Policy Brief

Why can an agricultural extension service be critical in Uzbekistan's quest for economic growth?

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Introduction

President Shavkat Mirziyoyev have moved quickly since assuming office in late 2016 to present a new vision for Uzbekistan's economic future. **The country is currently realizing a strategy for rapid economic growth, re-insertion into the global economy, movement into higher value industries and expansion of small and medium enterprises.** To advance its development agenda, the government has launched robust public policies to boost GDP growth rates, increase employment, enhance exports and generate additional sustainable tax revenues. These all are supported, with varying degree of success, by monitoring key competitiveness constraints; improving policy coordination; helping Uzbek industries reposition themselves in world markets; stimulating *oblast*-level initiatives; coordinating private-public dialogue; and generating popular understanding and support for Uzbekistan's competitiveness.

The agriculture sector is one of the competitive dimensions of the Uzbek economy which the country can focus on to meet both internal demand for agricultural products, and overall economic wellbeing of the population, and external market expansion. Development of sustainable high-value crop production for domestic and export markets is a crucial pillar of Uzbekistan's economic growth yet to be leveraged fully. **In the context of growing climate impact, water scarcity and exponential population growth in the country, unlocking the agriculture sector's full potential increasingly depends on the unique proprietary knowledge its stakeholders possess.** Yet, many farmers in Uzbekistan use suboptimal agricultural practices due to lack of information, knowledge and capacity. Hence, enhancing agriculture extension services may therefore be a prerequisite to sustainably provide competitive value to economic growth and bring the economies of scale to the agriculture sector of New Uzbekistan.

Boosting productivity through agriculture extension services

Farmers, who dominate the agriculture sector, require adequate access to knowledge, information, technology, and other necessary services to improve farming and stay abreast of latest developments for enhancing productivity. It is crucial to endow them with the required knowledge and services in a quality and timely manner for increasing their capacity to deal with existing and future challenges in the sector. As Anderson and Feder (2004) correctly put it: **agriculture extension services are an important tool to transfer knowledge gained from research and the knowledge base to farmers, to advise and educate them about new technology and practices, and to stimulate desirable agricultural developments.** Indeed, agriculture extension services, as both a public and private commodity, help agriculture producers to meet demand and increase exponential growth in production gauged to industry requirements.

Historically, all industrial and technological developments and revolutions have knowledge as a fundamental driver. And tomorrow's development could well be propelled by knowledge again. The above-highlighted challenges the agriculture facing today are likely to intensify tomorrow. Therefore, farmers need to increase efficiency and to specialize in the market, for which extension services remain a key policy tool. **A continuous wave of investment in agriculture research and extension services could revitalize productivity and unlock more growth, as long as the investment is deployed effectively.**

Agricultural reforms in Uzbekistan since 2017

Agriculture is an important contributor to Uzbekistan's economy. It provides more than 20% of GDP and employs about 30% of the labor force. In the context of latest reforms, the country is shifting to higher value fruit and vegetables from its long-time main crops–cotton and grain. To continue further the intended reforms in the agriculture sector, Uzbekistan switched to market prices from 1 June 2022, when trading with grain. This was also driven to a large extent by a steep rise in global wheat and food prices this year against the backdrop of geopolitical tensions.

These reforms in the country extended the commercial scope of agricultural production, providing more space for farmers to produce crops of their choice and opening markets for trading. Also, the recent reforms in the agriculture sector focused on increased productivity, provision of food security, and commercialization of the sector. **The removal of almost all bureaucratic interference into the planning and running of agricultural activities resulted in increased crop production and exports**.

However, the implementation of effective agriculture sector policies also requires a supportive service sector which will supply agriculture with all required knowledge and information inputs, including the innovative solutions and technologies. Since the country's independence, the agriculture sector has experienced a lack of such appropriate support services (KPMG 2020). Agriculture in Uzbekistan needs farmer-oriented knowledge and skills helping the farmers to understand a few foundational concepts necessary for better productivity. They include **water and agriculture management, entomology, crop science, value chain development** and so forth. Most farmers usually lack such skills and are prepared to purchase such expertise in the market. Yet, the current agricultural services market does not have a strong extension services component. Therefore, **setting up strong, demand-based, private-public extension services will be key for success of agriculture reforms in Uzbekistan**. Also, advances in machinery have expanded the scale, speed, and productivity of farm equipment, leading to more efficient cultivation of more land. This requires all to be well-versed with technology backed by sustainable infrastructure.

The current state of agriculture development and challenges requires systematic and modern support systems to provide science-based, innovative, and localized knowledge to agriculture producers. Growing uncertainties both in the economy (price and demand fluctuations, market volatility) and in nature (climate change) makes agriculture a very challenging sector; therefore, decision making will require increased research. **Integrated, multilevel, and practical agricultural research could reach producers, financers, and policy makers in the agriculture sector to help address the challenges of agriculture development.** Therefore, setting up an agriculture research system or reorganizing the existing system is the most important step in the further development of agriculture extension systems.

In this regard, with the support of the European Union, Uzbekistan is currently applying the agricultural knowledge and innovations systems (AKIS) approach which promotes knowledge transfer to the sector by deploying agricultural education, research, and advisory services. As a recently emerged concept for Uzbekistan through its Agricultural Strategy from 2019 and Presidential decree from 2021, AKIS is yet to demonstrate its results and impact.

Research and extension services in Uzbekistan

Uzbekistan has historically developed network of national agricultural research system (NARS). These are numerous research institutes, experimental stations, and universities in the field of agriculture, conducting research on diverse aspects of agriculture development. The majority of agricultural R&D in Uzbekistan is carried out by 45 research institutes, research stations and university research laboratories. New and emerging seed, input, and other agricultural companies in Uzbekistan provide agriculture extension services on a limited scale and scope.

The World Bank (2020) analyzed the current state of agricultural research in Uzbekistan within its ongoing 'Agriculture Modernization and Competitiveness' project. The findings of this preparatory report demonstrate the assessment of research capacity of 13 institutions participating in the project, covering diverse dimensions of agriculture research, as summarized in the SWOT analysis matrix (Table 1). In spite of the established knowledge creation and management system in place, very little was done to integrate the latest technology and know-how into the sector. The sector suffers from outdated technical skills and limited investment, which overshadowed any opportunities arising while undermining the long history of research foundations in the sector. As shown in the matrix, there are weaknesses across all aspects including people, resources, systems, and procedures.

Table 1. SWOT analysis of agriculture research in Uzbekistan (Source: World Bank 2020).

Strengths	Weaknesses
• Long history of research & strong research foundations • Suitable environment / broad variety of indigenous crops • Classical knowledge creation and knowledge management • Good cooperation between research, entrepreneur, and farmers • Good classical breeding program • Fertile land to support large production • Strong comparative advantage for horticultural and leguminous crops production • Relatively low labor costs • Established system of seed production (rice, wheat and cotton) • Fairly good number of varieties released	• Weak cooperation and networking • Out-dated technical skills • Insufficient investment for research • Little technical agriculture graduates coming for agriculture education system • Low knowledge about new technologies and advances in agriculture research • Inadequate number of trained manpower • Lack of laboratory equipment and consumables • Lack of farm research facilities • Lack of seed processing and storage facilities • Low quality propagation material being produced • Low quality testing of machinery, seeds and other processed products • No involvement of private sector in research
Opportunities	**Threats**
• New techniques available to improve breeding, yield, product and process upgradation • Sophisticated laboratory equipment • Improved land preparation technologies • Improved irrigation technologies • Improved seed processing technologies • Improved nutrition management technologies • New pest management technologies	• Economic crises in the country • Decrease in donor interest • Little interest of youth in research sector • Political instability • Weather change, un-predictable weather patterns • Unstable / change in agriculture policy

• Reduction of post-harvest losses by advance harvesting technologies. • Technological developments in subsidiary industries such as food ICT logistics • Relatively high local population to • Improving foreign investments and increasing business environment • Growing local and regional demand • Ownership by the government	

Existing capacity and systemic issues in the sector can be correlated to the level of public financing for agricultural knowledge and innovations (Table 2). The state budget allocated no financing towards agricultural advisory services from 2017 to 2020. The financing received for agricultural education and agricultural research constitutes a very little share of the overall agricultural public expenditures for those years. Considering the sector's contribution to the economy and the overall GDP of the country, this share could be increased to advance productivity. Increased financing could also improve the functional composition of the overall agricultural public expenditure, defining expense objectives more clearly, which would give more favorable returns.

Table 2. Public expenditures for agricultural knowledge and innovations in Uzbekistan, 2016-2020, billion soums (World Bank 2021, https://stat.uz/en/)–authors' estimations.

	2017	2018	2019	2020
Agricultural education	401	379	587	269
Agricultural research	47	51	73	91
Agricultural advisory services	0	0	0	0
TOTAL	447	430	660	361
Share of overall agricultural public expenditures (%)	3,35	4,83	5,08	2,97
Share of annual GDP in respective years (%)	0,14	0,10	0,12	0,06

Current reforms could help to transform agriculture into a well-functioning industry with high output, and a productive and resilient sector. The efforts should focus on the following aims: **(i) availability of quality agricultural services designed to advance on-farm productivity, increasing resilience to climate change, and improving overall output quality; (ii) improve value chains, farm cooperation, and access to necessary financial products; (iii) organization of agricultural trade and marketing through enhanced agro-logistics, with improved phytosanitary capacity and access to market information.**

The way in which land and other natural resources are used and how this changes over time pervades society and economies, affecting human wellbeing, the performance of both economic and ecological systems, and food security. Demographic projections suggest that by 2050 there will be 9 billion people on Earth. **So the demand for food will increase in the face of not only growing consumption, but also owing to the increasing use of crops for alternative purposes, such as fuel production.**

On the supply side of the equation, food production and the agriculture sector overall will be affected by augmenting climate change impacts, dwindling water resources, land and biodiversity degradation, and so forth. Uzbekistan is one of the most vulnerable countries to these challenges owing to its expanding agricultural economy, increasing population, and the growing impact of global warming. Its

agriculture sector in particular is more exposed to these challenges; it is vital for decision makers and practitioners of the country to confront them through concrete adaptation measures.

Not only during the crisis, but in times of increasing resource scarcity, it is critical that knowledge is disseminated effectively into the communities of practice across all dimensions of the economy. To improve the way in which the agriculture sector functions, knowledge and its practical application is a critical resource to enable farmers and active agricultural businesses to thrive through a challenging period.

Research findings revealed that knowledge transfer can be successful only by involving the recipients in the generation of research questions and studies, ensuring communication mechanisms are adapted to the absorptive capacity of users, and by developing a trusting relationship with the users (Szulanski 1995). Hence, collaborative engagement between diverse stakeholders in generating and disseminating usable knowledge is important in aiding knowledge transfer. The provision of extension services—for a long time ignored and limited in Uzbekistan—is critical to keep agriculture practitioners abreast of new and innovative developments in the sector.

Policy action now

An agricultural extension service should offer technical advice, and agronomic techniques and skills to improve agricultural productivity for farmers/clusters and supply the necessary inputs and services to support production. It should provide scientific research and data-analyzed information to farmers and convey new ideas developed by agricultural research stations.

The current situation regarding agricultural extension services in Uzbekistan is scattered, weak, and uncoordinated. Although the government is leading these efforts, private initiatives and companies are also emerging to cover numerous aspects of extension services. The scattered nature of the services, limited financing, an absence of up-to-date methodology, and a lack of trained staff mean that agriculture research systems in Uzbekistan are uncompetitive and unfit to take a key role in extension services for the agriculture sector.

Public investment in the agriculture sector and its knowledge and innovations dimension is essential to raise growth and address the challenges in the sector. Stepwise approach of reviewing of the agricultural research, providing of incentives for development of private sector efforts on extension services are aspects of major intervention logic.

However, conceptual, and strategic aspects of extension services development in Uzbekistan are still under discussion at the policy level. Unfortunately, education universities with high potential on empirical and applied research are still distanced from the extension service provision roles. **Without systematic, well-furnished, and financed public or private extension services, agriculture in Uzbekistan will not be able to perform at its highest productivity.** The continuous impact of climate change, as well as increased incidents of crop diseases and unplanned cropping may lead to regular failures of agriculture production. Stronger regulations, market incentives and transparent, market-based interactions in agriculture will support the development of extension systems. And the crucial role of the government in the production and promotion of innovative knowledge is key to this process. In turn, private players could provide high quality, demand-based services aligned with everyday needs of producers.

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