. removal of price taxation) is crucial to stimulate a sustainable growth in the sector and make the best use of public resources. Designing and piloting a package of interventions that allow to balance out farmers, textile industry and traders' needs and benefits is equally important but at the same time extremely complex.

167. Paradoxically, during this period of transition to liberalization for the wheat and cotton markets, other agricultural commodities experienced policy-induced disincentives and market concentration trends. This was the case for animal skins and silk cocoons, for example, as both products were affected by policy and market dynamics that most likely depressed producer prices.⁵⁸

Table 5.1. Animal skins, price penalty indicator, 2021–23

	2021	2022	2023
Price penalty, billion UZS	1,334.24	1,343.79	1,368.21
Price penalty, million USD	125.60	121.66	116.53
Price penalty, % of GDP ⁵⁹	0.18%	0.15%	0.13%

Source: World Bank staff estimates.

Note: 1. The price penalty refers to the difference between the producer price and an ideal 'fairer' price that should have prevailed under a policy-free and perfectly competitive market scenario. 2. Tables 5.1 and 5.2 were prepared before the issuance of Presidential Decree No. UP-47 dated March 14, 2025, "On measures to improve export procedures and stimulate the production of value-added finished products." According to this Decree, in order to harmonize with WTO requirements, the List of Goods, the export of which was carried out based on decisions of the President of the Republic of Uzbekistan or the Government of the Republic of Uzbekistan, was abolished. This List included the agricultural products discussed in this report. The mechanism of export permits was replaced with more transparent export duties, including for 32 positions of agricultural products.

168. Low prices for animal skins emerged after an export ban was imposed in 2019, which favored primary skin processors, but affected the income

of livestock farmers/smallholders. After the ban, animal skin prices plummeted by 5–10 times, with total farmer losses estimated at USD 115–125

million annually during 2021–23 (Table 5.1). This price penalty particularly harms smallholders, who own 94 percent of the livestock herd. In response, smallholder livestock producers may have partially transferred these losses to other livestock product prices, primarily meat, with potential welfare implications for Uzbekistan's entire population.

169. When the export restriction was introduced, the government increased livestock output subsidies and social protection measures. This points to a policy coherence issue: trade policies penalize farmers while the government steps up fiscal support to support them, at the expense of taxpayers. Compounded by other negative factors, such as the rising cost of living in 2021–22, this price penalty on animal skins could seriously

undermine the sector's long-term investments and productivity.

170. Silk clusters procured raw silk below market price, in 2021–23, again penalizing farmers. Farmers sell silk cocoons to these clusters at 25,000 UZS per kilogram, but the market price should range between 40,000 and 50,000 UZS per kilogram in 2023, according to sectoral experts (Table 5.2). This discrepancy results in estimated annual losses of USD 50–55 million for silk farmers (equivalent to 0.06–0.07 percent of GDP). Although the government provides silk cocoon subsidies of UZS 5,000 per kilogram, this only offsets one-fifth of the producer price loss. Other support mechanisms are also in place, such as a reduced land tax for mulberry plantations and income tax exemptions.

Table 5.2. Silk cocoon price penalty, 2021–23

	2021	2022	2023
Price penalty, million UZS	534,622	631,826	647,125.0
Price penalty, million USD	50.3	57.2	55.1
Price penalty, % of GDP ⁶⁰	0.07%	0.07%	0.06%

Source: World Bank staff estimates.

Note: The price penalty refers to the difference between the producer price and an ideal 'fairer' price that should have prevailed under a policy-free and perfectly competitive market scenario.

171. It would be more effective and efficient to liberalize the sector, eliminate the monopolistic control of silk clusters over silk cocoons, and consider phasing out coupled subsidies for silk cocoon production. Such an approach might also address potential conflicts in WTO accession, as these forms of support are coupled to production and should be avoided. The government has issued a resolution with the intention of transitioning to market-based relations, but it has not yet established a clear commitment and roadmap.

172. Even though Uzbekistan has embraced trade liberalization as it intensifies its efforts to accede to the WTO,⁶¹ it has placed export restrictions on other food and agricultural products since 2022. The government prohibited exports of vegetable oil, including cottonseed and sunflower oil, as well as sunflower seeds and seeds and fruits of other oilseeds, with certain exceptions established by law. The ban was also extended to corn, soybean oils, potatoes, corn, and sugar. In January 2023, the Ministry of Agriculture limited the export of onions.⁶²

173. In early 2024, ad hoc export bans on poultry eggs severely harmed the poultry subsector. Egg prices dropped by UZS 200 per piece, leading to an estimated total loss of USD 16 million for large producers alone (with a volume of 1 billion eggs over six months) and a loss of UZS 64 million for all producers. Meanwhile, the subsidy for each egg produced, only UZS 50, is available only to the largest producers. The government provided the subsidy as output support to large producers, but this compensated for only a quarter of the loss. And the ban was soon lifted.

174. The Government is planning to replace export bans with export custom duties from July 1, 2025. Export custom duties are a more transparent tool compared to the existing ban or to export permissions that are issued by various Commissions to the benefit of individual companies. However, custom duties could be prohibitively high in some cases, especially for raw commodities, and act as a de facto ban on exports. Their effect should be carefully analyzed in the future.

175. Unlike export bans and other quantitative restrictions on exports, which are prohibited by WTO rules, export duties are generally allowed. However, during all recent accessions (since 2012), new Members were requested to take commitments regarding export duties. In many cases, acceding governments have agreed to significantly limit or progressively eliminate export duties over a transition period. The introduction of new export duties is also not permitted under such commitments.

Input market distortions and inefficiencies

177. Not only are farmers penalized by policies and market dynamics that prevent them from fetching a fair and remunerative output price, but also the limited competition in the inputs market is detrimental to the sector's productivity and profitability. Some input markets are largely controlled by a few state-owned enterprises (SOEs) or suppliers designated by the local authorities, which impose high costs on producers and other value chain agents.

178. For example, from 2021 to 2023, diesel fuel prices in Uzbekistan were 25-30 percent higher than those in neighboring countries, such as Kyrgyzstan, which does not have its own oil production. Farmers' losses due to high diesel prices were estimated at \$125 million.⁶⁴ And the quality of

176. These ad-hoc, inconsistent trade measures, usually implemented to protect domestic markets from price and supply shocks, can disrupt supply chains and limit opportunities for domestic producers to capitalize on new market opportunities. They often produce unintended consequences and can even worsen price increases.⁶³ That makes it critical for Uzbekistan to pursue open trade and devise alternative measures to ensure food security and protect vulnerable households in times of crises.

diesel fuel posed another challenge for farmers, as a significant portion of domestically produced diesel is unsuitable for agricultural machinery, leading to increased repair expenses. By 2024, the price difference decreased to about 5 cents per liter as a result of the mixing of various domestically produced diesel varieties; even so, total losses still amounted to approximately USD 25 million.⁶⁵

179. There are numerous indications that the quality of mineral fertilizers produced by some SOEs is lower than claimed. And an investigation by the Antimonopoly Committee revealed that "NavoiAzot"⁶⁶ and "MaxamChirchik"⁶⁷ (both part of the SOE Uzbek Chemical Company) manipulated the domestic market to artificially increase the price of mineral fertilizers.

Unrealized opportunities due to restricted free farming and insecure land tenure

180. The administrative practice of crop placement was closely linked to negative price support for cotton and wheat. After negative price support was eliminated, crop placement was also officially abolished. But the transition to the new system is still undergoing, and some crops are still determined by the existing institutional set-up with high dependency on past patterns, creating numerous problems for farmers. Key issues include missed opportunities from not growing a diverse range of profitable crops and not adopting a more modern set of farming practices and technologies, active administrative interference, and slow adoption of CSA practices.

181. This insecurity, coupled with the restricted free farming, adversely affects both farmer and state revenues. A survey indicates that farmers are

willing to pay a UZS 9.2 million per hectare land tax for secure tenancy agreements free of crop placement restrictions. If the contract exempts them only from crop placement, they are willing to pay UZS 7.7 million per hectare.⁶⁸ The current land tax ranges between UZS 400,000 and 1 million per hectare. Since this survey was conducted primarily in horticultural districts with higher per-hectare income, it seems more realistic to increase the land tax by UZS 3–4 million per hectare.

182. Therefore, by effectively eliminating constraints to free farming and ensuring the security of land tenure over 2.8 million hectares, the country could boost land tax revenues for the state budget by up to UZS 11.3 trillion. This represents 4.9 percent of 2023 state budget revenues, or 1.1 percent of GDP in 2023, and would

cover one-fifth of the consolidated budget deficit. Moreover, this amount exceeds total agricultural subsidies in 2023 and equates to one-third of all agricultural public spending. Beyond enhancing direct budget revenues, eliminating the constraints to free farming and securing land tenure would increase agricultural output value, enhance productivity, and raise rural incomes. Realizing these benefits, however, would require quality general services support, as well as new infrastructure, particularly for marketing, agro-logistics, and storage.

183. In conclusion, price penalization for certain crops, high prices and low quality of inputs by state-owned enterprises, and the constraints to free farming and land tenure insecurity have significant repercussions for farmers and small-holders. These distortions—which often point to a lack of appropriate policies and regulations to address market failures—can seriously undermine the potential impact of agricultural subsidies provided by the government at a high cost for public finances.

6. PROMOTING AGRICULTURAL SCIENCE, KNOWLEDGE, AND INNOVATION

184. Uzbekistan's agricultural knowledge and innovation system (AKIS) is central to the country's ambitions to modernize agriculture and ensure sustainable development, particularly in the face of climate change and resource scarcity. While significant structural reforms have been undertaken, including the formal establishment of AKIS in 2021, the system continues to suffer from chronic underinvestment, institutional fragmentation, weak linkages between research and practice, and outdated infrastructures and methods.

185. Historically, Uzbekistan inherited a well-resourced but narrowly focused scientific network from the Soviet era, primarily centered on cotton. This network deteriorated after decades of economic hardship and administrative neglect. The Government initiated funding increases and organizational reforms in recent years, however, owing to the low initial funding levels, public spending on agricultural science remains well below international benchmarks. Additionally, the recently launched institutional reforms aimed at improving the performance and the absorption capacity of scientific research institutes (SRIs), including upgrading management, human capital, enhancing international engagement, and integration with the private sector are in initial stages.

186. Extension services, a critical component for knowledge transfer, also face significant constraints. The regional agricultural service centers, introduced in 2021, lack the human and financial resources, operational clarity, and strategic alignment to effectively support farmers. Their offerings are underdeveloped, underutilized, and poorly correlated with agricultural needs across regions. Most funding supports fixed costs with minimal investment in outreach, demonstration, or service innovation.

187. A well-functioning and effective AKIS system in Uzbekistan is especially pertinent for the challenges posed by climate change and the depletion of natural resources, which call for innovative approaches and technologies. Climate change, along with the recent challenges faced by agriculture and the evolving environmental context, demands an expansion of AKIS functions in the following areas:

- Developing the capabilities of farmers and other stakeholders to adapt to and mitigate the impacts of climate change swiftly and effectively, with a focus on capacities for adaptation.
- Enhancing capabilities through a multitiered approach, addressing changes at farm, meso, and national levels to facilitate risk management, which is often local, complex, and dynamic.
- Building adaptation capacities at the community level to enable the widespread adoption of locally driven and place-based approaches.
- Guiding the government on avoiding commitments to support “specific practices or technologies” that do not adequately address local needs, since they can create detrimental incentives or merely reinforce existing production methods.
- Minimizing maladaptation risks, identify no-regret policies that are flexible and robust across various climate scenarios to enhance long-term productivity.
- Leveraging local and indigenous knowledge through participatory plant breeding can aid adaptation by fostering interactions between indigenous knowledge systems and scientific research.
- Identifying hotspot where soil and water risks in agriculture are concentrated. These “soil risk hotspots” and “water risk hotspots” are likely to significantly affect production and may have substantial market and food security impacts.

188. Uzbekistan’s AKIS was formally established by the Decree of the President of the Republic of Uzbekistan No. UP-6159 of February 2021 that incorporated regional advisory service centers into the network of scientific research institutes (SRIs).

Research and development, alongside extension services and other forms of knowledge transfer, are highly efficient investments with significant returns, which can take years to materialize. Increasing investments in AKIS, especially for adaptation, can lay the groundwork for enhanced risk and vulnerability assessments, support informed decision-making, facilitate new technologies and production practices tailored to the changing climate, and build capacity through knowledge transfer programs.

189. In 2018, financing of agricultural knowledge generation was notably low—and lower than in many other low-income countries. Only 0.01 percent of the gross agricultural output or 0.2 percent of all

public expenditures on agriculture were allocated to agricultural science. By contrast, other low-income countries with successful agricultural development programs typically allocate around 0.5 percent of GAO to agricultural research and information and advisory services. So, Uzbekistan’s spending was one-fiftieth that of its peers.

190. To address this disparity, the country’s Agriculture Modernization Strategy aims to increase this expenditure to 0.05 percent of GAO in 2021 and 0.5 percent by 2025. This chapter examines in detail the extent to which these goals are being achieved, the arrangements for public funding, and the transformation and performance of the system. However, this amount doesn’t include AKIS-related capital investment from donor contributions, particularly from the World Bank-financed projects and the EU ASK facility.

Funding for scientific research

191. During the Soviet era in Uzbekistan, a comprehensive network of scientific research institutes (SRIs) dedicated to agriculture was established and generously financed. This was under the umbrella of a specialized institution, the Agricultural Academy of Sciences. But the network was narrowly specialized, focusing primarily on cotton production and its associated irrigation systems.

192. The economic crises of the 1990s and 2000s led to a significant reduction in budgetary allo-

cations that caused a severe contraction in both the staffing and resources of the SRI network. For instance, the Livestock SRI once employed 600 individuals in 1991, yet now retains only 20 to 30 staff members. It previously possessed several hundred hectares of arable land dedicated to fodder crops, a large herd of cattle, and numerous farms and experimental stations. These assets have since diminished substantially, as they have for most other SRIs (Box 6.1).

Box 6.1. Network of agriculture-related SRIs and their hierarchy

After numerous mergers, reductions, reverse separations, and re-establishments, the following structure of the SRI network has developed to date.

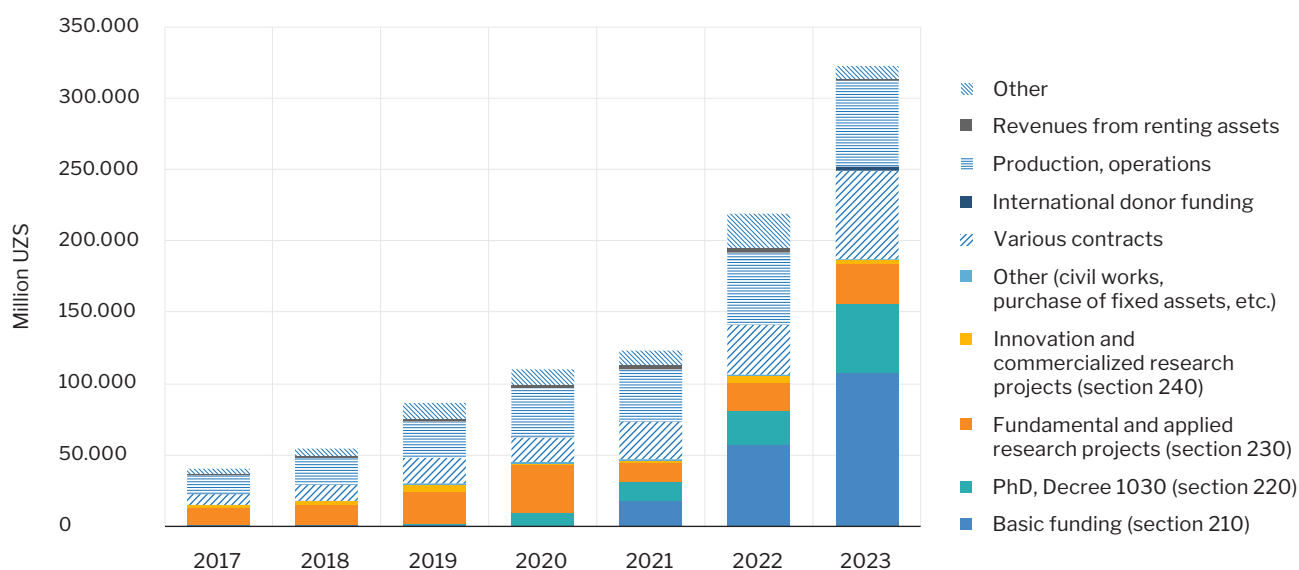
- As part of the National Center for Knowledge and Innovation in Agriculture (so called “AKIS” but not confused with wide concept of AKIS) there are SRIs on cotton breeding, seed production and agricultural technologies; grain and legumes; vegetable and melon crops and potatoes; orchards, viticulture, and winemaking; plant genetic resources; rice; agriculture in the southern regions; agriculture in Karakalpak; rainfed agriculture; grain and rice in Karakalpakstan; fodder crops; and oilseeds and fodder crops.
- Directly under the Ministry of Agriculture is the SRI on soil science and agrochemistry.

- Under the Committee for Veterinary and Livestock Development are SRIs on livestock and poultry; fish farming; and veterinary medicine.
- Under the Committee for the Development of Sericulture and Wool Industry are SRIs on sericulture; desert ecology in Astrakhan; natural fibers; and seed production of steppe and pasture fodder crops in Bukhara.
- Under the Agency for Quarantine and Plant Protection is the SRI for plant quarantine and protection.
- Some other SRIs actively engaged on agriculture, such as the irrigation and water problems, genetics, microbiology, and organic chemistry, not touched in this report.

193. **The total budgetary allocation for agricultural science increased significantly during the reform period.** But it remains below the benchmarks in the Agriculture Development Strategy. As mentioned, the target was to raise public spending on agricultural science to 0.05 percent of the GAO by 2021 and 0.5 percent by 2025. In 2023, the expenditure amounted to UZS 255.6 billion, representing 0.06 percent of GAO. This figure slightly surpasses the 2021 target but is still far from the 2025 goal. The ability of agricultural SRIs to use these funds well is critical to transforming allocated budgets into tangible services and benefits for agriculture.

194. **This chapter examines the structure, sources, and evolution of funding for three groups of SRIs.** The funding for SRIs under the National Center for Knowledge and Innovation in Agriculture increased by 58.3 percent in 2019 and by 77.7 percent in 2022 relative to prior year (Figure 6.1). Funding for the SRIs under the Committee for Veterinary and Livestock Development saw a substantial increase from 2019 to 2023, if at a less rapid pace. For the remaining SRIs, data on budget financing are only available for 2022.

Figure 6.1. Funding of all SRIs under the National Agricultural Knowledge and Innovation Center in 2017–2023, millions UZS



Note: Budgetary funding sources are marked in solid colors, and non-budgetary funding hatched.

Source: World Bank Staff Estimates.

195. Direct funding for SRIs nearly ceased in the early 2010s. To finance their activities, they had to compete for grants for fundamental, applied, and innovative research, as organized by the State Committee for Science and Technology (the precursor to the current MoHESI). This resulted in low salaries and, combined with poor management and institutional capacity, led to a deterioration of human resources. A significant portion of employees obtained their academic degrees in the USSR (42 percent) or from national universities (53 percent), which are not recognized for best practices, often repeating material taught during Soviet times. As a consequence, there is an acute shortage of young scientists trained abroad (1 percent), where they would acquire knowledge about the latest advances in agriculture. And only 4 percent of staff participate in exchange programs with foreign research institutes.

196. After 2017, researcher salaries began to increase gradually, supported by grants for various research types. The research salaries added top-up for publishing articles, participation in conferences and other components for stimulating performance of the scientific staff. Between 2020 and 2022, most agricultural SRIs transitioned to basic funding, which improved the stability of financial flows.

197. Assessing the performance of research institutes is a complex task. However, a few indicators, such as those related to governance quality, market linkages, and funds absorption capacity, can help assess, at least indirectly and partially, SRIs performance.

- **Linkages with agricultural producers and the market.** These connections remain weak under the current system. This is evident as private producers increasingly import seeds, planting materials, fertilizers, agro-technologies, and specialized consultations from abroad. Meanwhile, local farmers and agro-firms rarely engage with existing SRIs, largely due to skepticism about their competence. Instead, farmers exhibit greater trust in agro-specialists from countries like Türkiye, Israel, and the Netherlands, recognizing their superior technical capabilities, technologies, and methodologies. The involvement of entrepreneurs and farmers

in research activities is minimal, and mechanisms for copyright protection and intellectual ownership are weak.

- **Quality of SRI management.** SRI governance is fragmented and poorly coordinated at the national level, with limited synergy between the MoA, MoHESI, and other public agencies. This is exemplified by the limited alignment of SRI research plans with MoHESI's grant funding directions. SRI management quality is similarly low, with only a few exceptions.
- **Incentives and creative environment.** The absence of a creative environment and the negative incentives within SRIs have been cited by many returning Uzbek scientists as reasons for their reluctance to continue in SRI roles.
- **Fund absorption capacity.** The decline in capacity has resulted in inefficient use of even readily available funds, as demonstrated in the implementation of the World Bank's Agriculture Modernization Project.
- **Infrastructure and methods.** The materials and technical infrastructure were outdated or sometimes completely missing in the beginning of the reform period. There is also a lack of a platform for sharing data, scientific achievements, insights, and knowledge.
- **Scientific achievements.** There are challenges in integrating scientific advancements into production processes, compounded by language barriers and a shortage of personnel proficient in foreign languages necessary for collaboration with international institutions and research centers.
- **International cooperation.** Most research institutes maintain weak international relationships or lack cooperation with advanced foreign institutions, research centers, and universities.

198. The lack of long-term planning for agricultural science development is another limiting factor to the enhancement and expansion of AKIS. According to government documentation (Presidential Decree No. UP-6159 dated February 3, 2021), a Research Program for the Scientific Solution of Problems in Priority Areas, Global, Regional, and Territorial Problems in the Sphere of

Agriculture for the Next Five Years was developed by the National Center for Knowledge and Innovation in Agriculture.

- Some funding for scientific projects—specifically fundamental and applied research projects and innovation and commercialized research projects—is managed by MoHESI, which has not aligned its research plans with the five-year program.

- The program was detailed but included many outdated and irrelevant research themes, with only a few new pertinent topics gaining importance.
- During the creation of the program, several SRIs not under MoA's jurisdiction did not coordinate their activities with the program's objectives.

As a result, in the domain of agricultural science, SRIs have shifted toward short-term (one- and two-year) planning for their activities and funding.

Funding for extension services

199. Extension services are provided by 13 Regional Centers of Agricultural Services, established in 2021. These centers undertake a variety of functions, including laboratory, agricultural advisory, and information services, directly engaging with farmers. Providing advisory and information services is a new function for the Ministry of Agriculture and requires special attention.

200. The types of services offered should align with the centers' functions and tasks and be guided by demand assessments, which form the basis for determining the service volume and appropriate division into paid and free services. These factors should inform resource allocations for the Regional Centers of Agricultural Services. Although the centers were established three years ago, the list of advisory and information services they provide, along with their content, methodology, and standards, have not yet been fully defined.

- The centers were conceptualized as Consolidators or Single Windows for existing public services to agricultural producers, such as seed certification, document issuance, and state program loans. It was planned that 161 types of services would be provided by 17 public agencies. The focus was thus on consolidating existing services under one umbrella rather than introducing new services or improving existing ones. These traditional services were to be delivered by existing staff from other departments seconded to the centers, without efforts to make them more appealing.
- Advisory and information services were intended to be provided on a contractual basis, yet no assessment of demand, especially for paid

services, was conducted. Most smallholder farms cannot generate sufficient demand for paid services and are, paradoxically, the most vulnerable and in need of training. Furthermore, the training that the Regional Centers were expected to deliver was typically aimed at promoting better resource use and compliance with environmental standards rather than achieving immediate benefits, for which even large producers are often reluctant to pay.

201. Issues in the design of the centers' service offering led to improper planning of financial and human resources. These centers primarily conduct training on legislative changes and ad hoc training (lacking practical components) as required by regulations. Many planned laboratory facilities within the regional centers conflict with existing ones from other departments, with the exception of soil analysis. Most laboratories were intended to be leased or operated under public-private partnership arrangements. But due to the inconvenient location (as for the Tashkent regional center), attracting private laboratory operators has proven challenging.

202. Lack of human resources and tailored expertise undermines the centers' activities. The establishment of the National Center for Knowledge and Innovation in Agriculture saw an additional 11 staff at the central office and 119 staff at newly created regional centers. But the additional staff expertise and availability were inadequate for providing the needed information and advisory services. For example, regional centers lack agronomists, entomologists, and plant protection experts. Initially, it was expected that other agricultural government agencies and research institutes would

provide specialists on request. These “seconded specialists” were intended to offer information and consulting services on a contractual basis. In practice, other departments did not supply personnel due to existing commitments, and the fee-based service model and poor location were unattractive to potential clients.

203. The financing mode of extension services was inherited from the previous organization with no adaptation to the revised scope and objectives of activities. As stated above, the National Center for Knowledge and Innovation in Agriculture was established by transforming the previously existing Scientific and Production Center for Agriculture and Food Supply under the Ministry of Agriculture, which was a scientific organization. After the transformation, the procedures and mechanisms of funding remained virtually unchanged. So, the code for the functional classification of government expenditures didn’t change: Section 7 048 “Research and development work in the spheres of the economy,” Subsection 210 “Institutions and facilities serving science.” And according to Article 70 of the Budget Code, funding for science is the responsibility of the Republic budget. This does not allow local institutions engaged in agricultural development to actively participate in planning and executing the budgets of regional agricultural service centers.

204. In 2023, funding for regional centers amounted to UZS 15.4 billion. The distribution of funding to the regional centers showed little correlation with relevant agricultural parameters, like sown area and gross agricultural output for respective regions. Public spending per hectare of arable land

ranges from UZS 3,000 to 15,600, so the maximum value is 6.6 times the minimum, with an average allocation of UZS 4,600 per hectare. The correlation between public spending and arable areas is negative, at -0.26.

205. Public funding for the centers, in 2022, ranged between 0.002 percent and 0.011 percent of the gross agricultural output of the respective regions, with an average of 0.005 percent. The differential between the maximum and minimum values is 4.5 times. Although the correlation between public spending and the proportion of gross agricultural output in the region is positive, it remains very weak at 0.25.

206. The weak correlation between public funding of regional centers and the agricultural parameters likely stems from an inadequate service offerings. Public funding covered only fixed costs—such as salaries for management, a portion of service personnel, and utilities. Personnel responsible for delivering information and advisory services had to be recruited administratively or funded through paid service revenues.

207. In addition, the regional services have issues with fund execution and activity implementation. The expense structure of the regional center in Tashkent, for example, reveals a significant shortfall in disbursement at just 49.1 percent in 2021 (Table 6.1). This can be attributed to the challenges in implementing activities due to the novelty of the services and restrictions imposed by Covid-19. Of the expense, labor costs constituted the vast majority, accounting for 82.6 percent of the total.

Table 6.1. Cost estimates of the Tashkent Regional Center of Agricultural Services, UZS thousands

Expense line	2021			2022			
	Planned	Actual	Rate of disbursement, %	Total	Structure %	Increase to planned in 2021, %	Increase to actual in 2021, %
Salary and wages	633,521	395,368	62.4	1,127,298	66.2	178	285
Social tax	155,99	98,179.9	62.9	279,231	16.4	179	284
Other expenses	226,666	5,038.9	2.2	295,484	17.4	130	5,864
Total	1,016,183	498,587.1	49.1	1,702,013	100.0	167	341

208. **A key aspect of agricultural training is the demonstration of modern and efficient practices directly in the field.** The regional center in Tashkent possesses 55 hectares of land, ample for demonstration purposes and holding potential for generating significant profit. But the state budget did not allocate funds for working capital or the acquisition of demonstration technologies. Further, the organization did not have access to preferential loans from the Agricultural Fund.

209. **The volume of paid services offered by the regional centers is thus limited, constraining their capacity to generate revenues and self-sustain part of their operations.** These services were provided solely by the regional centers of agricultural services in the Fergana and Jizzakh regions, and under a single large contract. Even so, the revenue from paid services for these two centers remains a small fraction of the budgetary financing: 1.3 percent for the Fergana center and 8.2 percent for the Jizzakh center.

210. **In conclusion, Uzbekistan urgently needs a more strategic and coherent approach to agricultural science, innovation, and knowledge dissemination.** The challenges of climate adaptation, market integration, and food security cannot be addressed through fragmented and underfunded systems. To unlock the full potential of AKIS, the following strategic actions are critical:

- **Substantially increase and sustain public investment in agricultural R&D**—bringing it in line with global best practices.
- **Continue modernizing research institutions** with targeted infrastructure upgrades, improved management, and strong accountability mechanisms focused on outcomes and adoption.
- **Foster stronger linkages between research, extension, and end-users**, including farmers and agribusinesses, to ensure practical relevance and uptake of innovations.
- **Invest in human capital**, including attracting young scientists, supporting international collaborations, and upgrading training systems for both researchers and extension agents.
- **Align national and regional planning processes** to ensure that resources are distributed based on real agricultural needs and potential.
- **Redesign extension services** around a client-driven model, based on demand assessments, demonstrative learning, and robust feedback mechanisms.

211. **Without a strategically integrated and well-resourced AKIS, Uzbekistan risks falling short of its agricultural modernization and climate resilience goals.** A recalibrated approach that embraces innovation, local knowledge, and institutional efficiency is essential for building a productive, sustainable, and inclusive agricultural sector.

7. RECOMMENDATIONS

212. Uzbekistan's agricultural spending is high when compared to that of other countries. In 2023, it spent UZS 27.2 trillion, which equates to 2.6 percent of GDP,⁶⁹ significantly higher than the 0.8 percent typical in peer non-OECD countries that have successfully developed their agricultural sectors. The agricultural budget in Uzbekistan accounted for 6.4 percent of gross agricultural output (GAO) and 9.7 percent of the total consolidated budget.

213. The previous AgPER recommended allocating public spending in agriculture more efficiently and repurposing public budgets towards measures more conducive to climate-resilient, inclusive agricultural growth. Since that review, Government of Uzbekistan has made notable progress in this area from 2020 to 2023:

- It increased spending on AKIS from 0.01 percent of GAO to 0.06 percent.
- It launched new programs for productivity, diversification, and support for smallholders; these programs also focus on creating agri-food jobs, mitigating and adapting to climate change, marketing support, and introducing recognized international standards.
- It considerably increased subsidies for fixed capital formation.
- It eliminated price penalization for cotton and wheat so farmers can now benefit from market-driven prices.

214. However, despite increasing funds in some relevant areas, Uzbekistan did not manage to repurpose the inefficient and market-distorting coupled subsidies. It preserved existing low-productivity and sometimes detrimental programs, while launching new initiatives that required additional financing. Although these new programs can be highly conducive to structural changes in agriculture, their share of total agricultural subsidies still remains limited. The country's agricultural subsidies remain largely focused on supporting cotton and wheat.

215. Trends in public spending on agriculture were quite uneven during 2020–2023, as allocations for public goods decreased, while the share of expenditure detrimental to climate adaptation and mitigation increased. For example, the share of variable input subsidies rose from 32 percent to 42 percent of total public spending from 2020 to 2023. These subsidy schemes place no formal restrictions on applying inputs, which, coupled with the subsidy, cement Uzbekistan's excessive use of mineral fertilizers, water, and fuel per hectare.

216. Support for agri-mechanization through matching grants has shown positive outcomes, but low funding limits the program's scale. A substantial portion of public support continues to go to less productive subsidies that encourage excessive input use, particularly in cotton and wheat production.

217. Despite the increased level and variety of agricultural subsidies, the institutional capacities of the public agencies responsible for managing them still have critical shortcomings. This has led to challenges in designing, administering, disbursing, monitoring, and reporting the subsidies. The system requires robust support to overcome these initial challenges as it expands. It especially needs a monitoring and evaluation system to assess the effectiveness and efficiency of public expenditure and make policy adjustments based on that evidence.

218. Uzbekistan has eliminated price penalization through price setting and public procurement at below-market prices for cotton and wheat. It implemented important market-oriented cost-saving reforms and diversified the sectors targeted in the last few years, driving significant agricultural GDP growth, which accelerated from 0.8 percent in 2017–2018 to 3.3 percent in 2020–2022.⁷⁰

219. Despite these positive reforms, other potentially harmful market and policy distortions have recently emerged and require careful review. For example, the imbalance of power between cotton-textile clusters and farmers has resulted in these clusters acting as regional private monopolies,

causing farmers estimated annual losses of at least USD 120–200. New export restrictions on animal skins resulted in USD 115–125 million in estimated annual losses for farmers and smallholders, and USD 50–55 million in losses for the silk value chain. Land management, particularly the nonfunctioning land market, remains a major obstacle to structural reforms in the sector and prevents especially small farmers from accessing this productive asset.

220. The uptake of climate-smart agriculture (CSA) and broader application of innovation heavily depend on how effectively the country develops the recently formalized agricultural knowledge and information system (AKIS). Although public spending on agricultural R&D and information-advisory services has increased, it remains well below the target of 0.5 percent of GAO. And scientific research institutes lack incentives for improving their performance and have low capacity to absorb increased funding. The government established extension services in 2021, but the methodologies for service delivery and financial arrangements have yet to be fully developed. Other issues include overreliance on paid service delivery and treating regional extension services primarily as “one-stop” public service centers for farmers, rather than as centers for knowledge sharing.

221. To fully realize Uzbekistan’s agricultural potential, public policy needs to pivot toward a more market-oriented, equitable, and climate-smart framework. Key priorities include strengthening land tenure security, repurposing public spending to enhance productivity, and completing the phase-out of restrictions to free farming. Advancing these reforms can unlock significant market opportunities, raise farmer incomes, and improve fiscal outcomes. For example, addressing land tenure issues across 2.8 million hectares has the potential to generate up to UZS 11.3 trillion in land tax revenues—equivalent to 4.9% of the 2023 state budget or 1.1% of GDP—enough to cover one-fifth of the budget deficit and exceed the year’s total agricultural subsidies.

222. In addition to these structural shifts, this report recommends further actions to enhance flexibility in subleasing farmland, develop legal frameworks for horticulture partnerships, and

regulate pastureland leasing. The cotton sector, in particular, requires continued modernization through mechanization and productivity improvements, along with reforms to reduce the market dominance of cotton-textile clusters. Likewise, distortions in the livestock sector—such as price penalties on animal skins and silk cocoons—need to be addressed, and trade barriers removed to support sector competitiveness.

223. The privatization and reform of SOEs in agri-food value chains is expected to continue, supported by efforts to foster competitive and consumer-friendly markets for inputs and outputs. Critical public services—such as seed certification, soil and animal health diagnostics, and plant protection—need to be strengthened. This includes developing partnerships that extend support to smallholder farmers and underserved areas.

224. At the same time, this report recommends increasing investment in agricultural infrastructure and inclusive value chains. Such investments will be more effective if backed by reliable market information systems and export promotion strategies, alongside targeted human capital development and farm-level asset support to boost competitiveness.

225. Over the longer term, public spending needs to shift away from inefficient input subsidies—such as below-market loans for cotton and wheat—and toward fixed capital formation and climate-smart agriculture (CSA). High-return options include matching grants for on-farm investment and expanded funding for horticulture. A more equitable approach to subsidy targeting, especially for smallholders, can be supported through tools like the national social registry.

226. To enhance environmental outcomes, subsidies linked to climate-harmful practices—such as coal-based incentives—need to be redirected toward programs that promote climate adaptation, reduce food loss, and support sustainability. Efficiency and accountability in public spending can be strengthened through tools such as the Medium-Term Expenditure Framework and program budgeting. The design of agricultural support also benefits from public-private dialogue

and improved institutional arrangements to monitor performance, including the use of non-monetary indicators for services such as irrigation and water management.

227. This report also recommends linking agricultural support to clear eligibility criteria and performance outcomes. For example, once appropriate infrastructure is in place, soil testing could become a prerequisite for fertilizer subsidies. Support programs are expected to be time-bound, innovation-focused, and adapted to the diverse needs of farmers. Their effectiveness can be further enhanced by aligning them with broader development priorities—such as water-saving irrigation and climate services—and by investing in storage, logistics, and marketing that support CSA adoption.

228. The expansion and modernization of sector support services—particularly agricultural knowledge and innovation systems (AKIS)—is also essential. Farmers require tailored, location-specific advice to make informed decisions. Meeting this need calls for institutional reform, international collaboration, and updated research frameworks. Extension services need to better align with farmer demands, especially among smallholders. This will require increased staffing, reduced reliance on fee-based models, and enhanced public investment—potentially reallocated from low-impact subsidies. Enabling private advisory services also plays a role in accelerating technology adoption.

229. Institutional capacity also needs to be strengthened. Improved policy analysis tools, farm-level data systems, and comprehensive monitoring frameworks are central to informed decision-making. The digitalization of land records and subsidy administration can further improve transparency and efficiency.

230. The framework for repurposing of agriculture public expenditures in mid-term will be supported by refined public finance management procedures envisaged by recently issued State of Public Finance Improvement for 2026-2030. The Strategy envisages enhancing implementation of performance-based budgeting and other upgraded

tools for improved efficiency of spending, digitization, as well as recognizing implicit expenditures as tax exemptions, imputed expenses and other forms of quasi-fiscal operations. Expected reforms in public finance management will enable to keep agricultural spending under current expenditure envelope.

231. Taken together, the core elements of Uzbekistan's agricultural transformation include decoupled, climate-oriented support; greater investment in key public services; and expanded access to markets. If implemented through inclusive, evidence-based policy dialogue, these measures are expected to facilitate WTO accession, enhance sector competitiveness, and position agriculture as a central driver of sustainable economic growth.

232. In the near term, this report recommends prioritizing the removal of restrictive regulations, strengthening land rights, and eliminating inefficient subsidies. These quick wins can enhance farmer autonomy, encourage crop diversification, and allow public resources to be redirected toward more productive investments. At the same time, investments in institutional capacity and digital infrastructure are needed to strengthen governance and lay the groundwork for long-term resilience.

233. In summary, this review recommends that Uzbekistan pursue a three-fold approach: (i) repurpose agricultural public spending toward decoupled support aligned with CSA goals, (ii) strengthen market orientation through increased investment in the sector, and (iii) improve the quality and reach of public services for agriculture. When developed through broad-based stakeholder engagement, these measures are expected to improve the competitiveness of Uzbekistan's agri-food sector and facilitate the country's integration into global markets through WTO accession.

234. The following tables present the key recommendations in two stages. Table 7.1 outlines urgent and short-term actions that can generate immediate results. Table 7.2 focuses on medium- and long-term reforms necessary for sustainable structural transformation.

Recommendations

Table 7.1. Urgent and short-term agricultural policy recommendations

Category	Recommendation
Public policies for agriculture	■ Remove the farm specialization requirements to boost market opportunities and farmer incomes. ■ Develop regulations and public spending for rangelands to reverse land degradation trend, improve productivity and management while addressing social issues. ■ Implement economic incentives to diversify crop rotations beyond cotton-wheat systems. ■ Remove negative price support measures (such as tariff and non-tariff export barriers) on livestock products and silk.
Repurposing public spending and redistributing agri-subsidies	■ Embed pedigree animal import subsidies in a national strategy for genetic improvement and accelerated genetic progress across livestock systems. ■ Reallocate funds planned for livestock VAT refund to programs improving feed resources and enhancing feed use efficiency and productivity. ■ Reallocate funds from cotton and wheat input subsidies to other subsectors and programs enhancing productivity. ■ Shift to evidence-based agricultural support, promoting transparency and digital platforms. ■ Redirect subsidies from climate-harmful practices (e.g., coal boilers) to agri-environmental incentives. ■ Establish an agriculture risk insurance scheme using open data and weather information systems.
Enhancing the functional aspects of agricultural subsidies	■ Revise subsidy criteria and duration, focusing on results-based support. ■ Modify investment matching grants to offer upfront flexibility in equipment selection. ■ Expand digitalized agri-subsidy systems for transparent targeting and assessment.
Institutional capacity building	■ Strengthen farmer support services, including agricultural knowledge and innovation systems (AKIS). ■ Enhance policy analysis capabilities in public agencies through improved farm-level databases. ■ Establish monitoring systems for tracking agriculture-related public spending.
Agriculture data and digital platforms	■ Enhance land use databases and statistical systems with unified indicators. ■ Implement agri-census and farm surveys to track subsidy impacts.
Agricultural land market development	■ Enable full transferability of land tenure rights to support a functioning land market ■ Improve tenure security by eliminating state repossession of leased land based on efficiency assessments.

235. Medium- and long-term agricultural policy recommendations focus on structural reforms and sustainable growth strategies that require more time to implement but promise lasting economic benefits (Table 7.2). These measures include liberalizing agricultural markets, gradually reducing market distortions, and introducing private land ownership, which will align Uzbekistan's agricultural sector with

market economy principles. Additionally, investments in agri-environmental incentives, digital monitoring platforms, and sustainable land management will ensure long-term productivity and resilience. The reforms emphasize governance improvements, data-driven policy design, and export development, paving the way for a more competitive and environmentally sustainable agricultural sector.

Table 7.2 Medium- and long-term agricultural policy recommendations

Category	Recommendation
Public policies for agriculture	- Continue agriculture SOE reform to reduce budget liabilities. - Liberalize input and machinery markets to prevent monopolies. - Integrate pedigree animal import subsidies into a comprehensive breeding program.
Repurposing public spending and redistributing agri-subsidies	- Reduce market distortions by narrowing the gap between subsidized and market interest rates. - Eliminate the planned partial VAT refund for livestock products, reallocating funds to feed use efficiency and productivity-enhancing technologies. - Develop agri-environmental incentives in line with WTO green box measures. - Increase matching grants for farm investment, ensuring strong governance and transparency - Incentivize cold storage and processing to reduce food loss, particularly in horticulture - Establish seed multiplication incentives for priority crops. - Promote sustainable pasture management and explore carbon trading opportunities. - Support export market development through infrastructure investment and WTO compliance.
Institutional capacity building	- Engage farmers and agribusinesses in all policy stages. - Pilot evidence-based agri-incentive programs to assess their impact on productivity, water use, and soil quality.
Agriculture data and digital platforms	- Expand digital platforms for agri-environmental and livestock monitoring. - Develop Open Data systems for subsidy tenders and payments. - Establish an Agriculture Market Information System (AMIS).
Agricultural land market development	- Introduce private ownership starting with household and dehkan farmland privatization. - Conduct land inventory assessments to optimize public land use and reallocate excess land via auctions. - Modernize land use monitoring using GIS, remote sensing, and real-time data analytics.

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APPENDIX A1.

AGRICULTURE POLICY STRATEGIC FRAMEWORK

Table A1.1. Policy documents related agriculture, water sector and the green economy

Policy document	Connection to climate change
New Uzbekistan Development Strategy for 2022–2026	The strategy ensures that national development goals—100 high-level objectives deriving from the overall vision—are aligned with climate change objectives. Goals 24 and 80 are directly related to climate change mitigation and adaptation.
Strategy for Agricultural Development of the Republic of Uzbekistan for 2020–2030	This strategy includes around 60 measures to: ■ ensure food security and introduce high-yield and climate-resilient crop varieties; ■ reduce the role of the state in managing the agri-food sector and increase investment attractiveness, ensure sustainable use of natural resources and environmental protection; ■ develop modern public administration systems, diversify public spending in supporting the sector; and, ■ develop scientific, educational, information system, and consulting services, and develop transparent sectoral statistics.
Water Sector Development Concept for Uzbekistan 2020–2030	This is the main policy document for water use. Its main aim is “to create conditions for meeting the ever-growing water needs of people, the economy, and the environment; ensure reliable and safe operation of water infrastructure and efficient water management and use; improve the land reclamation status of irrigated lands; and achieve water security in a context of growing water scarcity and global climate change”.
Presidential Decree on Strategy for Transitioning to a Green Economy 2019–2030	This decree outlines a comprehensive roadmap for Uzbekistan to achieve sustainable development. By focusing on resource efficiency, environmental protection, sustainable energy, climate change mitigation, and green innovation, it aims to build a resilient and sustainable economy. In particular, it focuses on developing climate-resilient infrastructure, enhancing early warning systems and disaster preparedness, and supporting vulnerable communities in adapting to climate change impacts.
Green Economy Strategic Framework 2022–2030	The framework aims to transition Uzbekistan towards a sustainable, resilient, and inclusive economy by focusing on sustainable economic development, resource efficiency, environmental protection, renewable energy, and climate change mitigation. In terms of climate change adaptation and mitigation, it aims to implement low-carbon technologies and practices in key sectors, enhance carbon sequestration through afforestation and sustainable land management, develop infrastructure and systems to withstand climate-related risks, and promote adaptive agricultural practices to cope with changing climate conditions.
National Program on Climate Change Adaptation and Mitigation in Agriculture	The content of this national program mostly consists of a roadmap for strengthening international cooperation, accelerating joint projects and activities on climate change adaptation, researching and creating new drought-resistant varieties of traditional crops, cultivating drought-tolerant crops in rainfed areas, and managing pastures more sustainably.
Climate Change Strategy through 2030	Under development
National Sectoral and Regional Adaptation Plans through 2030	Under development
Long-Term Decarbonization Strategy	Under development

APPENDIX A2.

DATA AND METHODOLOGY

This review uses the definition of agricultural public expenditure from the internationally recognized Classification of the Functions of Government. According to this classification, agricultural public expenditures include expenditures on crops, livestock, fisheries, forestry, and irrigation/drainage. However, they exclude spending on rural development (such as rural infrastructure, with the exception of agriculture-related infrastructure like agri-logistics), food safety, nutrition-related health programs not linked to agricultural production, and social safety nets. The total amount of agricultural public expenditures encompasses both direct expenditures from the state budget and implicit expenditures, which include subsidized interest rate loans, debt write-offs, tax exemptions, and support provided by quasi-public agencies, among other forms of assistance. This report analyzes the period from 2021 to 2023. Some in-depth topics, however, extend beyond this timeframe: it examines agricultural subsidies comprehensively for 2018 to 2023, and it also addresses certain key expenditure trends for 2024.

Estimating the level of agricultural public expenditures and their components in Uzbekistan presents a complex challenge. These expenditures are distributed across and allocated through 20 ministries, agencies, committees, funds, government-established non-governmental organizations (NGOs), and state-owned banks (SOBs). Notably, this figure does not account for local governments (khokimiyats), which serve as de facto key “distributors” of public expenditures. The result is an “over-fragmentation” of public expenditure management. The task is further complicated by the numerous establishments, mergers, closures of public agencies, transfers of functions, and expenditure commitments that occurred during this period. Additionally, in response to significant recent volatility some urgent and ad hoc agricultural public spending was introduced, often as an exception to standard procedures for implementing subsidies. This has added to the complexity of the system.

The budget reports from the Ministry of Finance do not always provide enough detail to ascertain total agricultural expenditures. Furthermore, capital and recurrent expenditures are budgeted, disbursed, and reported separately. Detailed budget breakdowns by program and function must be derived from individual ministries, agencies, committees, and funds, which often requires coordination with various departments within these institutions. Meanwhile, expenditures related to agriculture are sometimes “concealed” within other programs, such as family entrepreneurship support initiatives that aid smallholder farmers.

This review has collected data with a detailed breakdown by programs and items, rather than a single aggregate figure, in order to analyze allocative efficiency. Moreover, a comprehensive review has enabled a closer examination of climate-related considerations within public expenditures and aids in identifying the beneficiaries of public support. By disaggregating agricultural support mechanisms and sub-programs, this assessment thoroughly evaluates agricultural subsidies. An extensive and deep review of these subsidies has revealed several implicit public expenditures that were omitted in the Second AgPER.

Therefore, the budget figures presented in this review are World Bank estimates based on data gathered from various public institutions and official publications. These figures may differ slightly from official data and could exclude certain expenditures that might be classified as agricultural public expenditures but that were unavailable to the World Bank when preparing the report. Nevertheless, any omitted expenditures would constitute only a minor portion of total agricultural expenditures.

We analyzed budget data using the OECD functional classification of public expenditure, since global experiences demonstrate that the efficiency and effectiveness of agricultural public expenditures are heavily influenced by whether funds are allocated to ‘appropriate’ programs and functions that address market

failures and provide public goods to the sector. By using OECD classification that distinguishes between direct farm payments (or subsidies) and general sector support, we can draw some preliminary conclusions about the allocative efficiency of public budgets. Moreover, the Second AgPER used the same approach, which allows us to maintain analytical consistency.⁷¹

The WTO classification of domestic support measures in agriculture differs from the OECD functional classification. While both OECD and WTO classifications assess agricultural support, their methodologies, scope, and objectives differ significantly. The OECD classification is functional, focusing on how governments allocate public expenditures in agriculture, while the WTO classification is trade-oriented, assessing whether support distorts trade and requires reduction commitments. However, there is a substantial overlap between what the two classifications consider economically efficient and what they deem trade-distorting. Many economic efficiency-oriented expenditures, such as investments in infrastructure, knowledge transfer, and innovation systems, align with WTO Annex 2 of AoA (Green Box) criteria. Nonetheless, the OECD's agricultural public expenditure classification does not directly assess trade impacts, meaning that certain expenditures classified as agricultural under OECD may fall into WTO categories that require reduction commitments if deemed trade-distorting. On the other hand, some expenditures that are included in OECD classification may be excluded from domestic support measures under the WTO commitments (for example, some tax-related support measures). Despite a substantial overlap, the two classifications are not identical, leading to discrepancies in how certain policies are categorized and treated under trade rules.

Agri-subsidies data collection and coverage

Direct payments to agricultural producers include direct disbursement of funds from state budget to accounts of farmers as well as supporting by concessional loans, credit guarantees, administrative fee, tax and customs exemptions.

Data quality and completeness:

- The authors received data from all organizations except 4: Tax Committee, Customs Committee and the Central Bank and Farmers' Council. Bulk of subsidies contained information both value and number of recipients. However, number of recipients in some cases has double counting (the same farmer might be recipient of several subsidies). Data on non-monetary attributes of the subsidies as ha of eligible land, etc. was received only for 1/3 of disbursed subsidies. Lacking data on subsidies administered by the farmers' Council was received from the MoEF. The authors used estimations for the following sources:
 - Tax committee estimation related to: i) personal income tax and social tax exemptions for cotton manual picking. the estimate based on volume of raw cotton manually picked, tariffs per kg of picked cotton and tax rates. ii) water and land tax exemptions for water saving technologies implementation. The estimate based on area of land implemented water saving technologies and average land/water tax rates.
 - Custom exemptions are not estimated as from the nature they are artificial: the Govt establishes high (almost prohibitive) import tariff barriers and then grants exemption. E.g. import excise tax for tractors is 70 percent. Compare with other countries.
 - Central Bank data on concessional loans was derived from the Statistical Bulletin of the Central Bank. For avoiding double account, amount of concessional loans disbursed from the AgriFund and Farmers' Council deducted.
 - Subsidies in the form of concessional loans are estimated as interest payment reduction. Source of the market interest rate information is the Central Bank of Uzbekistan.
 - The authors also estimated budget lost opportunities due to free interest rate concessional loans to some SOEs as "AgroKimyoKhimoya".

As most of agricultural subsidies are not direct payments from the State budget, they should be estimated. Methodology is depending to the type of the subsidy (concessional loans, credit guarantees, tax exemptions).

Estimating agricultural subsidies in form of concessional loans based on calculating difference between concessional loan's interest rate and market interest rate.

Formula for estimating Agricultural subsidies in form of concessional loans:

$$SCL=L \times (IM-IC) \times APCL$$

Where:

L – amount of the concessional loan

IM – Market interest rate

IC – Concessional interest rate

APCL – concessional loan's average period.

This exercise should be done for each program of the concessional loans: for growing cotton, for growing wheat, "Each family is entrepreneur," etc.

Data sources for estimating this subsidy are:

i) market interest rate – Statistical Yearbook of the Central Bank of Uzbekistan;

ii) concessional loan amount per each program – the Agri-Fund under the Ministry of Economy and Finance (MoEF), the Horticulture Fund under the Agency on Orchards and Greenhouses, the Fund under the Farmers' Council, and the Statistical Yearbook of the Central Bank of Uzbekistan.

Estimating tax exemptions.

The public tax database doesn't cover most of agriculture related taxes and exemptions. Therefore, the team has to estimate such type of support. Methodology of estimating tax exemptions is based on tax base calculations and effective tax rates.

Data sources: national tax legislation, web-site of the MoA and MoWR on water saving technologies implementation.

Formula for estimating Personal income tax exemption for cotton manual picking:

$$TEPITCM=CY \times (T1 \times 60\% + T2 \times 40\%) \times TRPIT \times HM$$

Where:

CY – cotton yield

T1 – tariff for the 1st round of manual picking

T2 – tariff for the 2nd round of manual picking

TRPIT – personal income tax rate (12%)

HM – share of manually harvested cotton (94%)

Amount of social tax exemption for cotton manual picking is the same as for personal income tax.

Both taxes have the same tax rate and tax base.

Formula for estimating Land tax exemptions for implementing water saving technologies:

$$TELTWS=AWS \times ATRLT$$

Where:

AWS – area under water-saving technologies, ha

ATRLT – average tax rate for irrigated land, per ha

Formula for estimating Water tax exemptions for implementing water saving technologies:

$$TEWTWS=AWS \times TRWT \times AWC \times 50\%$$

Where:

AWS – area under water-saving technologies, ha

TRWT – water tax rate, per m³

AWC – average normative water consumption, m³ per ha

APPENDIX A3.

FINDINGS FROM THE FIELD MISSION IN UZBEKISTAN (11-19 FEBRUARY, 2025)

This Annex summarizes the key findings and feedback obtained from representatives of the agribusiness private and public sectors in Karakalpakstan, Andijan, Urgench, Fergana, and Khoresm regions during the World Bank mission conducted between February 11 and 19, 2025. These findings were presented and discussed with representatives of the Ministry of Agriculture and the Ministry of Economy and Finance during the closing meeting of the mission in Tashkent.

The team, comprised of Milos Milovanovic, Agribusiness Investment Support Specialist (Food and Agriculture Organization of the United Nations) and Sandjar Babaev, Local Consultant (World Bank), interviewed representatives from relevant national and local authorities, agricultural input providers, machinery and mechanization suppliers, farmers, small and medium size agribusiness companies engaged in various types of agricultural production (seedlings, cotton, wheat, horticulture), cooperatives, producer organizations, commercial banks, agro-leasing companies, sector specialists, etc., focusing on the performance of the so-called “fixed capital formation” incentive and ways to redesign it to better meet the needs of the agriculture sector.

The main topics discussed with agribusiness sector representatives during the interviews included the implementation mechanism of the matching grant scheme (a subsidy for recovering part of on-farm investment costs), the level of public support provided to beneficiaries, and whether the subsidy comes with technical assistance for implementing investments. Additionally, factors influencing applicants’ choices in the process, the availability of technology to help producers enhance agricultural productivity, and other related topics were covered. The discussions also addressed the country’s overall agribusiness sector investment needs, the impact of climate change on agriculture, and optimal models for better self-organization among producers (through cooperatives, associations, and producer organizations), as well as the performance of ongoing agricultural policy programs. The list of questions raised during the interviews is included in this report.

Matching grants are a tool aimed at promoting private sector development and are often used for agricultural development. A matching grant is defined as “a one-off, non-reimbursable transfer to project beneficiaries, for a specific purpose, based on the condition that the recipient contributes for the same purpose”. These grants can be used for a variety of activities, including technical assistance, investment in assets, or financing of working capital.

Matching grants can stimulate market development, innovation, and promote asset-building among low-income segments, while fostering private investments and investors towards underserved markets by addressing specific barriers to market development. Matching grants may help farmers and agricultural SMEs invest in activities that have great potential to generate growth, but they are unwilling or unable to finance due to a variety of constraints, which can be internal or external, financial or non-financial. In particular, matching grants are often used as a way to stimulate innovation or technology adoption, as investors might be reluctant to invest due to high risks.

Scarce production capital, particularly in terms of modern machinery and mechanization equipment, is a significant challenge for Uzbekistan’s agricultural sector. This deficiency is largely attributed to long-standing historical policy distortions and underinvestment, which have hindered productivity and efficiency.

Considering the past under-investment in capital stock in agriculture, recent incentives for fixed capital formation, frequently referred to as matching grants, are a positive development. Uzbekistan introduced subsidies and interest payment compensation for fixed capital formation in 2021 in response to high capital demand (Table below). The Entrepreneurship Fund for fixed capital and concessional loans through the “Every Family is Entrepreneur” program plays a major role in modernizing machinery and mechanization in the country. However, Uzbekistan needs to assess the effectiveness of support through those programs to determine their outcomes. These policy measures were increasingly used to support the least productive crops, with limited effect on the existing crop structure, thus curbing the potential for structural transformation in agriculture.

Table A3.1. Uzbekistan: Incentives for fixed capital formation introduced since 2021 (million soms)

Incentive type	2021	2022	2023
Subsidies from Entrepreneurship Fund for fixed capital	455,618	143,171	3,214,228
Concessional loans on agriculture within “Every Family is Entrepreneur” program	725,767	811,944	809,817
Subsidies from Orchards Fund	104,478	105,682	170,000
Tax exemptions for water saving technologies	48,416	66,432	102,693
Wells for household plots in water-scarce areas (Farmer’s Council)	25,630	95,650	65,319
Water saving subsidies from various public agencies (MoA, State Committee for Veterinary and Livestock Development (SCVLD), MoA for Khorezm and Karakalpakstan)	34,791	30,569	60,596
Support from the Fund for Attracting the Population to Entrepreneurship	-	30,780	45,012
Subsidies for water supply needs (Silk Committee)	4,440	4,920	19,876
Other (introduced before 2021)	943,037	337,071	322,597
Total incentives for fixed capital formation	2,342,177	1,626,219	4, 810,137

Source: World Bank Staff estimates

The key issues in implementing the incentive are outlined below, along with proposals for amendments for further discussion and consideration by the relevant authorities. The findings from the field visits were validated during the technical meetings with government representatives, and the areas identified for potential strengthening of the measure’s implementation offer options that should be considered in the context of broader policy objectives for the sector. Opportunities for enhancing the fixed capital formation measure exist along the measure’s design, its implementation modality, and the monitoring and evaluation stage. These can be addressed through legislative action (by amending relevant by-laws) and corrective measures during implementation.

Key issues and options for potential amendments

1. Communication – Farmers’ lack of awareness about the measure in implementation

Communication with potential applicants is critically important for the uptake of the policy measure, such as an incentive for fixed capital formation by beneficiaries, maximizing the impact of incentives on productivity, and improving their targeting. This is important not only from the perspective of the number of applications received and therefore funds disbursed, but also for promoting the quality of the applications received. In Uzbekistan, many farmers do not know about the existence of the incentives or have incomplete information about the program and funding possibilities under it.

Proposal: A strong communication/awareness raising campaign should be organized upfront to every Call for applications. In addition, succinct information on conditions for applying and obtaining a subsidy should be made available to potential applicants online at any time.

2. Technical assistance is not included as an eligible investment cost

The current model applied in the country does not cover the cost (neither full nor partial) of the technical assistance associated with the investment, which is critically important for the successful implementation of the investment. For this reason, in many cases, fixed assets acquired through the program (such as drip irrigation equipment) have remained underutilized (not been properly or sufficiently used), preventing the maximum impact these investments would have on farm performance.

Proposal: Introduction of technical assistance component as it has proved to be of vital importance for the successful implementation of investments supported through similar policy measures worldwide.

3. Incentive coverage

Incentive for fixed capital formation does not provide support to beneficiaries (farmers and aggregators) for the construction and/or expansion of buildings and other production facilities, neither include capacity building, knowledge sharing, or support to the innovation uptake by farmers.

Proposal: Expand the list of eligible investments and costs under the incentive to promote more investment, under the inclusive package, providing knowledge and skills needed for their use.

4. Uncertainty about the application result

The incentive for fixed capital formation is implemented in the form of the rebate of the share (15%) of the investment cost after the actual investment, rather than as a standard matching grant mechanism, which foresees submission of application (together with business plan, bank statements, letter of intent and other documentation foreseen by the relevant regulatory act such as the Grant operational manual) before processing and approval. For this reason, an applicant cannot be certain about whether his or her application will be financed even if all conditions prescribed are fulfilled, or it will be on hold and the rebate postponed until (if) sufficient budgetary funding is available.

Proposal: Modification of the implementation modality in the form of an ex-ante model (opening the call for applications, screening, processing, and approving applications, issuing a decision on subsidy and payment at the end of the process).

5. No foreseen time frame for application approval

Time needed for processing, inspecting, and approval of the application can range from one month to more than one year, and even longer. Clear deadlines for each step in the process, although they exist formally, are not respected in practice. In addition, the approval mechanism is inconsistent across different regions of the country.

Proposal: Introduction of binding deadlines for each step in the process from application submission until the subsidy payment.

6. Inability to assess the budgetary allocation needed for the measure

The retroactive principle of the incentive, based on the processing and approval of the application received after the actual investment took place, leads to the inability of authorities to plan budgetary resources needed for the implementation of the program. Usually, similar programs in other countries are implemented by opening the so-called Calls for proposals (or Calls for applications), with the defined budget allocated under the Call and ranking criteria for applicants and their investments, before the actual investments are undertaken. Only after successful approval of the application, farmers would be able to undertake investments and receive a part of the investment cost back from the Government. In Uzbekistan, at the moment the Call for applications is launched, it is uncertain how many potential beneficiaries will apply (consequently the funds needed for the implementation of the incentive) and therefore the budget for the forthcoming budgetary cycle cannot be planned accordingly.

Proposal: The same as for point 4.

7. Rebate and not a matching grant

As mentioned, the incentive is currently implemented as a partial rebate of the total investment cost. Applicants are expected to finance the investments from their resources or resources borrowed from the bank, and apply for a subsidy (rebate) after the investment is undertaken. The fact that applicants need to finance investments themselves and wait for the outcome of the application process is perceived as a financial endeavor with an uncertain outcome for many of the farmers visited and does not contribute to the investment mobilization.

Proposal: Allow upfront payments of rebates/grants to beneficiaries, under strict contractual obligations and monitoring.

8. Limited investment options (mechanization, livestock, irrigation and saplings)

Currently, incentives for fixed capital formation are available for a very limited number of investments such as machinery and mechanization, livestock import, irrigation equipment and fruit/grape saplings. Other on-farm investments are not eligible for the partial rebate.

Proposal: Expansion of eligible investments covered by the incentive to a range of on-farm investments for the modernization of the sector and productivity growth, including climate-smart agriculture solutions.

9. Limitations in equipment purchasing—strictly from the list

Interested farmers, in order to submit the application and receive a subsidy, can purchase only machinery and mechanization from the pre-determined list. The list of eligible machinery and mechanization is not inclusive (does not include many of the brands/models available on the market), with prices for the equipment in the pre-approved list frequently higher than standard market prices. The fact that farmers, in order to receive a subsidy, pay for mechanization and machinery more than they would be paying if they did not apply for the rebate, results in the actual decrease of the subsidy from the originally planned amount. In addition, this can be considered as a (partial) transfer of public support from farmers to the dealers of machinery and mechanization.

10. Limitations in drip irrigation suppliers and equipment

Similarly to the mechanization and machinery purchases, applicants can undertake investments in equipment provided by suppliers who are part of the pre-determined list of drip irrigation suppliers. In case that drip irrigation is installed by a supplier who is not on the list, the investment becomes ineligible for public support.

Proposal: Untying drip irrigation incentive from the list of authorized equipment suppliers through the abolishment of the pre-determined list of suppliers.

11. Strong focus on primary agricultural production—no marketing/processing support

The incentive for fixed capital formation is strongly focused on public support to primary production, without sufficient incentives for marketing of agricultural products, or their processing.

Proposal: Amendment of the existing regulation (or development of a separate regulation for introduction of new incentive) to include investments in agricultural processing and marketing, focused on adding value to agricultural production.

12. Mandatory insurance

The applicants are obliged to sign an insurance contract for purchased machinery and/or mechanization with a determined supplier at the rate of 7%, which is higher than the regular market insurance rate.

Proposal: Similarly to drip irrigation and mechanization incentives, "the untying" of the incentive through eliminating the exclusive insurance supplier.

13. Relatively modest levels of public support under the scheme

Both the relative low subsidy amount (15% of total investment cost) and the nominal amount (about US\$ 700 per ha of drip irrigation, US\$ 2 per fruit sapling) are low and do not incentivize innovative technology application by farmers but rather promotes investments “as usual”.

Proposal: Repurposing of the existing Government agricultural spending to increase both relative and nominal subsidy levels to incentivize larger and more sophisticated on-farm investments.

14. Paper based applications

While the application process for the drip irrigation incentive takes place electronically, the applications for machinery and mechanization are still paper-based.

Proposal: Transfer to electronic submission of applications for mechanization/machinery and other eligible investments under the incentive.

15. Technology issues

Some interviewed farmers reported that the drip irrigation systems purchased through the incentive were of low quality and improperly installed. As a result, farmers could not use the systems throughout the contract period (five years from the installation). According to the regulation on incentives, in such cases, a subsidy return of 80% of the funds granted is requested by the GoU.

Proposal: Monitor of the investments supported through the incentive and “blacklist” suppliers performing below professional standards to be classified as ineligible to provide their services to applicants under future calls for applications.

16. Involvement of other commercial banks in the implementation

The incentive is currently implemented with the exclusive participation of only one state-owned bank, Agrobank. Involvement of commercial banks in the implementation of the incentive will bring choice to applicants and have numerous positive effects on the rural finance market, including larger penetration of financial services in rural areas and larger competition among participating banks, and consequently positive effects on interest rates in the sector.

Accompanying policy measures to be considered:

- Support for agricultural insurance development through the insurance premiums
- Strengthening the capacity of public agricultural advisory and extension services, in parallel to creating an enabling environment for private advisory development.
- The design of a new matching grant scheme (including in a pilot region) based on tripartite contributions from: a) beneficiary, b) commercial bank and c) Government
- Study visits to countries with well-functioning matching grants schemes
- Support in the development of the new/upgrade of the existing online platform for online applications and support to beneficiaries in the process

The World Bank team met and interviewed around 30-40 senior management and specialists of ministries, representatives of off-budget funds which allocate subsidies; commercial banks and leasing companies financing agri-machinery purchase; agri-machinery, input and on-farm service suppliers; agri-business and agri-finance experts; farmers’ associations; farmer cooperatives and farmers from five regions of Uzbekistan, including Republic of Karakalpakstan (12 farmers), Andijan (6 farmers), Fergana (11 farmers), Namangan (4 farmers) Khoresm (8 farmers) regions.

Questions raised during the interviews (non-exhaustive list):

1. Which policy subsidy measure have you benefited from?
2. How did you learn about the measure?
3. Was the information provided about the measure clear?
4. How satisfied were you with the measure?
5. Have you been provided with assistance/advice during the application process?
6. Have you been provided with technical assistance during the implementation of the investment?
7. Was the application process complicated, and were there any difficulties?
8. What can be improved in the implementation, and how?
9. What (if any) are the limitations of the measure?
10. What were the effects of the investment on your farming operations?
11. If the measure was not in place, would you still invest?
12. Would you apply again and if yes, what are your on-farm investment needs?
13. Would you recommend this measure to your colleagues?

APPENDIX A4.

SOURCES AND STRUCTURE OF FUNDING FOR SRI

This appendix presents an analysis of the SRI funding sources, which include the following components:

I. Budget sources

- basic financing
- doctorate expenditures and salary supplements
- research grants from the the Science and Innovation Fund of the Ministry of Higher Education, Science, and Innovations (MoHESI)
- various one-time expenditures

II. Extrabudgetary sources

- foreign grants
- business contracts
- business activity, renting assets, etc.

Basic financing includes expenditures for the maintenance of buildings and structures, payment of basic salaries to key employees of SRI. Usually, this refers to the management of SRI, heads of departments and 1-2 researchers from each department (depending on how the staffing table was approved). Basic salaries are fixed in the Resolution of the Cabinet of Ministers No. 233 dated August 18, 2009 “On measures to further stimulate the work of scientists.” The basic salary of a director of an SRI can range from USD 870 to 960. Besides the basic salary, they receive salary supplements.

Doctorate expenditures and salary supplements include: 1) covering the costs of training doctoral students, trainee-researchers; 2) bonuses/supplements to basic salaries, for example, for the publication of articles in foreign journals, etc. They are described in the Resolution of the Cabinet of Ministers No. 1030 dated December 24, 2019 “On the procedure for additional payments to employees with an academic degree engaged in science, scientific, pedagogical and labor activities in state organizations in the field of science and education.” Together with the supplements, the total wage of a Director of an SRI is about USD 2000.

Research grant types from the MoHESI and their distribution procedures:

Research grants financed from Fund for Science and Innovation of MoHESI. The Fund for Science and Innovation is financed from the Republican Budget. Issues on research grants and procedures of allocation are regulated by the Resolution of the Cabinet of Ministers #133.

Types of research grants:

- **Fundamental.** Requirements: creating new knowledge, methods, theories, etc. Term—up to 5 years.
- **Applied.** Requirements: creating new products, services, production methods, scaling-up production of already invented products, etc. Term—up to 3 years.
- **Innovational.** Requirements: developing prototypes of new products, converting results of fundamental and applied research to export-oriented or import substitution goods, etc. In practice, requirements are almost the same as for applied research. Term—up to 2 years.

There is no rule as to the allocation of shares of the Fund for Science and Innovation by types of research grant and their distribution between various sectors.

The MoHESI regularly announces contests for research grants (3-4 times each year). For each theme at least 2 responsive proposals should be submitted. If no proposal or only 1 proposal submitted, the contest re-announced. If only 1 proposal re-submitted, then this proposal to be evaluated.

Evaluation is 2 staged: 1) technical—examining formal requirements; 2) scientific—examining scientific value

of the proposal. Scientific evaluation is based on scores (0-100 points). Scientific evaluation is carried out by the Scientific-Technical Councils of each area (currently there are 17 councils, including 1 council for agriculture, veterinary and environment and 1 council on forestry).

Requirements applicable to research grant budget: at least 40 percent should be spent for procuring tools, equipment, consumables, etc. (for humanitarian sciences—at least 20 percent), prohibited to spend for purchasing cars, construction, etc.

Monitoring over research grants implementation is conducted by submitting quarterly report to MoHESI. MoHESI has the right to do on-site inspection.

Various one-time expenditures are usually allocated for capital repair, construction, and large-scale purchases of equipment. These funds are rarely allocated and are usually spent by the MoA itself (centralized purchases).

Foreign grants—until recently—were the main source of skills improvement, academic exchange and purchases of some equipment. But owing to problems with national budget execution and procurement procedural problems, misuse of funds by recipients or mostly their upper organizations, donors prefer to spend money and make procurement directly, not through budget accounts of SRIs. Therefore, most of time such funds are not incorporated in budget reporting of SRIs.

Business contracts based on the innovation and commercialization of research projects. Basically, this is the payment of royalties to SRI as authors of varieties, etc. Due to non-compliance of copyrights, this source almost does not work, except for cotton growing and wheat, where almost all cash flows pass through official bank accounts and the state obliges to allocate funds to the authors of varieties.

Economic activity includes mainly the sale of agricultural products. These incomes are especially large in SRI of grain and legumes due to the sale of super-elite seeds, the SRI of orchards, viticulture and winemaking through the sale of seedlings, etc.

Additionally, SRI rent out part of the buildings, etc.

When managing extrabudgetary funds, SRI have more freedom, including in terms of procurement, determining wages, etc.

The remainder of the appendix examines the funding breakdown, trends, and sources for three categories of SRI: (i) those that fall under the National Center for Knowledge and Innovation in Agriculture, (ii) SRIs controlled by the Committee for Veterinary and Livestock Development, and (iii) all other SRIs.

The funding for SRIs under the National Center for Knowledge and Innovation in Agriculture increased by 58.3 percent in 2019 relative to 2018 and by 77.7 percent in 2022 relative to 2021 (appendix table A4.1). Concurrently, budget financing in these years rose by 64.2 percent and 125 percent, respectively. The rapid growth in 2022 is attributed to the transition to basic funding, which surged from 1 billion som in 2020 to 17.3 billion som in 2021 and reached 57.5 billion som in 2022. Expenditure on doctoral studies and salary supplements also expanded rapidly, from 574 million som in 2019 to 49.5 billion som in 2023. However, research grants showed considerable volatility, peaking at 34.2 billion som in 2020 but declining to 13.2 billion som in 2021. Despite growing substantially in 2022–2023, they did not reach the 2020 level. Thus, the increase in basic funding by 56 billion som from 2020 to 2022 was partly offset by a 20 billion som decrease in research grants. However, the “final balance” is favorable.

Revenues from innovation grants, sourced from the Science and Innovation Fund of the MoHESI, also fluctuated and remained overall modest. Potential causes of these fluctuations include: (i) fewer or no proposal submissions by agricultural SRIs; (ii) the low quality of proposals; and (iii) reduced budgets for agricultural research grants. Conversely, increased salaries and the implementation of basic financing in 2021 provided a stable financial flow, which may have discouraged competition for research grants.

Table A4.1. Funding of all SRIs under the National Agricultural Knowledge and Innovation Center in 2017–2023, millions UZS

No	Indicators	2017	2018	2019	2020	2021	2022	2023
	All SRI	40,386.7	54,562.9	86,359.7	110,404.4	123,197.3	218,923.0	322,950.4
	including							
1	Budget funds, total	15,088.7	18,093.3	29,705.1	44,695.3	47,161.2	106,189.5	186,777.1
	including							
a	Basic funding (section 210)	402.5	484.0	642.2	997.9	17,297.8	57,518.8	106,915.6
b	PhD, Decree 1030 (section 220)	165.2	239.0	574.9	7,860.5	13,244.9	22,891.1	49,483.0
c	Fundamental and applied research projects (section 230)	12,118.2	13,832.9	23,465.2	34,182.3	13,228.8	20,566.2	27,950.7
d	Innovation and commercialized research projects (section 240)	1,933.5	2,982.9	4,504.2	1,322.4	2,605.0	4,316.6	2,421.1
e	Others (civil works, purchase of fixed assets, etc.)	469.3	554.6	518.5	332.2	784.7	896.8	6.8
2	Non-budget funds, total	25,298.0	36,469.5	56,654.5	65,709.1	76,036.1	112,733.5	136,173.3
	including							
a	Various contracts	7,082.0	10,862.9	18,302.5	17,231.4	26,247.3	34,871.4	63,007.3
b	International donor funding	25.3	-	-	70.8	127.6	-	2,247.4
c	Production, operations	13,482.5	18,778.6	25,454.4	34,650.8	36,095.6	50,889.4	60,448.6
d	Revenues from renting assets	1,023.8	1,259.3	1,572.3	1,715.1	2,985.9	3,033.6	600.7
e	Others	3,684.4	5,568.7	11,325.4	12,041.1	10,579.7	23,939.2	9,869.3

Note: Includes only funds transferred to treasury account of the SRI and spend through national budget legislation.

Source: MoA and Ministry of Economy and Finance (MoEF).

For an extended period, expenditures related to construction, capital repairs, and the acquisition of fixed assets, including laboratory equipment, were virtually unfunded. Despite an overall increase since 2017, several issues persist: (1) the funding is not systematic; (2) there remains a dependence on international grants and loans; and (3) the focus is primarily on capital repairs and construction, along with other expenses that do not always directly benefit scientific endeavors.

A notable issue is that, following capital repairs, the government often transfers the buildings of a SRI to another organization, sells them, or hands them over to investors at no cost. For example, the building of the SRI of Soil Science and Agrochemistry, along with its adjacent land (3-4 hectares) located in a prime area of Tashkent, was transferred to a private company for a nominal fee after being renovated. Although the building was eventually returned, this incident caused significant operational issues for the SRI, including the loss of staff. Moreover, expenditures related to such transfers are categorized as public expenditures for agricultural research, despite not adding any value.

The proportion of funding from non-budgetary sources reached its peak at 66 percent in 2018. The subsequent decline in the share of non-budgetary sources arose from the rapid increase in budgetary funding rather than a decrease in the activity level of SRIs.

The largest organizations in terms of funding under this group are the SRI of Cotton and the Research Institute of Grain and Legumes (Table A4.2). Together, they account for almost half of all funding to the National Agricultural Knowledge and Innovation Center. They also have the largest non-budgetary sources, attributed to royalties as authors of varieties and the production of super-elite seeds, among other activities. Following them is the SRI of Orchards, Viticulture, and Winemaking, which also benefits significantly from non-budgetary sources through the sale of seedlings.

Table A4.2. Sources of funding of each SRI under the National Agricultural Knowledge and Innovation Center in 2017–2023, millions UZS

Indicators	2017	2018	2019	2020	2021	2022	2023
All SRI	40,386.7	54,562.9	86,359.7	110,404.4	123,197.3	218,923.0	322,950.4
Share of Budget financing, %	37.4	33.2	34.4	40.5	38.3	48.5	57.8
Share of non-Budget financing, %	62.6	66.8	65.6	59.5	61.7	51.5	42.2
Agriculture mechanization SRI	694.5	1,223.6	2,358.0	5,984.3	6,723.7	6,993.2	9,611.5
Share of Budget financing, %	50.5	61.5	72.6	92.2	94.4	85.7	83.6
Share of non-Budget financing, %	49.5	38.5	27.4	7.8	5.6	14.3	16.4
Grain and rice production and research station	1,169.9	2,207.7	2,898.7	4,652.5	2,920.0	7,918.6	9,052.2
Share of Budget financing, %	26.8	16.5	20.5	15.5	37.0	48.8	40.7
Share of non-Budget financing, %	73.2	83.5	79.5	84.5	63.0	51.2	59.3
Fine-staple cotton SRI	396.6						
Share of Budget financing, %	88.3	71.3	72.2	44.9	29.5	86.8	89.9
Share of non-Budget financing, %	11.7	28.7	27.8	55.1	70.5	13.2	10.1
Karakalpak cropping SRI	754.0	614.2	1,057.1	2,404.3	2,358.9	5,437.6	5,197.3
Share of Budget financing, %	77.4	90.8	86.7	90.3	88.2	96.2	94.6
Share of non-Budget financing, %	22.6	9.2	13.3	9.7	11.8	3.8	5.4
Rainfed cropping SRI	1,418.4	1,502.8	2,862.6	4,039.8	3,347.3	6,330.7	6,961.3
Share of Budget financing, %	63.1	52.3	47.1	35.0	81.6	84.3	85.3
Share of non-Budget financing, %	36.9	47.7	52.9	65.0	18.4	15.7	14.7
Grain and legumes SRI	7,680.7	11,876.7	21,998.2	28,622.6	31,520.5	57,884.3	99,896.1
Share of Budget financing, %	11.1	9.5	8.8	8.9	12.5	18.2	68.6
Share of non-Budget financing, %	88.9	90.5	91.2	91.1	87.5	81.8	31.4
Southern cropping SRI	2,758.5	2,516.0	4,400.5	5,817.6	5,233.4	10,161.7	9,953.9
Share of Budget financing, %	28.8	38.0	40.4	45.7	59.6	61.7	100.0
Share of non-Budget financing, %	71.2	62.0	59.6	54.3	40.4	38.3	-
Cotton breeding, seeds, and agronomics SRI	12,658.4	17,273.7	30,026.7	34,016.1	35,933.9	54,940.2	96,874.1
Share of Budget financing, %	50.0	42.4	40.1	48.5	26.0	39.7	31.7
Share of non-Budget financing, %	50.0	57.6	59.9	51.5	74.0	60.3	68.3
Vegetables, melons, and potato SRI	1,721.8	2,423.6	3,589.2	5,361.4	6,272.7	11,856.7	21,891.9
Share of Budget financing, %	68.2	65.6	72.2	89.2	81.1	94.2	70.0
Share of non-Budget financing, %	31.8	34.4	27.8	10.8	18.9	5.8	30.0
Rice SRI	1,746.4	1,932.5	2,801.2	3,383.8	5,209.2	8,973.0	8,913.8
Share of Budget financing, %	25.0	26.8	27.5	32.5	27.9	58.2	48.3
Share of non-Budget financing, %	75.0	73.2	72.5	67.5	72.1	41.8	51.7
Fruits, grapes, and vine SRI	8,000.3	10,865.1	11,296.2	11,864.2	18,630.0	30,890.8	39,005.0
Share of Budget financing, %	25.2	23.8	32.9	33.6	45.3	59.5	57.9
Share of non-Budget financing, %	74.8	76.2	67.1	66.4	54.7	40.5	42.1
Genetic resources of crops SRI	1,387.1	1,728.2	2,416.4	3,674.4	4,346.2	15,415.5	13,305.0
Share of Budget financing, %	71.3	72.2	75.8	81.9	76.8	68.3	80.9
Share of non-Budget financing, %	28.7	27.8	24.2	18.1	23.2	31.7	19.1

Note: Research and experimental station for fodder crops is subordinate to Grain and legumes SRI and Research and experimental station for oilseeds and fodder crops is subordinate to Genetic Resources SRI. Owing to numerous reorganizations, for some period of time their funding was flowed through these SRI. Also amount of funding is low. Therefore, these two organizations were not shown separately.

Source: MoA and MoEF.

Funding for the SRIs under the Committee for Veterinary and Livestock Development saw a substantial increase from 2019 to 2023, albeit at a less rapid pace. The average annual funding during 2021–2023 amounted to \$1.5 million (Table A4.3). Basic funding experienced a 5.7-fold increase in 2021. During the period of 2019–2022, expenses for doctoral studies and foundational salary supplements also rose. Conversely, funding for both fundamental and applied research declined, and financial support for innovative developments nearly ceased. The share of non-budgetary funds remained modest, around 10 percent for the years 2021–2023.

Table A4.3. Funding of all SRIs under the Veterinary and Livestock Development Committee in 2017–2023, million UZS

No.	Indicators	2017	2018	2019	2020	2021	2022	2023 (plan)
	All SRI	3,411.3	3,591.6	6,966.6	9,021.1	15,024.0	15,899.1	20,244.0
	thousand USD	576.2	436.4	780.9	902.9	1,409.8	1,442.3	1,760.3
1	Budget funds, total	2,083.5	2,423.8	5,647.5	7,809.1	13,663.2	14,183.6	18,328.0
	Share of budget funds, %	61.1	67.5	81.1	86.6	90.9	89.2	90.5
a	Basic funding (section 210)	618.7	706.6	1,060.5	1,272.0	8,520.2	9,655.3	13,030.2
b	PhD, Decree 1030 (section 220)	257.9	315.4	754.1	1,397.8	2,413.1	3,889.8	4,839.3
c	Fundamental and applied research projects (section 230)	862.2	966.9	3,281.3	4,479.6	2,414.9	638.5	458.5
d	Innovation and commercialized research projects (section 240)	344.7	434.9	551.6	659.7	315.0	0.0	0.0
e	Others (civil works, purchases of fixed assets, etc.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Non-budget funds, total	1,327.8	1,167.8	1,319.1	1,212.0	1,360.8	1,715.5	1,916.0
	Share of non-budget funds, %	38.9	32.5	18.9	13.4	9.1	10.8	9.5
a	various contracts	940.8	935.6	851.7	879.7	1,053.8	998.3	729.3
b	International donor funding	106.1	83.5	136.0	0.0	0.0	101.3	449.0
c	production, operations	244.4	112.1	317.4	316.7	282.2	586.0	710.1
d	Revenues from renting assets	23.1	26.7	4.4	8.1	22.5	20.4	18.5
e	Others	13.4	9.9	9.6	7.5	2.3	9.5	9.1

Source: MoA and MoEF.

The SRI of Veterinary Medicine receives the largest funding, with a total (small) amount of USD 820,000 from all sources in 2022. In 2021, this SRI saw an increase in basic funding by nearly 4 billion som, yet concurrently experienced a reduction of 2.5 billion som in research grants. The SRI on Livestock and Poultry received the most substantial budgetary support in 2021 due to a transition to basic funding and research grants. However, following this, the availability of research grants significantly diminished. The least funded SRI under this group is the Fishery SRI (Table A4.4).

Table A4.4. Funding source of each SRIs under the Committee on Veterinary and Livestock Development in 2017–2023

No.	Indicators	2017	2018	2019	2020	2021	2022	2023 (plan)
1	Livestock and Poultry SRI, million UZS	1,547.1	1,477.3	2,292.1	2,989.6	6,087.9	4,752.6	5,659.5
	thousand USD	261.3	179.5	256.9	299.2	571.3	431.1	492.1
	Share of budget funds, %	75.0	84.3	79.6	88.7	95.0	87.0	87.0
	Share of non-budget funds, %	25.0	15.7	20.4	11.3	5.0	13.0	13.0
2	Veterinary SRI, million UZS	1,864.2	2,114.3	4,674.5	5,574.2	7,478.1	9,045.6	10,756.5
	thousand USD	314.9	256.9	524.0	557.9	701.7	820.6	935.3
	Share of budget funds, %	49.5	55.7	81.8	84.3	87.4	92.3	97.9
	Share of non-budget funds, %	50.5	44.3	18.2	15.7	12.6	7.7	2.1
3	Fishery SRI, million UZS	0.0	0.0	0.0	457.3	1,458.0	2,100.9	3,828.0
	thousand USD	0.0	0.0	0.0	45.8	136.8	190.6	332.9
	Share of budget funds, %	0.0	0.0	0.0	100.0	92.2	80.8	75.2
	Share of non-budget funds, %	0.0	0.0	0.0	0.0	7.8	19.2	24.8

Source: CVLD.

For the remaining SRIs, data on budget financing is only available for 2022 (Table A4.5). The budget allocation for two SRIs under the Committee for the Development of Sericulture and the Wool Industry amounted to merely \$400,000–\$500,000 USD. The SRI of Astrakhan and Desert Ecology received almost no grants from the Ministry of Innovation.

The activities of the SRI of Sericulture have been effectively suspended. Its building in Tashkent is being auctioned, and the SRI itself is being relocated to the Markhamat district in the Andijan region (although recently this decision was nullified). However, a new facility has yet to be constructed and equipped. Nearly all staff members have declined to relocate and have resigned. This decision by the authorities was recently overturned, which has significantly impacted the SRI's operations.

Table A4.5. Budget funding of other SRI under the MoA, 2022, million UZS, actual

Name	Total budget funding		Including			
	Million UZS	Thousand USD	Basic funding (section 210)	PhD, Decree 1030 (section 220)	Fundamental and applied research projects (section 230)	Innovation and commercialized research projects (section 240)
International strategic center on agricultural development – ISCAD (including former SRI of Agricultural economy)*	4,511.0	409.2	2,645.2	1,575.7	290.1	
Soil and Agrichemistry SRI	12,862.9	1,166.9	2,790.4	2,221.3	7,327.3	523.9
Plant quarantine and protection SRI	18,022.9	1,635.0	10,439.3	3,930.8	3,652.8	
Astrakhan and desert ecology SRI	5.297	480.5	3,319.9	1.758	219.1	
SRI on sericulture	6,670.6	605.2	2,841.2	1,064.3	2,765.1	

Note: *contains expenditures allocated to ISCAD from the state budget only for expenditure item of functional classification “Science”. ISCAD also received budget funding from other expenditure items. Actually, this is expenditures of former SRI of Agricultural Economics
Source: MoA and MEF.

APPENDIX A5.

CSA SUPPORT TOOLS

This appendix assesses and classifies adaptation responses using the following four categories: infrastructure and technological measures; behavioral and cultural measures; ecosystem or nature-based measures; and social, economic, and institutional measures. These categories are based on the classification scheme of the Global Adaptation Mapping Initiative, used in the 6th Inter-Government Panel on Climate Change report to link agricultural adaptation options with the Sustainable Development Goals. The sub-categories presented in Table A5.1 were developed by the Secretariat to reflect the range of programs and activities implemented and reported by the M&E countries. In total, 599 adaptation programs and activities across the M&E countries.

Table A5.1. CSA support tools

Category and sub-category	Description
Infrastructure and technological approaches (INT)	Enabling, implementing or undertaking technological innovation or infrastructure development
Irrigation and drainage	Investing in irrigation and drainage infrastructure on farm; e.g. installation of irrigation or drainage technology, development of individual water storage systems
Regional water infrastructure	Investing in water infrastructure at a regional level (off farm); e.g. installation of flood control technology, construction of reservoirs or canals
Crop or livestock technology	Investing in technologies for crop or livestock production; e.g. installation of canopies to control the growing climate for tree crops, sprinkler or ventilation systems to prevent livestock heat stress
Behavioral and cultural approaches (BHC)	Enabling changes in farmer behavior
Crop management and operations	Altering crop management practices; e.g. adjusting planting dates, changes in growing location
Livestock management and operations	Altering livestock management practices; e.g. adjustments in animal husbandry or manure management.
Pest, disease and invasive species control	Managing pest, disease and invasive species problems in crop or livestock production; e.g. invasive species inspection programmes, collaborative efforts to slow spread
Crop or livestock breeding or breed selection	Supporting the selection of cultivars or breeds or developing new cultivars or breeds; e.g. breeding programmes, adoption of climate-adapted cultivars or breeds
Ecosystem-based approaches (ECO)	Enhancing, protecting or promoting ecosystem services
Water quality	Efforts to limit soil erosion and nutrient runoff into waterways; e.g. riparian buffers, use of catch crops, fertilisation plans and nutrient balances
Soil health	Efforts to improve soil health, reclaim land or limit desertification; e.g. conservation tillage, soil testing, humus management
Diversification	Efforts to promote diversity, e.g. crop rotations, preservation of agrobiodiversity, agroforestry
Agroecology	Efforts to advance agro-ecological systems, e.g. organic production, land conservation, land retirement
Social, economic and institutional approaches (SEI)	Enhancing the capacities of individuals, groups and institutions to respond to climate change
Climate services	Providing information to support improved decision making; e.g. early warning systems, decision support tools, the provision of forecasts or climate scenarios, extension and outreach
Insurance	Creating or expanding insurance mechanisms to accommodate climate risks

Category and sub-category	Description
Other financial mechanisms	Creating other non-insurance financial instruments; e.g. disaster recovery funding, payments for environmental services; this category also includes funding programmes that support a diversity of activities that potentially span other categories and subcategories (e.g. funding instruments awarded by a national to regional or local governments to support various adaptation activities)
Capacity building	Investing in the capacity of individuals or institutions to adapt; e.g. research or research funding, the development of partnerships, community based adaptation, changes in legal or governance structures
Planning	Developing adaptation strategies or plans; e.g. local, regional, national or sectoral adaptation plans, disaster or contingency planning

Source: OECD 2023.

Table A5.2. Draft taxonomy used to assess public expenditure support for CSA

Type of subsidy, compensation	Adaptation	Mitigation
	1 supports, 0 neutral 9 negatively affects	
MEF		
Financing the activities of the Centers for the conduct of accounting and reporting in farms under the district Councils of farmers, dekhkans and owners of household plots	0	0
Subsidy “UzAgrosugurta” (Agriculture insurance SOE)	1	0
Compensation of a part of the tariff for machine harvesting of raw cotton in Jizzakh, Kashkadarya, Syrdarya and Tashkent regions	0	0
Subsidy to cover part of interest payments for implementing water saving technologies in Karakalpakstan and Khorezm	1	1
Write-off debts of “National Wheat Company”	0	0
Write-off debts of “AgroChemestry”	0	0
Agriculture State Support Fund		
Concessional financing for the cultivation of raw cotton (farmers, clusters and seed farmers)	9	9
Concessional financing for the cotton harvest	9	9
Compensation to cover part of the interest rate on commercial loans allocated in national currency for the final settlement of purchases of raw cotton	9	9
Preferential loans to finance the costs of wheat production	0	9
Preferential loans to create a reserve of grain/wheat for poultry farms and business entities engaged in the production of feed for poultry (AgriFund to place 400 bln UZS as resource)	1	1
Subsidies for the purchase by agricultural enterprises of agricultural machinery manufactured in Uzbekistan, with a localization level of at least 20%	1	1
Compensation of part of the accrued interest payments on loans and leasing for the purchase of agricultural machinery	1	1
Concessional loans for horticulture products growing	1	0
State Fund To Support Entrepreneurship		
Subsidies for unemployed citizens, members of low-income families and persons returning from external labor migration to contribute to the Charter fund of agricultural cooperatives created in order to ensure their employment	1	0
Compensation of a part of the interest rate and a guarantee for loans allocated for: a) replenishment of working capital of poultry farms and business entities engaged in the production of compound feed for poultry, for the reservation of hatching eggs, one-day-old chicks, feed products and its additives, medicines, additional components, wheat, corn, soybeans, soybean and sunflower meal, taking into account their production capacities; b) implementation of new projects in the direction of meat production, purchase and modernization of technological equipment for all types of incubation shops, processing and storage of poultry products, as well as special equipment, its spare parts and other fixed assets	1	1

Table A5.2. Draft taxonomy used to assess public expenditure support for CSA

Type of subsidy, compensation	Adaptation	Mitigation
Partial guarantee of collateral for loans for the introduction of water-saving technologies	1	1
Covering part of the interest rate of loans for the introduction of water-saving technologies	1	1
Guarantees for bank loans for grape projects	1	0
Issuance of guarantees for loans allocated by LLC "Tomorka hizmati" and agricultural cooperatives	0	0
Veterinary And Livestock Development Committee		
Livestock output subsidies		
milk	9	9
ruminant meat	9	9
poultry meat	0	1
fish	9	9
poultry eggs	0	1
Breeding animals subsidy		
imported sheep and goats	1	1
Imported cattle	0	9
Agri Services Agency (Orchards And Greenhouses Development Fund)		
Subsidies (grants) for:		
water saving technologies implementation subsidies	1	1
wells and pumping stations	1	9
seedlings	1	0
pillars-trellis	1	0
lemon	1	0
Renewable energy for water pumping	1	1
Concessional Credit Line for horticulture products growing	1	0
Agency on Regulating Alcohol and Tobacco Markets, Development of Winemaking (Viticulture Fund)		
Vine Fund subsidies		
water saving technologies implementation subsidies	1	0
wells and pumping stations	1	9
Shpalers for new vineyards	1	0
exports of natural wine and brandy	0	0
For purchase of winemaking equipment	0	0
Silk And Wool Industry Development Committee		
Subsidies for the reconstruction and construction in the regions of new shaft and vertical wells (wells), as well as a pumping station for pumping water in Pastures	1	0
Subsidy for a grena of silkworm eggs.	1	1
Ministry of Water Resources		
Drip irrigation for cotton	1	0
Public Works Fund		
Covering part of the cost of remuneration of the State Veterinary Committee system (Public Works Fund)	1	1
Fund for attracting the population to entrepreneurship		
Subsidies for the installation of light-weight	1	0
Subsidies for the purchase of irrigation means	1	0
Subsidies for the purchase of seeds and seedlings	1	0
Subsidies to be contributed as a contribution to the Charter fund of agricultural cooperatives	1	0

Table A5.2. Draft taxonomy used to assess public expenditure support for CSA

Type of subsidy, compensation	Adaptation	Mitigation
Export Promotion Agency		
Coverage of expenses for certification of exporters of agricultural products	1	1
Subsidies to cover transportation costs (by rail and air transport) associated with the export of lemon fruits	0	9
allocation of loans to Greenhouses by commercial banks for a period of 1 year, including a 6-month grace period, to provide greenhouse farms with working capital.	0	9
subsidies for compensation of transportation costs to domestic exporting enterprises (their authorized representatives)	0	9
Financial assistance in order to compensate the costs of exporters	0	0
Loan guarantees for pre-export loans	0	0
Farmers Council		
Wells for household plots in water-scarce areas	1	9
Loan resources	1	0
Capital for Ltd "Tomorqa Hizmat"	1	0
Tax Committee		
Land tax exemptions due to implementing water saving technologies	1	0
Water tax exemptions due to implementing water saving technologies	1	0
Personal income tax exemption for cotton manual picking	9	9
Social tax exemption for cotton manual picking	9	9
Customs Committee		
Concessional loans on agriculture within "Every family is entrepreneur" program	1	0

APPENDIX A6.

LIST OF MEASURES TO REDUCE TARIFF BARRIERS TO FOOD IMPORTS IN UZBEKISTAN, 2017–BEGINNING OF 2025

Effective September 1, 2017, Uzbekistan abolished its excise tax on imported meat and meat by-products (which was previously 30 percent), poultry and pork fat (previously 30 percent), wheat flour (previously 11 percent) and products used for animal feed (previously 70 percent). It introduced a zero-rate customs duty for butter, soybean and sunflower oils, seeds (potatoes, wheat, meslin, rye, barley, oats, corn, grain sorghum, buckwheat, millet, soybeans, flax, sunflower, and others), rye flour, durum wheat cereals and flour, cane sugar, cocoa beans, raw materials used in pharmaceuticals, as well as some animal feed products. It also reduced customs duty rates for certain types of goods including cattle meat, pork, pork fat, poultry fat and other meat by-products, coffee, wheat flour and cane sugar, and lowered excise tax rates on sunflower seeds, butter, cane sugar, and coffee.

From February 1, 2018 until January 1, 2020, the country exempted cattle, sheep and goats, cattle meat, lamb, potatoes, soybeans, sunflower and sesame seeds, and sugar from customs duties, except customs clearance fees.

From April 2020 until December 31, 2020—during the COVID-19 pandemic—Uzbekistan established zero rates of import duties and excise taxes for basic food products to prevent domestic price increases.

To prevent seasonal price increases, certain types of goods (bananas, fresh or dried dates, figs, pineapples, avocados, guavas, mangoes and mangosteen, fresh or dried citrus fruits, papaya, fresh apples, pears and quinces, kiwi) were exempted from customs duties from October 2021 to May 1, 2022.

In December 2021, the country approved a list of goods to be imported with zero-rate customs duties (effective January 1 to December 31, 2022). This list includes poultry meat, flour, and sunflower oil.

From May 1, 2021 to December 31, 2022, Uzbekistan exempted imports of vegetable oil, sunflower and flax seeds, and soybeans from value-added tax.

From October 10, 2021 to April 30, 2022, sales of chicken, frozen fish, and live poultry were exempted from value-added tax, and from October 10, 2021 to December 31, 2022, the sale and import of meat (beef, lamb), live animals (cattle and sheep) and their slaughter by-products, and potatoes were also exempted from this tax.

From April 1, 2022 to December 31, 2022, preferential tariffs of 50 percent were applied for the transportation of wheat (flour) and vegetable oil imported by the Uzdavzahira Committee (Committee for the Management of State Reserves).

From May 1, 2022 to January 1, 2024, Uzbekistan established zero-rate customs duties for importing: food by-products of cattle, sheep, goats, horses, mules, or hinnies; fish; fish fillet; dried fish, salted or in brine; milk and cream, condensed or containing added sugar or other sweetening matter; butter and other fats and oils made from milk; poultry eggs; bananas; citrus fruits, fresh or dried (except lemon); coffee, roasted or unroasted, with caffeine or decaffeinated; coffee husks and coffee bean shells; coffee substitutes containing coffee in any proportion; tea in primary packages with a net weight of no more than three kilograms in disposable packaging; soybean oil and its fractions; peanut oil and its fractions; palm oil and its fractions; rapeseed oil (from rapeseed or colza) or mustard oil and their fractions; animal fats or vegetable oils and their

fractions; margarine; malt extract; prepared food products made from fine or coarse flour, cereals, starch or malt extract; tapioca and its substitutes made from starch; prepared food products obtained by swelling or roasting cereal grains or grain products (for example, corn flakes); baker's yeast; wheat or wheat-rye flour. This exemption then prolonged until January of 2025 (Presidential Decree #PF-217) and afterwards until January of 2026 (Presidential Decree #PF-229).

From January 1, 2024, to January 1, 2026, Uzbekistan established zero-rate customs duties for importing sunflower, safflower, or cottonseed oils and their fractions, unrefined or refined, but without chemical modification (Presidential Decree #PF-229).

From April 1, 2023, to January 1, 2024, Uzbekistan established zero-rate customs duties for importing 36 categories of consumer goods (Presidential Decree #PF-41). Of these, 32 categories are foodstuffs. This measure was extended until January 1, 2025 (Presidential Decree #PF-217), and subsequently until January 1, 2026 (Presidential Decree #PF-229).

The list of foodstuffs includes:

- Fresh, chilled, or frozen pork meat; other meat and edible meat by-products
- Pork fat separated from lean meat, and poultry fat, not rendered or extracted by other methods, salted, in brine, dried, or smoked
- Yogurt, buttermilk, curdled milk and cream, kefir, and other fermented or acidified milk and cream—concentrated or not, with or without added sugar, flavoring agents, fruits, nuts, or cocoa
- Cheese and curd
- Bird eggs without shells and egg yolks—fresh, dried, steamed, or boiled in water, molded, frozen, or otherwise preserved, with or without added sugar
- Leguminous vegetables—dried, hulled or unhulled, split or unsplit
- Dates, figs, pineapples, avocados, guavas, mangoes, and mangosteens (or Garcinia), fresh or dried
- Apples, pears, and quinces, fresh
- Other fresh fruits
- Flour of cereal grains other than wheat or wheat-rye flour
- Groats, meal, and pellets of cereal grains
- Fine and coarse potato flour, powder, flakes, pellets
- Fine and coarse flour and powder of dried leguminous vegetables, sago palm pith, roots, or tubers
- Starch and inulin
- Coconut (copra), palm kernel, or babassu oil and their fractions—refined or unrefined, but not chemically modified
- Prepared or preserved products from meat, meat by-products, blood, or insects
- Prepared or preserved fish; caviar and its substitutes made from fish eggs
- Molasses resulting from the extraction or refining of sugar
- Sugar confectionery (including white chocolate) not containing cocoa
- Chocolate and other prepared food products containing cocoa
- Pasta—cooked or uncooked, stuffed or unstuffed, such as spaghetti, macaroni, noodles, lasagna, dumplings, ravioli, cannelloni; couscous, prepared or unprepared
- Bread, pastry goods, cakes, biscuits, and other bakery products—whether or not containing cocoa; waffle sheets; empty capsules suitable for pharmaceutical use; sealing wafers; rice paper; and similar products
- Processed vegetable, fruit, nut, or other plant parts—jams, jellies, marmalades, purées, and pastes obtained by heat treatment, including with added sugar

- Fruits, nuts, and other edible plant parts—prepared or preserved, with or without added sugar, sweeteners, or alcohol
- Extracts, essences, and concentrates of coffee, tea, or maté; preparations based on them or on roasted chicory and substitutes, including their extracts
- Products for sauces and ready-made sauces; mixed flavorings and seasonings; mustard powder and prepared mustard
- Ready-made soups and broths, and preparations for their preparation; homogenized composite prepared foods
- Waters—including natural or artificial mineral waters, carbonated or not, with or without added sugar, sweeteners, or flavorings; and other non-alcoholic beverages.

Meanwhile, for two categories, zero-rate customs duties were effective only until September 1, 2023. These categories are:

- Onions, shallots, garlic, leeks, and other bulb vegetables, fresh or chilled
- Lettuce (*Lactuca sativa*) and chicory (*Cichorium* spp.), fresh or chilled

The government is also undertaking efforts to harmonize excise tax rates between imported and domestically produced goods.

ENDNOTES

- ¹ Including textile exports.
- ² Source: Национальный комитет Республики Узбекистан по статистике, 2024. «Социально-экономическое положение Республики Узбекистан за январь-декабрь 2023 года», Ташкент. National Committee on Statistics of the Republic of Uzbekistan. 2024. "Socio-economic situation of the Republic of Uzbekistan for January-December 2023." Tashkent. The data might differ in later statistical reports due to revising macroeconomic indicators.
- ³ World Bank 2022.
- ⁴ World Bank, forthcoming.
- ⁵ GDP data sourced from National Committee on Statistics of the Republic of Uzbekistan. 2024. "Socio-economic situation of the Republic of Uzbekistan for January-December 2023." Tashkent. Page 9. According to revised macroeconomic indicators, the World Bank Team estimated total Agriculture public expenditures equal to 2.3% of revised GDP. The source of revised GDP is National Committee on Statistics of the Republic of Uzbekistan. 2025. "Socio-economic situation of the Republic of Uzbekistan for January-December 2024." Tashkent. Page 9.
- ⁶ OECD (2023). Agricultural Innovation Systems: Strengthening the Connection Between Research and Practice. Paris: Organisation for Economic Co-operation and Development.
- ⁷ World Bank (forthcoming). "Water Sector Assessment Report." Washington, D.C. and World Bank. 2022. "Uzbekistan Public Expenditure Review: Better value for money in human capital and water infrastructure." Washington, D.C.
- ⁸ <https://kun.uz/kr/news/2023/02/15/kimyoviy-ogitlarga-toyingan-tuproq-ekinzorlarimizni-qanday-qutqarish-mumkin#1>
- ⁹ Domestic livestock prices in Uzbekistan are tightly linked to regional markets in neighboring countries. Uzbekistan imports live animals and livestock products from Kazakhstan and the Kyrgyz Republic. When the prices in these countries change, they also change in Uzbekistan. Thus, even if domestic production rises, consumer prices will not necessarily fall.
- ¹⁰ <https://anhor.uz/economy/freedom-of-choice-and-myth/>.
- ¹¹ Most of these measures could qualify as non-trade-distorting support under the WTO «green box» if they meet the general and measure-specific criteria outlined in paragraph 2 of Annex 2 of the WTO Agreement on Agriculture (AoA).
- ¹² World Bank, forthcoming.
- ¹³ Such tools as digital ID systems to identify farmers eligible for subsidies, digital payment systems and E-wallets, and decision-support tools that assist the payment agencies enable precise targeting, real-time monitoring, and efficient distribution, ultimately leading to better resource allocation and improved outcomes for farmers and the environment. Such platforms can also disseminate information on innovative technologies, market prices, and climate forecasts to farmers forming the basis of E-extension services.
- ¹⁴ In accordance with the WTO Agreement on Agriculture (AoA), Members may apply non-trade-distorting support measures without limitation, provided they meet the criteria set out in Annex 2 of the AoA (Green Box). Members may also apply trade-distorting support measures, but only within the limits established by their WTO commitments. Export subsidies, however, are prohibited and must be eliminated upon accession to the WTO.

The parameters of Uzbekistan's domestic support commitments, including the potential establishment of a Total AMS and eligibility to apply Article 6.2 development programs, remain under negotiation. For the purpose of this report, «compliance with WTO commitments» assumes that if Uzbekistan secures a Total AMS commitment, any trade-distorting support exceeding the de minimis thresholds would generally be subject to reduction commitments.

Taking into account the well-advanced stage of Uzbekistan's WTO negotiation and to facilitate post-accession compliance with reduction commitments, this report outlines possible options for gradually repurposing certain existing measures toward non-trade-distorting support under the Green Box (Annex 2 of the AoA), or, where applicable, into Article 6.2 development programs, provided eligibility for such programs is secured during WTO accession.
- ¹⁵ Source: Национальный комитет Республики Узбекистан по статистике, 2024. «Социально-экономическое положение Республики Узбекистан за январь-декабрь 2023 года», Ташкент. National Committee on Statistics of the Republic of Uzbekistan. 2024. "Socio-economic situation of the Republic of Uzbekistan for January-December 2023." Tashkent. The data might differ in later statistical reports due to the subsequent revision of macroeconomic indicators.
- ¹⁶ World Bank 2020.
- ¹⁷ Uzbekistan will be required to systematically reduce its non-exempt support if it exceeds the de minimis level, as WTO rules mandate a 20 percent reduction over six years for developed members and 13 percent over ten years for developing members.

- ¹⁸ UNDP 2023.
- ¹⁹ World Bank 2022.
- ²⁰ This review analyzes agricultural public expenditures in Uzbekistan from 2021 to 2023, using the internationally recognized Classification of the Functions of Government.
- ²¹ There has been a significant increase in public agriculture expenditures over 2016–2020 (World Bank 2021). However, the estimates are not directly comparable to the data reported for those years because the Third AgPER for 2021–2023 uses a different methodology and was able to access to a broader range of data sources, especially related to direct payments to farmers, payments for fixed capital formation, and developing and maintaining infrastructure. Data access during the Second AgPER process was limited by the Covid-19 pandemic.
- ²² This estimates based on GDP data from National Committee on Statistics of the Republic of Uzbekistan. 2024. “Socio-economic situation of the Republic of Uzbekistan for January-December 2023.” Tashkent. Page 9. According to revised GDP indicators, the World Bank Team estimated total agricultural budget equal to 3.0 percent of GDP in 2021, 2.2 percent in 2022 and 2.3 percent in 2023. The source of revised GDP data is National Committee on Statistics of the Republic of Uzbekistan. 2025. “Socio-economic situation of the Republic of Uzbekistan for January-December 2024.” Tashkent. Page 9.
- ²³ Ibid.
- ²⁴ This estimates based on GDP data from National Committee on Statistics of the Republic of Uzbekistan. 2024. “Socio-economic situation of the Republic of Uzbekistan for January-December 2023.” Tashkent. Page 9. According to revised GDP data, the World Bank team estimated total agriculture public expenditure average for 2021-2023 is 2.5% of GDP.
- ²⁵ Based on GDP before revision in 2024.
- ²⁶ OECD 2016.
- ²⁷ World Bank 2021.
- ²⁸ The first output subsidies were canceled at the end of 2022 and reinstated as a temporary measure in mid-2023, with the subsidy set to remain in effect until the end of 2024. The subsidy was then reinstated again in 2025.
- ²⁹ Uzbekistan has low agricultural mechanization rates: 90.2 percent in cotton/wheat farming (with only 19 percent of the machinery required for harvesting, the most labor-intensive stage), 48.6 percent for melons and vegetables, 39.7 percent for orchards and grapes, and 53.1 percent for livestock (primarily on large farms). Additionally, 33 percent of existing agricultural machinery is worn out (used for more than 15 years) and outdated: 45.5 percent of ploughing tractors, 30.2 percent of wheat harvesters, and 40 percent of other types of tractors. Experts estimate the unmet demand for agricultural machinery at 23,000 units for cotton/wheat farming, 16,500 units for melons and vegetables, 18,000 units for orchards and grapes, and 14,500 units for livestock.
- ³⁰ So it would be more accurate to describe these payments as compensation for disruptions in energy supplies from state-owned enterprises (SOEs) rather than assistance in the formation of fixed capital.
- ³¹ <https://www.gazeta.uz/uz/2022/06/16/bank-corruption/> and <https://www.spot.uz/ru/2024/05/11/brb-1-quarter/> and other.
- ³² For better understanding of the performance of a range of instruments to incentivize investment in fixed capital formation (interest rate subsidies, argoleasing and matching grants), the World Bank carried out a limited number of interviews with farmers in Republic of Karakalpakstan, Fergana, Andijan, Khorezm regions as well as a roundtable discussion with dealers of agricultural mechanization and sector experts at the national and local levels as part of this report’s preparation in February 2025. Though the number and the level of subsidies provided for the formation of fixed capital (incentives for fixed capital formation and subsidized interest rate loans) have increased recently (from UZS 2,342,177 in 2021 to UZS 4,739,195 in 2023), their structure has numerous shortcomings that were identified during the field visits and farmer interviews.
- ³³ FAO. (2023). Investing in digital agriculture innovation to secure food, yields, and livelihoods. Federation of American Scientists. <https://fas.org/publication/investing-in-digital-agriculture-innovation-to-secure-food-yields-and-livelihoods/>
- ³⁴ WTO rules prohibit export subsidies. The WTO Agreement on Agriculture contains exceptions, but the Nairobi Ministerial Conference in 2015 decided that export subsidies must be completely eliminated. No CIS country has managed to negotiate the use of export subsidies during their WTO accession. This includes any support measures tied to export performance, including export credits and subsidies for transporting agricultural products. Two CIS countries demonstrated export subsidies during their WTO accession processes: Tajikistan and Kazakhstan. But as a result of negotiations, they committed to eliminating them upon the accession to the WTO. As a result, this compels countries in the WTO accession process to seek ways to redirect support toward more sustainable and less market-distorting measures.
- ³⁵ The name Export Promotion Agency might raise concerns among WTO members if its expenditures are not explicitly tied to exports. «International Trade Agency» could be an alternative.
- ³⁶ World Bank 2024.

- ³⁷ World Bank 2021.
- ³⁸ The analysis in this chapter does not focus on spending on general services (or public goods) including AKIS, inspections and control, development and maintenance of infrastructure, marketing and promotion, public stockkeeping, or miscellaneous.
- ³⁹ This figure is not fully comparable to that in the previous AgPER, as this study has more complete data and information and has accessed a broader range of sources.
- ⁴⁰ GDP before macroeconomic indicators' revision in 2024. Source: National Committee on Statistics of the Republic of Uzbekistan. 2022. "Socio-economic situation of the Republic of Uzbekistan for January-December 2021." Tashkent.
- ⁴¹ <https://kun.uz/kr/news/2023/02/15/kimyoviy-ogitlarga-toyingan-tuproq-ekinzorlarimizni-qanday-qutqarish-mumkin#!>.
- ⁴² The order-of-magnitude estimates are from the World Bank companion study "Pathways to Climate-Smart Agriculture in Uzbekistan" (forthcoming).
- ⁴³ World Bank 2020.
- ⁴⁴ By economist Otabek Bakirov.
- ⁴⁵ Khokimiyat are region and district level state authorities.
- ⁴⁶ Makhalla are the lowest administrative units, as de jure citizen's self-governance institution.
- ⁴⁷ Ministry of Agriculture of Uzbekistan.
- ⁴⁸ While the AoA stipulates that all revenue forgone should be included in the Total AMS, in practice, WTO members exclude tax incentives such as VAT rebate and tax exemptions on outputs, inputs or fuels from their notifications on domestic support in agriculture. Recent WTO accession cases demonstrate that tax-related support measures are typically negotiated separately and do not count toward AMS reduction commitments. A customs exemption as a part of border measures is generally not considered a domestic support measure under WTO rules. Instead, it falls under trade policy measures under the GATT rather than domestic agricultural support under AoA.
- ⁴⁹ <https://stat.uz/ru/default/ezhekvtartal-nye-doklady/39035-2023-2#tab-4> and <https://stat.uz/ru/press-tsentr/novosti-goskomstata/59512-sdfsdf-2>
- ⁵⁰ <https://www.adb.org/sites/default/files/linked-documents/53120-001-ssa.pdf>
- ⁵¹ World Bank, forthcoming.
- ⁵² World Bank, forthcoming.
- ⁵³ The Chapter 5 was prepared before the issuance of Presidential Decree No. UP-47 dated March 14, 2025, «On measures to improve export procedures and stimulate the production of value-added finished products.» According to this Decree, in order to harmonize with WTO requirements, the List of Goods, the export of which was carried out based on decisions of the President of the Republic of Uzbekistan or the Government of the Republic of Uzbekistan, was abolished. This List included the agricultural products discussed in this chapter. The mechanism of export permits was replaced with more transparent export duties, including for 32 positions of agricultural products. The changes introduced by this Decree are discussed in paragraphs 172-173 of the Chapter 5.
- ⁵⁴ A complete and thorough price incentives analysis as follow up to this AgPER is recommended.
- ⁵⁵ World Bank 2021.
- ⁵⁶ World Bank 2021.
- ⁵⁷ Presidential Decree No. 205 dated December 2023.
- ⁵⁸ The degree of price penalization for silk cocoons was estimated based on the difference between procurement prices (those prevailing in the market) and experts estimates of a hypothetical "fair price" that was re-checked against silk yarn to silk cocoons proportion. Data on total yield of silk cocoons were derived from the State Statistics Agency (yield of silk cocoons in 2022 was 26 000 tons). For animal skins, the price difference was derived based on expert interviews and estimated for cattle skins and sheep skins separately and then multiplied by number of slaughtered cattle/sheep. The source of this data is the State Statistics Agency.
- ⁵⁹ GDP before revision made in 2024.
- ⁶⁰ GDP before revision made in 2024.
- ⁶¹ In a striking example of this liberalization, in January 2019, Uzbekistan abolished restrictions in place since 1997 on the "export of pork, poultry meat and edible by-products, vegetable oils, sugar, bakery products, among others.
- ⁶² World Bank 2024.
- ⁶³ World Bank 2024.
- ⁶⁴ 400,000 tons or 500 million liters of diesel fuel multiplied by USD 0.25.
- ⁶⁵ <https://www.spot.uz/ru/2024/02/19/diesel-discount/>.
- ⁶⁶ <https://www.gazeta.uz/ru/2024/07/25/navoiazot/>.
- ⁶⁷ <https://www.spot.uz/ru/2024/07/08/maxam-chirchiq/>.
- ⁶⁸ <https://anhor.uz/economy/freedom-of-choice-and-myth/>.
- ⁶⁹ GDP before revision made in 2024.
- ⁷⁰ World Bank 2022.
- ⁷¹ OECD 2016.

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