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INNOVATIVE SOLUTIONS OF CIRCULAR ECONOMY WITHIN SUSTAINABLE ECONOMIC GROWTH AND THEIR INTEGRATION INTO INDUSTRIAL SECTORS

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INTRODUCTION

In recent years, Uzbekistan has been actively progressing towards a green economy, recognizing its crucial role in ensuring sustainable economic growth and environmental protection. The increasing urgency of addressing environmental challenges, such as air pollution, resource depletion, and inefficient waste management, underscores the need for innovative solutions. To accelerate this transition, the government has introduced strategic regulatory measures, including Decree of the presidential DP-4477 (dated October 4, 2019), which outlines the “Green Economy Transition Strategy for 2019–2030.”[1] This policy framework aims to optimize resource utilization, promote eco-friendly technologies, and enhance energy efficiency across various economic sectors. In alignment with this strategy, researchers and young scholars are actively engaged in scientific exploration to develop and implement sustainable economic models.

One of the most essential components of the green economy is the circular economy, which has gained significant attention as an alternative to the conventional linear economy model. The traditional approach—“take, make, dispose”—relies on excessive resource consumption and generates vast amounts of waste, leading to environmental degradation. In contrast, the circular economy is based on the 3R principles: Reduce, Reuse, and Recycle, promoting resource efficiency and sustainability [2]. By adopting circular production models, industries can minimize



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waste, extend product life cycles, and establish closed-loop supply chains, ultimately reducing environmental impact.

The implementation of circular economy principles in Uzbekistan is becoming increasingly important, not only to support environmental sustainability but also to enhance economic efficiency and industrial competitiveness. The shift towards a circular economic model requires a comprehensive approach, integrating technological innovation, policy reforms, and cross-sectoral collaboration. Given the growing global emphasis on sustainability, Uzbekistan's commitment to circular economy development is a crucial step towards achieving long-term ecological balance and economic resilience.

MAIN PART

In recent years, Uzbekistan has experienced significant growth in the number of industrial enterprises. As of February 1, 2024, there were 68 691 industrial enterprises operating in the country, with the highest concentration in Tashkent, which accounted for 11 930 enterprises [3]. By July 1, 2024, the total number of industrial enterprises had increased to 111 968, reflecting a 3,6% rise compared to the same period in 2023 [4]. Such rapid industrial growth is accompanied by increased production and consumption, leading to higher environmental pressure and depletion of natural resources. Integrating circular economy principles into Uzbekistan's traditional economic model is a crucial step toward ensuring sustainable development. The circular economy emphasizes waste reduction, material reuse, and resource recycling, which helps mitigate environmental impact while improving production efficiency [5]. Implementing circular practices will not only enable Uzbek enterprises to reduce costs associated with raw materials but also enhance their competitiveness in the global market, where sustainability and environmental responsibility are increasingly prioritized. Thus, integrating circular economy principles into Uzbekistan's industrial sector is a strategically important direction for achieving long-term economic growth and maintaining ecological balance [6].



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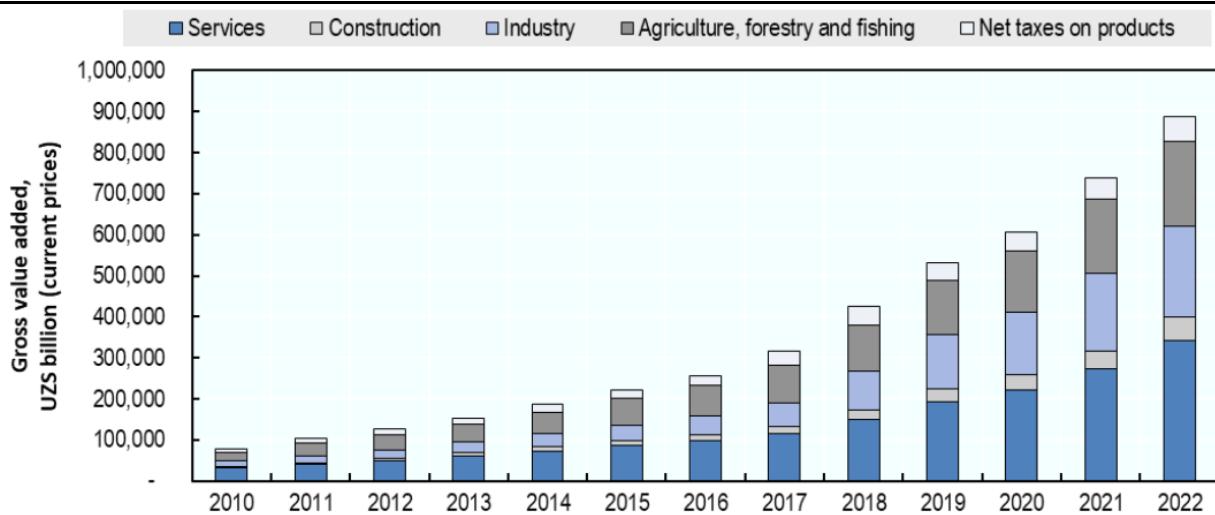


Figure 1. Industry's share of Uzbekistan's GDP has risen, while agriculture's share has declined [7]

From the figure, we can observe that Uzbekistan's industrial sector is experiencing steady growth, while the share of agriculture in the economy is gradually declining. This shift indicates an ongoing structural transformation, where industrial development is gaining priority over traditional agricultural activities. Such a trend reflects the country's efforts to modernize its economy, enhance industrial production capabilities, and integrate more advanced technologies into manufacturing sectors. At the same time, the decreasing share of agriculture suggests a transition towards more diversified and value-added economic activities, aligning with global trends in economic development.

To achieve this goal, it is essential to develop and implement innovative solutions that facilitate an effective transition to a sustainable economy. One of the key challenges in implementing new policies is the lack of public and business awareness regarding government strategies and initiatives. This lack of understanding reduces stakeholder engagement and slows down the adaptation process to new economic conditions. To address this issue, the primary task is to increase awareness among various sectors of society and enterprises about the proposed changes, as well as to create mechanisms that support their effective implementation. One potential solution is the development of a digital platform designed for the industrial sector. This platform would serve multiple critical functions:



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First, it would establish a collaboration network for industrial enterprises, enabling more efficient resource utilization. Through this platform, waste from one enterprise could be repurposed as raw material for another, thereby fostering closed-loop production cycles and minimizing waste emissions. Such a mechanism would ensure the efficient redistribution of resources, reducing environmental impact and promoting corporate environmental responsibility.

Second, the platform would integrate economic benefit assessment tools, providing enterprises with analytical insights into the potential profitability of adopting circular business models. This aspect is crucial for the industrial sector, as economic feasibility remains a top priority in decision-making processes. The use of digital technologies for modeling and forecasting economic impact would allow companies to make more informed decisions when integrating sustainable practices into their operations.

Thus, the development and implementation of such a digital platform would not only serve as a tool for enhancing industrial production efficiency but also represent a significant step in advancing the circular economy. It would provide informational, technological, and analytical support to businesses, encouraging them to transition toward more sustainable business models. Ultimately, this initiative would contribute to shaping a new economic paradigm based on resource conservation, cooperation, and environmental responsibility.

CONCLUSION

The transition to a circular economy presents a significant opportunity for Uzbekistan to achieve sustainable economic growth while addressing pressing environmental challenges. As the industrial sector continues to expand and the share of agriculture declines, it becomes increasingly important to implement resource-efficient and waste-reducing economic models. The integration of circular economy principles, such as reduce, reuse, and recycle, will not only enhance industrial efficiency but also minimize environmental impact and strengthen economic resilience. Developing a digital platform to facilitate industrial collaboration and resource optimization will play a crucial role in this transition. By enabling closed-loop production cycles, assessing economic benefits, and fostering intersectoral



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cooperation, such a platform will provide practical solutions for businesses seeking to adopt sustainable practices. Ultimately, shifting towards a circular economic model will support Uzbekistan's long-term economic stability, improve industrial competitiveness, and contribute to global efforts in environmental conservation. The successful implementation of these strategies will not only enhance economic productivity but also position Uzbekistan as a leader in sustainable industrial development.

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