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THE ROLE OF INTERNATIONAL EXPERIENCE IN SHAPING NATIONAL FOOD SECURITY POLICY: BASED ON THE CASES OF INDIA AND JAPAN

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Abstract: Food security means having regular access to safe and nutritious food. In Uzbekistan, where the climate is continental and water is limited, this is a top priority. Agriculture is a major part of the economy, and the country produces around 75% of its food. However, irrigation uses 90% of water, and climate risks threaten productivity. India's Green Revolution and Japan's tech-driven farming show how strong support and innovation can improve food security. Inspired by these, Uzbekistan's 2030 strategy focuses on efficient water use, farmer support, better logistics and storage, and investment in agricultural research.

Keywords: food security, Uzbekistan, India, Japan, Green Revolution, agricultural policy, irrigation, subsidies, innovation, agricultural strategy

INTRODUCTION

Food security is a critical pillar of human development, ensuring that all individuals have consistent physical, social, and economic access to sufficient, safe, and nutritious food [1]. It is commonly understood through four main components: food availability, access, utilization, and stability. These dimensions are especially important for countries like Uzbekistan, where agriculture plays a significant economic role—contributing around 24% to the national GDP and employing more than 28% of the labor force [2].

Recent academic research underlines the necessity for adaptive approaches to enhance agricultural sustainability in Uzbekistan. Key measures include the introduction of climate-resilient crop varieties, modernization of irrigation systems, and improvements in land-use efficiency. Such efforts are vital in addressing long-term challenges to food production and supply.

International experiences offer valuable insights. India's Green Revolution, for example, significantly boosted grain self-sufficiency through technological innovation, widespread government subsidies, and large-scale distribution systems [4]. Meanwhile, Japan has achieved high agricultural productivity despite limited arable land, thanks to advanced farming technologies, strong institutional support, and an emphasis on food quality and safety [5]. Drawing on these models can help Uzbekistan develop a more resilient, sustainable, and self-reliant food system adapted to its specific conditions.

LITERATURE REVIEW

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Food security is a key factor for human development, ensuring stable access to safe and nutritious food [1]. In Uzbekistan, where water resources are limited and climate conditions are challenging, ensuring food security is a top priority [2].

India's Green Revolution significantly increased food production through technological innovation and government support, strengthening the country's food security [3]. Japan, despite limited arable land, achieves high productivity using advanced technologies and efficient management[4].

These international experiences provide valuable lessons for Uzbekistan in developing effective agricultural policies and ensuring national food security

RESEARCH METHODOLOGY

The methods of systems approach, statistical observation, structural analysis, and comparison were used in the preparation of the paper.

RESULTS

Uzbekistan is undergoing a major transformation in its approach to food security, shaped by both internal challenges and external inspiration. The country's agricultural development strategy increasingly reflects a hybrid model that draws from India's production-driven self-sufficiency and Japan's efficiency- and innovation-oriented food system. As climate variability, water stress, and population growth place pressure on domestic resources, Uzbekistan is aligning its policies with global best practices while adapting them to local conditions.

One of the most significant policy shifts in Uzbekistan involves improving resource efficiency. By the end of 2023, over 250,000 hectares had been converted to modern irrigation methods, such as drip and sprinkler systems, with plans to expand this to 445,000 hectares by 2026 [6]. These systems reduce water usage by up to 40%, increase yields per hectare, and help combat salinization. This mirrors Japan's use of precision technologies—including GPS, AI-based irrigation management, and automated nutrient dosing—which allow the country to achieve high productivity despite very limited arable land [7].

Equally important is the government's support for farmers through subsidies for fertilizers, low-interest loans, and subsidized agricultural machinery. These interventions are modeled after India's Green Revolution era, where government-backed incentives encouraged rapid increases in food grain production and improved rural livelihoods. In India, for instance, grain output reached approximately 275 million tonnes in 2017–2018, ensuring full domestic coverage and creating export capacity [8]. Uzbekistan's current policies follow a similar logic, seeking to promote cereal and vegetable crops while reducing the share of cotton, thus strengthening national food self-reliance [9].

Uzbekistan is also improving its agricultural market infrastructure. Between 2023 and 2025, the government plans to build more than 80 cold-storage facilities, modernize farm-to-market roads, and expand rural digital trading platforms [10]. These efforts are aligned with India's public distribution model and Japan's investments in smart logistics, which have helped reduce post-harvest losses and improve food distribution. Uzbekistan's Agromarket.uz and ARIS platforms, for example, allow thousands of farmers to sell directly to buyers, thus improving price transparency and reducing intermediary costs.

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Scientific innovation is becoming a core pillar of Uzbekistan's agricultural policy. Over 100 regional agro-innovation centers have been established through the ARIS platform, offering soil diagnostics, advisory services, and technology access to local farmers [11]. This initiative draws heavily from India's Krishi Vigyan Kendras (KVKs)—Farm Science Centers designed to deliver field-based, science-led agricultural extension services to farmers. Similarly, Uzbekistan is modernizing its research institutions, introducing biotechnology, and promoting biofertilizers to boost yields while preserving soil health.

In 2023, the government procured over 600,000 tons of cereals to stabilize bread prices and offset supply chain disruptions caused by global market fluctuations. This measure echoes India's use of buffer stocks and Japan's protective food security policies.

A key indicator of Uzbekistan's continued vulnerability, however, is its reliance on food imports. The country produces the majority of its staple food needs, but for several essential categories—including wheat, meat, dairy, sugar, and vegetable oil—it remains heavily dependent on external suppliers.

Table1

Uzbekistan's Food Import Dependence (2023)

Product Category	Share of Imports	Main Supplier Countries
Grains (wheat, flour)	40–50%	Kazakhstan, Russia
Vegetable oil	35–45%	Russia, Kazakhstan
Meat	20–30%	Belarus, Russia
Dairy products	25–30%	Russia, Latvia, Ukraine
Sugar	80–90%	Belarus, Brazil

Source: Compiled by the author based on data from the State Committee of Statistics of Uzbekistan (2023)

Grain remains a dietary staple in Uzbekistan. Although domestic wheat production reaches 6–7 million tonnes annually, this volume is increasingly insufficient due to population growth and changing consumption patterns. This high level of dependency exposes Uzbekistan to external shocks and underlines the need for diversification and enhanced domestic productivity.

Overall, the evidence suggests that Uzbekistan is building a pragmatic and forward-looking agricultural strategy. By combining India's focus on mass production and rural support with Japan's emphasis on high-tech innovation and institutional reform, Uzbekistan is crafting a customized approach to food security. If these efforts are sustained and scaled, the country could significantly reduce import dependence, strengthen rural resilience, and achieve long-term food sovereignty.

CONCLUSION

Uzbekistan's food security policy is becoming more influenced by international experiences, especially from India's Green Revolution and Japan's advanced farming technologies. These examples highlight the importance of using water efficiently, supporting farmers, encouraging innovation, and improving market infrastructure. Uzbekistan is following similar paths to increase agricultural productivity and reduce food insecurity. However, the country still depends heavily on imports for some important food products, which makes it vulnerable to outside shocks. To achieve long-term food stability, it is important to strengthen local production and continue modernizing agriculture.

Some recommendations include expanding the use of modern irrigation systems to save water and increase crop yields. It is also important to provide more financial support to farmers, such as subsidies and access to better equipment. Investing in research and new technologies can help improve farming methods and increase productivity. Improving storage facilities, transportation, and digital markets will reduce food losses after harvest and help distribute food more efficiently. Finally, Uzbekistan should focus on producing more of its own food, especially products like sugar, dairy, and vegetable oil, to reduce reliance on imports.

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