UZBEKISTAN'S STRATEGY FOR TRANSITIONING TO A "GREEN ECONOMY": CURRENT CHALLENGES AND PROMISING OPPORTUNITIES

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Annotation: *This article analyzes Uzbekistan's transition strategy to a "Green Economy", its main directions, institutional mechanisms, and challenges in implementation. In recent years, environmental problems, inefficient use of resources, and an increase in energy consumption indicate the need for a "green" approach. The study discusses the role of "green transformation" in ensuring sustainable economic growth within the framework of the Uzbekistan-2030 Strategy, as well as renewable energy sources, environmental tax policy, and a system of "green" investments. In particular, international cooperation, technological modernization, and the intellectual potential of young people are considered important factors in this direction.*

Keywords: *green economy, sustainable development, Uzbekistan-2030 Strategy, environmental policy, energy efficiency, green investment, innovation, institutional mechanisms.*

Abstract: *This article examines Uzbekistan's strategy for transitioning to a green economy, focusing on the institutional mechanisms, implementation challenges, and development prospects. The study emphasizes that the shift toward a green economy is an urgent necessity driven by global environmental change, energy inefficiency, and the need for sustainable growth. Using data from the Statistical Agency under the President of the Republic of Uzbekistan (2016–2023), the article analyzes regional pollution trends and highlights government initiatives aimed at reducing greenhouse gas emissions and improving energy efficiency. Results show a gradual decline in pollutant emissions and growing investment in renewable energy projects, especially solar and wind.*

INTRODUCTION

Uzbekistan's economy has been experiencing major transformations in recent years. Global climate change, scarcity of natural resources, and growing environmental challenges have made it essential to shift toward a modern, sustainable economic model. In this regard, Uzbekistan's strategy for developing a **"green economy"** has become increasingly significant. The green

economy focuses on the rational use of natural resources, enhancing energy efficiency, and protecting the environment. This approach plays a vital role not only economically but also socially and ecologically in the country's overall development.

The transition to a green economy creates opportunities for **new job creation, sustainable development,** and **improving the ecological situation** across the nation. Recognizing the urgency of this issue, the President of Uzbekistan, **Shavkat Mirziyoyev,** has drawn global attention to the country's environmental challenges. On his initiative, specialists and equipment from all regions of the country have been mobilized to restore the ecological balance in the **Aral Sea region.** Large-scale afforestation projects have been implemented on the dried seabed, planting tree species adapted to the area's conditions — a process that continues systematically today.

As highlighted, **scientific and technological progress** has contributed to rapid economic growth worldwide, and Uzbekistan is actively aligning its development strategy with these global trends. However, the development of industry, agriculture, and a sharp increase in population are causing many environmental problems for humanity. Due to the thoughtless work being done to meet demands and needs, natural forests are shrinking, water problems are occurring, and environmental degradation is being observed.

METHODS

Based on both qualitative and quantitative data, this study employs a descriptive and analytical research methodology. The President of the Republic of Uzbekistan's Statistical Agency provided the statistical data on air pollutant emissions from 2016 to 2023. Presidential decrees, policy documents, and international reports from the World Bank, OECD, and UNDP were also examined. The study evaluates variations in emission levels over time and across regions using a comparative methodology. It also assesses the relationship between the application of policies and advancements in environmental metrics.To put Uzbekistan's policies in perspective, theoretical frameworks from models of the green economy and sustainable development were studied. An institutional and policy analysis framework was used to assess the results in order to pinpoint the nation's green transition process's advantages, disadvantages, and prospects.

RESULTS

In today's rapidly evolving world, the shift toward a **"green economy"** has become an essential and unavoidable necessity. Uzbekistan's efforts to transition to this model are still in the **early stages**, yet they hold strong **long-term potential** for sustainable development. According to data from the **Statistical Agency under the President of the Republic of Uzbekistan,** the table

below illustrates the **amount of pollutants released into the atmosphere** across the country's regions from **2016 to 2023**. The data show a **steady decline** in pollutant emissions over the years — reaching their **highest level in 2016** and dropping to their **lowest point in 2023**. This positive trend reflects Uzbekistan's growing commitment to **environmental protection** and the **implementation of green policies** aimed at reducing harmful emissions.

1- table . Pollution emissions into the atmosphere in the Republic of Uzbekistan in 2016-2023 (thousand tons)

REGIONS	2016	2017	2018	2019	2020	2021	2022	2023
Republic of Uzbekistan	1008,20	853,5	883,7	952,8	924,4	908,7	873,6	763,2
Karakalpakstan	30,6	37,70	34	37,2	28,9	31,4	21,1	9,8
Andijan	36,7	15.80	15.90	14.30	11.50	4.90	17.30	10.50
Bukhara Region	58.50	63.80	74.80	69.10	37.10	44.80	35.60	30.70
Jizzakh Region	63.40	5.20	11.80	4.30	3.40	2.90	27.00	29.50
Kashkadarya Region	167.90	165.70	152.20	140.40	128.10	132.20	115.70	117.70
Navoi Region	57.40	44.10	49.90	43.60	48.40	68.60	41.60	35.00
Namangan Region	15.80	15.90	15.20	15.80	15.00	24.00	7.40	5.00
Samarkand Region	51.60	37.20	52.10	44.20	52.70	39.40	38.70	39.40
Surkhandarya Region	3.20	3.20	5.10	6.90	6.50	7.10	7.30	7.40
Syrdarya Region	68.90	59.60	60.50	47.80	71.80	45.70	49.10	33.10
Tashkent Region	318.70	302.90	336.60	397.90	430.00	425.40	438.00	430.10
Fergana Region	103.20	60.10	53.20	49.60	50.50	46.50	49.50	26.40
Khorezm Region	5.20	9.20	7.10	7.20	6.80	7.20	4.50	| 3.40
Tashkent	27	3	1	7	3	2	2	1

city	.10	3.10	5.30	4.50	3.70	8.60	0.80	5.20

Uzbekistan possesses vast natural resource potential, especially in **solar and wind energy.** Several large-scale solar energy projects are currently being implemented in the **Samarkand, Bukhara, and Navoi** regions, positioning Uzbekistan as a potential **regional leader in renewable energy** (Sustainable Development Report, 2021). Through **international cooperation** and the **adoption of green technologies**, the country aims to expand its use of these sustainable energy sources.

The **integration of innovative technologies** is expected to transform Uzbekistan's **industrial and energy sectors**. For instance, improving energy efficiency within industries can lead to lower energy consumption and a reduction in environmentally harmful waste (UNDP, 2022). Thanks to ongoing collaboration with organizations such as the **United Nations** and the **World Bank**, Uzbekistan is witnessing notable progress in the development and application of **green technologies.**

However, one of the key challenges in transitioning to a **green economy** lies in the **underdeveloped infrastructure** for renewable energy. The systems required to generate and distribute electricity from sustainable sources are still limited, particularly in **rural areas.** Establishing modern energy networks demands **large-scale financial investment** and **advanced technological capacity**, which remain significant barriers. Additionally, projects aimed at enhancing **energy efficiency infrastructure** are still in the early stages of implementation.

Despite these challenges, Uzbekistan's green economy strategy presents **substantial opportunities** for economic growth and environmental improvement. The country's **abundant natural resources**—especially its high solar and wind energy potential—provide a strong foundation for this transformation. The ongoing solar energy initiatives in **Samarkand, Bukhara, and Navoi** are expected to help meet domestic electricity needs, boost **energy exports**, and significantly **reduce environmental degradation**, thereby contributing to the **global fight against climate change**.

Attracting **international investment** presents significant opportunities for Uzbekistan's economic development. The country's ongoing efforts to transition toward a **green economy** open new avenues for strengthening **global partnerships.** International financial organizations and donor countries can play a crucial role by providing **financial support** for Uzbekistan's **sustainable development initiatives**. For instance, both the **Asian Development Bank (ADB)** and the **World Bank** are investing in renewable energy projects across Uzbekistan, contributing to the long-term sustainability and modernization of the national economy.

Funds obtained from these institutions are primarily allocated to the **development of renewable energy infrastructure** and **improvements in energy efficiency**, which are vital for stabilizing and diversifying Uzbekistan's economic growth.

Moreover, the **adoption of innovative and green technologies** offers vast potential for advancing Uzbekistan's industrial sector. By integrating **energy-efficient technologies**, industries can significantly **reduce energy consumption** and **minimize waste production**. These technological innovations not only promote **environmental sustainability** but also enhance the **overall efficiency and competitiveness** of the national economy. In this way, the expansion of green technologies serves as a key driver of Uzbekistan's transition toward a more **sustainable and resilient economic model.**

The President's directive approved plans to cut greenhouse gas emissions, enhance green energy sources, improve energy efficiency, implement water-saving technology on up to 1 million hectares of land, plant 200 million seedlings annually, expand forests, and recycle household waste. President Shavkat Mirziyoyev signed the resolution titled "On measures to increase the effectiveness of reforms aimed at transitioning the Republic of Uzbekistan to a green economy by 2030." According to it:

- raise the production capacity of renewable energy sources by 15 GW, bringing their participation to over 30% of the total power output;
- increase industrial sector energy efficiency by at least 20%;
- cut greenhouse gas emissions per unit of GDP by 35% in comparison to 2010;
- increase water use efficiency and implement water-saving irrigation technologies on up to 1 million hectares of land;
- increase the amount of solid household waste recycled by more than 65%;
- increase the amount of green space in cities by more than 30% by planting 200 million seedlings annually and increasing the total number of seedlings to 1 billion;
- decrease energy consumption per unit of GDP by 30%.

DISCUSSION

Uzbekistan's transition to a green economy faces a number of challenges. Financial constraints, difficulties in accessing technology, and the need to increase environmental awareness. However, the potential of young people, international cooperation, and energy potential create opportunities. The Uzbekistan-2030 strategy is aimed at developing green technologies. To overcome these challenges, it is necessary to expand financing opportunities. It is also necessary to reach international agreements on technology transfer. It is necessary to implement educational programs to increase environmental

awareness. Uzbekistan's experience can serve as a model for other developing countries. Despite resource constraints, Uzbekistan can achieve a sustainable future through innovation and cooperation. It will also give other countries an impetus to create their own strategies in this area. Future research should study the socio-economic consequences of a green economy. It is important to develop mechanisms for attracting green investments. It is also necessary to assess the effectiveness of the introduction of green technologies. It is also necessary to develop recommendations to increase public awareness.With the right policies, investments and cooperation, Uzbekistan can achieve sustainable growth. It is also possible to improve the well-being of the population while protecting the environment. Uzbekistan's transition to a "green economy" is an achievable goal.

CONCLUSION

Uzbekistan's "Green Economy" transition plan is crucial to the nation's future economic stability and environmental security. Its goals include boosting energy efficiency, ensuring sustainable national development, making sensible use of natural resources, and cutting waste.

This procedure will support social and environmental sustainability in addition to economic stability. The shift to a "green economy" will keep the environment clean and healthy for future generations while also bolstering Uzbekistan's position in the fight against global climate change. Infrastructure, unequal resource distribution, a lack of funding, and a lack of societal awareness are among the current issues. However, the growth of green technologies, bolstering international collaboration, enhancing education, and advancing ecological agriculture are all creating exciting potential. Although Uzbekistan's transition to a "Green Economy" strategy is difficult and arduous, its success will be an important factor in ensuring sustainable development in the future. Through technological innovation, international cooperation, and rational use of natural resources, the country can achieve significant progress in this direction.

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