

THE ECONOMICS OF WATER-EFFICIENT TRANSITION.

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Abstract. Surkhandarya is strategically important as Uzbekistan's entry point to trade in South Asia. This thesis analyzes how the Termez International Trade Center affects local agribusinesses' ability to export goods. It specifically looks at how new logistical hubs and less "border friction" impact the profitability of high-value crops like citrus fruits, lemons, and pomegranates. Surkhandarya is strategically important as Uzbekistan's entry point to trade in South Asia. This thesis analyzes how the Termez International Trade Center affects local agribusinesses' ability to export goods. It specifically looks at how new logistical hubs and less "border friction" impact the profitability of high-value crops like citrus fruits, lemons, and pomegranates. The study contrasts traditional domestic sales with foreign export margins to Afghanistan and Pakistan using a cost-benefit analysis. Key bottlenecks, such as gaps in cold storage and certification requirements, are identified by the research. Results indicate that by maximizing "food miles" and cutting transaction costs, using Termez's distinct geographic advantage may improve regional agricultural GDP. In order to help local "clusters" better integrate into the Middle Corridor trade route, the thesis concludes with useful suggestions.

Keywords: *Surkhandarya, Termez Trade Center, Agribusiness Exports, Logistics, South Asian Markets.*

Экономические аспекты перехода к водозэффективному использованию ресурсов.

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Аннотация. Сурхандарьинская область занимает стратегически важное положение как ключевой пункт входа Узбекистана в торговую систему Южной Азии. В данной диссертации анализируется влияние Термезского международного торгового центра на экспортный потенциал местных агропредприятий. В частности, рассматривается, как создание новых

логистических хабов и снижение «пограничных барьеров» влияют на рентабельность выращивания высоколиквидных культур, таких как цитрусовые, лимоны и гранаты. В исследовании, основанном на методе анализа затрат и выгод, проводится сопоставление маржинальности традиционных внутренних продаж с показателями внешнего экспорта в Афганистан и Пакистан. Автор выявляет основные «узкие места» в отрасли, такие как дефицит мощностей холодильного хранения и сложности в прохождении процедур сертификации. Результаты работы показывают, что использование уникального географического преимущества Термеза путем оптимизации «продовольственных миль» и сокращения транзакционных издержек может значительно повысить сельскохозяйственный ВВП региона. В заключении диссертации представлены практические рекомендации по эффективной интеграции местных агрокластеров в торговый маршрут «пограничные барьеры»

Ключевые слова: *Сурхандарья, Термезский торговый центр, агроэкспорт, логистика, рынки Южной Азии.*

Introduction. The sustainable growth of Uzbekistan's agricultural industry has emerged as a strategic national target in the context of global climate change and the growing shortage of transboundary water resources in Central Asia. The country's southernmost and most thermally active province, Surkhandarya, confronts particular economic difficulties. It is distinguished by intense heat and a vital reliance on the Amu Darya river basin. The profitability of nearby agribusinesses is directly threatened by the large water losses caused by traditional furrow irrigation techniques, which frequently approach 40–50% due to evaporation and filtration.

Research Methodology. This study applies a mixed-methods research approach to analyze the economic aspects of the transition to water-efficient systems. The methodology combines theoretical analysis, quantitative evaluation, and comparative assessment to ensure reliable and comprehensive results.

A systematic review of academic literature is conducted using scholarly articles, conference papers, and analytical reports from international organizations such as the World Bank, FAO, and OECD, as well as national policy documents. This review establishes the conceptual and theoretical framework of the study and identifies key economic mechanisms influencing water-efficient transition.

The study also relies on secondary statistical data obtained from national statistical agencies, international databases, and sector-specific reports. The data are analyzed using basic statistical techniques such as growth rates, percentage changes, and

correlation analysis to identify relationships between water efficiency, productivity, and economic performance.

Analysis and discussion of results. The research indicates that switching to water-efficient systems has important economic consequences, especially for nations with high agricultural water consumption and water shortages. Agriculture continues to be the largest consumer of freshwater resources, accounting for more than two-thirds of all water withdrawals in many developing and transition economies, according to statistical data from national statistical agencies and international databases like the World Bank, FAO, and OECD. According to national statistics, the adoption of water-saving technologies—particularly contemporary irrigation techniques like fountain and drip irrigation—contributes to a noticeable decrease in water consumption per unit of production. Water consumption per hectare has decreased in areas where water-efficient technologies have been implemented, yet crop yields and farm revenues have grown steadily or even more. This demonstrates that water efficiency can boost economic production through better resource allocation rather than limit it. Water productivity, which is defined as economic production per cubic meter of water consumed, is higher in nations that invest in water-efficient infrastructure, according to international comparative data. Water-efficient economies have lower long-term production costs and are more resilient to climate unpredictability, according to FAO and World Bank data. These results imply that water efficiency is essential to maintaining economic sustainability, especially in nations that rely heavily on agriculture.

The economic investigation also demonstrates that long-term advantages of water-efficient technology exceed their relatively high initial investment costs. Over time, statistical patterns show decreases in maintenance, energy use, and water supply costs. Additionally, evidence from national development programs confirms that government support mechanisms like tax incentives, concessional loans, and subsidies greatly promote the adoption of water-saving devices.

Improved water efficiency contributes to macroeconomic stability by lowering demand on limited water supplies and promoting long-term growth. Correlation analysis using international datasets reveals a favorable association between water efficiency indices, agricultural productivity, and rural income growth. This emphasizes the significance of incorporating water-saving methods into national economic and environmental policies.

Conclusion and Recommendations. The present research explored the financial basis and consequences of the shift to water-efficient technologies, emphasizing its

significance for long-term development in the face of growing water scarcity. The study indicates that water efficiency is not just an environmental goal, but also an important economic approach that boosts resource output, lowers long-term costs, and promotes economic resilience. Empirical research based on national statistical data and international databases shows that using water-efficient technologies reduces water intensity and increases economic output per unit of water consumed. Despite the relatively high initial investment needs, the long-term economic benefits, such as lower operational costs, better production, and greater adaptability to climate variability, outweigh the expenditures. The research results also show that countries that implement integrated water management and efficiency-oriented policies have more consistent economic performance, particularly in water-dependent sectors like agriculture.

Overall, the results confirm that switching to water-efficient technologies is an affordable and long-term development strategy. Effective water management improves both microeconomic efficiency and macroeconomic stability, highlighting the strategic importance of water efficiency in national economic planning.

References.

1. World Bank. *World Development Report: Water for Development*. Washington, World Bank, various years. Available at: <https://www.worldbank.org>
2. Organisation for Economic Co-operation and Development (OECD). *Water Resources Management and Economic Growth*. Paris: OECD Publishing. Available at: <https://www.oecd.org>
3. Rogers, P., Bhatia, R., & Huber, A. (1998). *Water as a Social and Economic Good: How to Put the Principle into Practice*. Global Water Partnership, Stockholm.
4. Dinar, A., Rosegrant, M. W., & Meinzen-Dick, R. (1997). *Water Allocation Mechanisms: Principles and Examples*. World Bank Policy Research Working Paper. Washington, DC.
5. Tietenberg, T., & Lewis, L. (2018). *Environmental and Natural Resource Economics*. 11th ed. New York: Routledge.
6. Pearce, D., & Turner, R. K. (1990). *Economics of Natural Resources and the Environment*. Baltimore: Johns Hopkins University Press.