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PROSPECTS FOR COOPERATION BETWEEN TURKEY AND UZBEKISTAN IN THE AGRICULTURAL SECTOR AND WATER-LAND RESOURCES

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ABSTRACT

This research explores the multidimensional cooperation between Turkey and Uzbekistan in the agricultural sector, emphasizing the legal foundations, technological exchanges, academic partnerships, and joint investments. The analysis highlights how bilateral relations have evolved into a strategic partnership with a strong focus on food security, climate resilience, and digital transformation. Key initiatives include the development of smart agriculture, precision irrigation, greenhouse technologies, and academic exchange programs. Special attention is paid to the role of regional institutions, particularly the Organization of Turkic States (OTS), in institutionalizing cooperation and fostering regional integration. The findings suggest that Turkey-Uzbekistan cooperation serves as a model for sustainable agricultural development and environmental collaboration in Central Asia.

Keywords: *Turkey-Uzbekistan cooperation, agriculture, irrigation technologies, digital agriculture, climate adaptation, Organization of Turkic States, investment, academic exchange, food security, sustainable development*.

ПЕРСПЕКТИВЫ СОТРУДНИЧЕСТВА МЕЖДУ ТУРЦИЕЙ И УЗБЕКИСТАНОМ В СЕЛЬСКОХОЗЯЙСТВЕННОМ СЕКТОРЕ И ОБЛАСТИ ВОДНО-ЗЕМЕЛЬНЫХ РЕСУРСОВ

АННОТАЦИЯ

Данное исследование посвящено многоплановому сотрудничеству между Турцией и Узбекистаном в сфере сельского хозяйства, с акцентом на правовые основы, технологический обмен, академические партнерства и совместные инвестиции. В работе подчеркивается, как двусторонние отношения превратились в стратегическое партнёрство, сосредоточенное на обеспечении продовольственной безопасности, устойчивости к изменениям климата и цифровой трансформации. Основные инициативы включают

развитие интеллектуального сельского хозяйства, точного орошения, тепличных технологий и программ академического обмена. Особое внимание уделено роли региональных институтов, в частности Организации тюркских государств (ОТГ), в институционализации сотрудничества и содействии региональной интеграции. Результаты исследования показывают, что сотрудничество между Турцией и Узбекистаном служит моделью устойчивого сельскохозяйственного развития и экологического взаимодействия в Центральной Азии.

Ключевые слова: *сотрудничество Турции и Узбекистана, сельское хозяйство, технологии орошения, цифровое сельское хозяйство, адаптация к климату, Организация тюркских государств, инвестиции, академический обмен, продовольственная безопасность, устойчивое развитие.*

INTRODUCTION

Agriculture has always been a cornerstone of Central Asian economies, and in recent decades, nations like Uzbekistan have prioritized its modernization to ensure long-term food security and environmental sustainability. One of the most significant external partners in this process has been the Republic of Turkey, whose own agricultural transformation offers valuable lessons for Uzbekistan. Since the signing of the Protocol on Agricultural Cooperation in 1997, Turkey and Uzbekistan have gradually built a strong bilateral framework rooted in mutual interests and complementary strengths.

This paper aims to analyze the evolution and current state of agricultural cooperation between Turkey and Uzbekistan. The partnership is assessed through several lenses: legal frameworks, investment projects, academic exchanges, and technological innovation. The role of multilateral organizations such as the OTS in advancing shared agricultural agendas is also explored. Given the growing challenges of water scarcity, climate change, and the need for digitalization in agriculture, this cooperation has far-reaching implications beyond the bilateral context.

LITERATURE REVIEW AND METHODS

The cornerstone of Turkey-Uzbekistan agricultural cooperation lies in the 1997 Protocol on Cooperation in Agriculture. This agreement laid the groundwork for collaboration in key agricultural sectors such as cotton, sugar beets, animal husbandry, and irrigation technology. According to the FAOLEX database, the protocol emphasized joint research, academic exchange, and technological transfer.

Over time, this bilateral engagement has evolved to incorporate multilateral cooperation, particularly under the umbrella of the Organization of Turkic States (OTS). Established to strengthen cultural, political, and economic ties among Turkic-

speaking countries, the OTS has emerged as a strategic platform for agricultural policy coordination since 2022.

This research is based on a qualitative content analysis of primary documents, including ministerial protocols, OTS strategy reports, and official statements from the ministries of agriculture of both countries. Supplementary data were obtained from academic journals, news articles, and institutional reports. A comparative lens was employed to juxtapose Turkey's agricultural modernization experience with Uzbekistan's current needs.

RESULTS

One of the most visible outcomes of Turkey-Uzbekistan cooperation is the increase in bilateral investment projects. Turkish companies have invested in high-yield horticulture (e.g., olives, pomegranates, and citrus fruits), cold-chain logistics, and post-harvest processing facilities in Uzbekistan. These initiatives are aligned with the Uzbek government's broader agricultural reform agenda, which seeks to reduce post-harvest losses and increase export potential.

In 2024, both nations agreed upon a Comprehensive Agricultural Roadmap, outlining specific joint ventures in greenhouse construction, seed development, and organic farming. The roadmap also includes plans for mechanized farming and digital monitoring systems, such as GPS-guided tractors and AI-based crop health sensors.

Technology transfer forms the backbone of this partnership. Turkish agritech firms have played a vital role in introducing Uzbekistan to modern irrigation systems such as drip and sprinkler technologies. Additionally, mobile apps developed in Turkey for real-time weather updates and pest control monitoring are being piloted in Uzbek farms.

The collaboration also includes the sharing of genetic materials and seed varieties suitable for Uzbekistan's arid and semi-arid conditions. The co-establishment of seed banks and laboratories is expected to further enhance food resilience.

Academic cooperation is another vital area. Universities such as the Tashkent State Agrarian University and the Bukhara Engineering-Technological Institute have launched exchange programs with Turkish institutions. Workshops and student forums have been held annually, focusing on smart farming, biotechnology, and sustainable agricultural practices.

In one notable event, students from Uzbekistan participated in greenhouse construction workshops led by Turkish engineers. These sessions introduced them to humidity sensors, solar-powered irrigation controllers, and climate-resilient crop varieties.

Uzbekistan faces acute challenges related to water scarcity and land degradation. Karakalpakstan and parts of the Fergana Valley suffer from high salinity and inefficient water usage. Turkey, with its experience in semi-arid agriculture, has provided both technical know-how and institutional support.

In collaboration with SUDAB (Directorate of Water Monitoring and Research, Turkey), Uzbek specialists are being trained in hydrological forecasting, GIS-based soil mapping, and real-time irrigation planning. The Drought Prevention Institute, jointly established under the OTS framework, will integrate remote sensing tools to monitor water levels and predict drought cycles.

The analysis reveals that Turkey-Uzbekistan agricultural cooperation is more than just a bilateral relationship. It is a strategic alignment that reflects a convergence of goals in food security, climate adaptation, and technological advancement. The case of Uzbekistan is particularly noteworthy because it offers a fertile testing ground for many of Turkey's agri-tech solutions.

Multilateral frameworks such as the OTS amplify the impact of bilateral efforts. Through ministerial summits and working groups, OTS ensures continuity, institutional memory, and alignment of agricultural strategies across Turkic-speaking nations.

However, challenges remain. Bureaucratic inefficiencies, currency fluctuations, and mismatched regulatory standards can slow project implementation. Moreover, scaling up digital platforms requires strong internet infrastructure, which may be lacking in some Uzbek rural areas.

Nonetheless, the partnership's success lies in its flexibility and multidimensional nature. It encompasses policy dialogue, grassroots implementation, and regional cooperation—all underpinned by mutual respect and shared values.

DISCUSSION

The cooperative efforts between Turkey and Uzbekistan in agriculture represent more than a conventional bilateral relationship—they reflect a dynamic and evolving strategic alignment tailored to the realities of the 21st century. This partnership functions at multiple levels, combining policy dialogue, technological innovation, academic collaboration, and infrastructural development. The synergy between Turkey's experience in semi-arid agricultural systems and Uzbekistan's pressing agrarian needs has proven mutually beneficial, creating avenues for sustainable transformation in Uzbekistan's rural economy.

Importantly, Uzbekistan serves as a valuable pilot ground for Turkey's agritech innovations. Through adaptive implementation of smart irrigation technologies, climate-resilient seed varieties, and digital farming platforms, Turkish expertise is

being tested and localized in a real-world context. These practices not only enhance Uzbekistan's food security and agricultural productivity but also offer lessons in regional resilience and resource management.

Furthermore, the involvement of multilateral institutions such as the Organization of Turkic States (OTS) has elevated this cooperation from a national to a regional level. The OTS acts as a facilitator for policy coherence and intergovernmental dialogue, ensuring that bilateral initiatives are harmonized with broader regional development strategies. This institutional backing provides continuity and strategic oversight, enhancing the durability and scalability of agricultural projects.

Nevertheless, the partnership is not without challenges. Regulatory discrepancies, digital infrastructure gaps in rural areas, and administrative delays occasionally hinder timely execution. Currency volatility and logistical issues also present hurdles for investors and project planners. Addressing these barriers will require enhanced regulatory alignment, investments in rural connectivity, and streamlined bureaucratic procedures.

Overall, the multidimensional nature of the Turkey-Uzbekistan agricultural partnership—rooted in shared values, complementary strengths, and forward-looking objectives—positions it as a model for other developing economies seeking to navigate similar developmental trajectories. It is a cooperation framework that not only responds to present-day needs but is also resilient and adaptive in the face of emerging global agricultural and environmental challenges.

CONCLUSION

The partnership between Turkey and Uzbekistan in agriculture stands as a model of how bilateral cooperation can evolve into strategic regional engagement. It is comprehensive, spanning investments, technology, human capital, and policy alignment. This cooperation not only addresses the immediate needs of Uzbekistan's agricultural sector but also contributes to long-term regional sustainability and stability.

As the challenges of climate change, desertification, and global food insecurity grow, such partnerships will become increasingly vital. The case of Turkey and Uzbekistan demonstrates that cross-border collaboration, when based on mutual trust and shared goals, can yield transformative results.

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