



Article

## Global Green Economy and Its Role in Uzbekistan

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**Abstract:** The article, devoted to the development of the green economy in Uzbekistan and on a global scale, discusses a number of important issues. Overall inclusive, environmental sustainability, access to renewable energy sources, and the need to combat climate change. This article describes the development of the green economy worldwide and strategies aimed at protecting the environment, and is expected to be based on major research and recommendations from organizations such as the United Nations and the World Bank. The important measures and laws adopted during Uzbekistan's transition to a green economy, including legal acts on the development of renewable energy sources, are indicated. Speaking about the experience of Uzbekistan and other countries in the transition to a green economy, international cooperation and joint projects, special attention was paid to joint initiatives with the United Nations, the World Bank and the European Union, as well as the introduction of environmental technologies. There were also suggestions about the need to create additional incentive systems to increase environmental awareness of the population and introduce green technologies into business. The article also provides information on the funds of the state budget of Uzbekistan allocated for climate-related activities.

**Keywords:** Green economy, sustainable development, renewable energy, ecological balance, climate change.

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### 1. Introduction

In today's modern world, environmental issues and climate change have become among the most pressing challenges facing humanity. Traditional economic models initially implemented had certain shortcomings. These models often failed to consider the finite nature of natural resources, leading to the emergence of a demand for a new and sustainable economic model.

By the 1980s, environmental protection and sustainable development concepts were recognized as crucial global issues. From this period onward, the "Global Green Economy" model began to emerge and fully took shape by the 1990s. Notably, at the 1992 United Nations Conference on Environment and Development held in Rio de Janeiro, the principles of the global green economy were further clarified. As a result, in the past few decades, the concept of the green economy has been evolving on a global scale. The green economy is not only focused on economic growth but also emphasizes environmental sustainability and the efficient use of natural resources. Uzbekistan is also aligning with this trend by integrating green economy principles into its economic system. This article analyzes the essence of the global green economy and its development prospects in Uzbekistan.

Numerous studies have been conducted on the green economy, with most of them focusing on maintaining ecological balance, achieving sustainable economic

development, and ensuring the efficient use of natural resources. The United Nations Environment Programme (UNEP) has published reports on the key principles of the green economy, highlighting issues such as sustainable development, environmental technologies, and green financing.

The World Bank's 2023 report highlights the impact of the green economy on economic growth, strategies for reducing carbon emissions, and the role of renewable energy sources. China and European Union countries have significant experience in transitioning to a green economy, actively implementing environmental innovations and green technologies.

Official strategies have been developed for the transition to a green economy in the Republic of Uzbekistan. Notably, the "Law on Renewable Energy Sources" adopted in 2019 and the presidential decrees of 2024 contribute to the development of the green economy. Additionally, academic research in the country, including national reports from the Ministry of Economy and Finance of Uzbekistan, emphasizes the importance of green economy principles.

## 2. Materials and Methods

This study focuses on the development of the green economy and its significance in Uzbekistan's economic landscape. Both qualitative and quantitative methods were employed, utilizing data from various sources for analysis.

The research utilized the following data sources: official government documents, reports from international organizations, and academic articles. Specifically, reports from the United Nations Environment Programme (UNEP), the World Bank, and the International Monetary Fund (IMF) served as primary data sources. Uzbekistan's green economy statistics were synthesized from reports by the World Bank, the Ministry of Economy and Finance of Uzbekistan, and the Global Green Economy Index (GGEI) [1], [2], [3], [4], [5], [6], [7]. Additionally, Uzbekistan's transition to a green economy was compared with the experiences of the European Union, China, and CIS countries [8], [9].

To ensure a scientific assessment of research findings, the following methods were applied: document analysis of Uzbekistan's green economy-related laws and state strategies, including the "Renewable Energy Sources Law" and Presidential Decree PQ-213. Statistical analysis was conducted to evaluate economic growth indicators, carbon emission reduction levels, and the share of renewable energy. A comparative analysis method was used to examine Uzbekistan's green economy strategies in relation to the European Union and China's policies, identifying differences and similarities. Expert analysis was conducted by reviewing scientific articles and insights from researchers specializing in Uzbekistan's green economy.

Several limitations were encountered during the research: limited availability of comprehensive statistical data on Uzbekistan's green economy, difficulties in assessing the long-term impact of ongoing government strategies, and the incomplete nature of Uzbekistan's green economy transition, making it challenging to obtain definitive results for certain programs.

## 3. Result

This article examines the development of the green economy and its role in Uzbekistan. The research was conducted using both qualitative and quantitative methods. Specifically, official reports, data published by international organizations, scientific articles, and government documents were analyzed. The latest information on the green economy in Uzbekistan was summarized based on reports from the World Bank and the United Nations. Uzbekistan's transition to a green economy was compared with the experiences of countries such as the European Union and China. An analytical approach was applied during the data collection process, and existing strategies, policy directions, and economic development indicators were studied [10].

When discussing the global green economy and its role in Uzbekistan, this sector represents an economic model that seeks to adapt to changing economic, social, and

environmental conditions worldwide. The green economy aims to manage natural resources efficiently and sustainably, reduce carbon emissions, utilize renewable energy sources, and ensure environmental security.

There are the following trends in the green economy:

1. **Sustainable Energy:** Investments are being made worldwide in renewable energy sources such as solar, wind, hydro, and geothermal energy. The share of these energy sources is increasing, helping economies reduce dependence on traditional fuels like natural gas and oil.
2. **Low-Carbon Technologies:** Low-carbon production and transportation systems are playing a significant role in the global economy.
3. **Efficient Resource Management:** The implementation of advanced technologies aims to conserve natural resources, promote recycling, and ensure long-term sustainability.

Uzbekistan adopted the "Green Economy" concept in 2019, which has played a crucial role in the country's social and economic development. The key directions of this concept include:

1. **Renewable Energy:** Uzbekistan has significant potential for utilizing solar and wind energy. In 2021, several projects were launched to invest in renewable energy sources. For example, a 100 MW solar power plant in Bukhara and a wind power station in Navoi region were implemented as major projects.
2. **Reducing Carbon Emissions:** Uzbekistan is undertaking various initiatives to lower its carbon footprint. These efforts involve introducing environmentally friendly technologies in multiple industrial sectors and optimizing production processes.
3. **Developing Eco-Tourism:** Uzbekistan is also focusing on promoting environmentally friendly tourism, contributing to sustainable economic growth.

*Achievements in this Field:*

1. New laws and regulatory acts have been adopted to ensure environmental safety in the industrial and agricultural sectors.
2. Investments in renewable energy and the modernization of the existing electricity infrastructure have begun.
3. **International Cooperation:** Uzbekistan is implementing green economy projects in collaboration with international organizations such as the World Bank and the European Union, including programs aimed at increasing energy efficiency.

Although the transition to a green economy has begun in Uzbekistan, the country's position in this field is improving. By effectively managing its natural resources, enhancing energy efficiency, and ensuring environmental security, Uzbekistan is taking firm steps toward integrating into the global green economy [11].

#### 4. Discussion

The research results indicate that Uzbekistan has favorable conditions for the development of a green economy. Although the country is rich in natural resources, the need for their efficient management is becoming increasingly urgent. While the government has adopted decisions and strategies aimed at implementing green economy principles, certain challenges still remain.

Main results:

**Energy Sector:** Although the Uzbek government is investing in renewable energy sources, dependency on hydrocarbon resources remains significantly high.

**Water Resources:** Water scarcity is one of the pressing issues, requiring broader implementation of water-saving technologies.

Agriculture: Uzbekistan's agriculture needs to develop organic farming and water-saving technologies to reduce environmental impact [12].

Environmental Awareness and Legal Framework: While principles of the green economy are being introduced, the level of environmental literacy among the population and incentives for businesses to transition to green technologies are not sufficiently developed.

Based on the results, although Uzbekistan has achieved significant progress in implementing the principles of a green economy, additional financing, broader application of innovative technologies, and strengthened international cooperation are needed to accelerate this process.

According to the United Nations report, the green economy is a model aimed at reducing the environmental risks of economic activities and ensuring sustainable development without degrading the environment. This approach seeks to improve human well-being and ensure social justice while significantly reducing environmental risks and the degradation of nature.

The main directions of the green economy by UNEP (United Nations Environment Programme) include:

1. Environmental Sustainability: Economic activities must not harm the environment. This principle involves ensuring environmental safety in production processes, reducing waste, and conserving resources.
2. Efficient Resource Use: Saving natural resources and creating opportunities for their renewal. Efficient use of energy and raw material resources holds significant importance in the green economy.
3. Social Justice: The green economy must create equal opportunities for all sections of society. It includes ensuring ecological sustainability along with social justice.
4. Introduction of Green Technologies: Utilizing renewable energy sources (e.g., solar, wind energy), recycling waste, and developing eco-friendly technologies. These technologies not only protect the environment but also create new economic opportunities.
5. Sustainable Consumption and Production: Ensuring sustainability in consumption and production processes by reducing the environmental impact throughout the product lifecycle.
6. Recognizing the Economic Value of Nature: Accounting for the economic value of nature's services and integrating them into economic decision-making processes.

These principles form the basis of the green economy and contribute to its development on a global scale.

Over the last few decades, the green economy has rapidly developed globally, becoming a vital part of the economic policies of many countries. Protecting the environment, ensuring sustainable development, and ecological security have become the priority directions of this global economic model. The main reason for these changes is climate change, the depletion of natural resources, and the rising environmental problems.

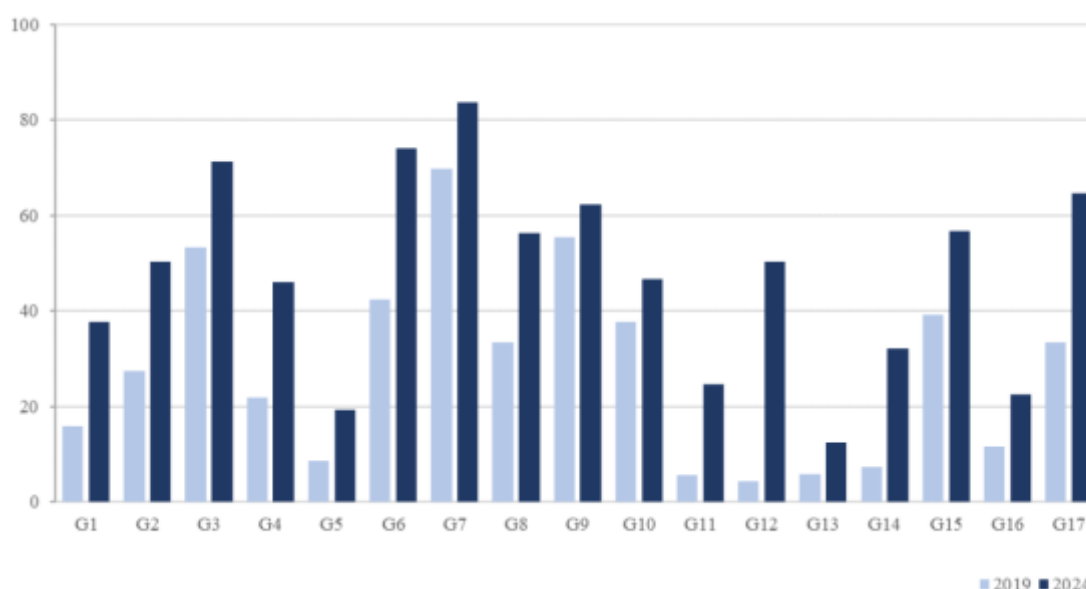
Today, many countries are integrating the principles of a green economy into their economic policies. For instance, the European Union adopted the "Green Deal" program in 2019, aiming to achieve carbon neutrality by 2050. Within this program, significant funds are being allocated for transitioning to renewable energy, reducing waste, and developing eco-technologies [13], [14].

China is also one of the leading countries investing in the green economy. In 2020, the Chinese government announced plans to achieve carbon neutrality by 2060 and has been increasing investments in renewable energy sources. The United States has been developing various laws and programs to support green energy and reduce carbon

emissions. Former President Joe Biden's "Clean Energy Plan" was one of the critical steps toward supporting the green economy [15].

International organizations like the United Nations, the World Bank, and the International Monetary Fund (IMF) are focusing extensively on promoting the principles of a green economy. Specifically, UNEP has advanced numerous initiatives for green economy development. The United Nations' 2015 Sustainable Development Goals (SDGs) also emphasize the necessity of transitioning to an economy based on ecological balance and reducing carbon emissions. SDGs are a program of 17 global goals adopted by the UN in 2015 and are planned to be achieved by 2030.

This program is showing practical results (Figure 1).



**Figure 1. Positive results in the implementation of the UN Sustainable Development Goals in Uzbekistan (2023).**

*Source: UN Uzbekistan Office, 2023.*

Figure 1 demonstrates the upward trend in Uzbekistan's achievement of the UN Sustainable Development Goals (SDGs). Key progress areas include renewable energy access, green infrastructure development, and eco-tourism growth. The figure visualizes practical improvements in environmental policy implementation, water resource efficiency, and international cooperation. This highlights the country's dedication to the 2030 Agenda and its role in fostering ecological sustainability in the region. Future Development of the Green Economy on a Global Scale: It is expected that the global development of the green economy will accelerate further in the future. In particular, new technologies, ecological innovations, and the advancement of renewable energy sources will become the main drivers of the green economy. As a result of joint efforts by countries and international organizations, the global economic system may transition into a more ecologically sustainable and resource-efficient model, which is already showing its outcomes.

**Stages of Formation and Development of the Green Economy in Uzbekistan:** Although Uzbekistan is a country rich in natural resources, the transition to a green economy has become a necessity due to the ecological problems caused by the traditional economic model. The analysis of the stages of forming and developing the green economy in Uzbekistan is as follows:

1. The Necessity of Transitioning to a Green Economy: The transition to a green economy in Uzbekistan is associated with the following factors:
  - Ecological Problems: Climate change, land degradation, water scarcity, and air pollution.



- Resource Limitations: The depletion of traditional energy sources such as oil, gas, and coal.
- Impact of Industry and Agriculture: The increase in industrial waste and issues with efficient water use.
- International Obligations: Uzbekistan strives to ensure sustainable development within the framework of international environmental agreements.
- 2. Stages of Development:
  - Initial Stage (2010–2020): During this stage, the Uzbek government focused on ecological issues and developed the following programs:
    - In 2017, drafting the "Green Economy" concept.
    - Expanding the use of alternative energy sources.
    - Passing the Renewable Energy Sources Law in 2019.
  - Rapid Development Stage (2021–2030): During this period, the following priority areas were identified:
    - Modernizing the economy with "green" technologies.
    - Introducing eco-friendly technologies in the industrial and transport sectors.
    - Increasing the share of renewable energy to 25%.
    - Developing ecological tourism.
  - Long-term Development Stage :
    - Transitioning to a fully "green economy" model.
    - Achieving carbon neutrality.
    - Implementing an eco-friendly transport system.
    - Developing sustainable agriculture.

Global Climate Change and Uzbekistan: Global climate change, which impacts the entire world, also affects Uzbekistan. Rising temperatures and water scarcity negatively influence agriculture, drinking water supply, and ecological balance. Specifically, the reduction of water in the Amu Darya and Syr Darya rivers accelerates desertification. This, in turn, leads to shrinking forests and a decrease in biodiversity.

Uzbekistan is focusing on developing the green economy to address these issues. The use of renewable energy sources, especially solar and wind energy, is expanding. Water-saving technologies are being introduced in agriculture. Additionally, programs for planting trees to combat desertification are being implemented.

**Table 1. The share of the State Budget of the Republic of Uzbekistan allocated to climate-related activities. (%): [3]**

	Total positive climate-related expenses.	Expenses related to climate impact mitigation.	Expenses related to climate adaptation.	Negative climate-related expenses.
Billion UZS	26 302,4	612,7	25 414,8	1 006,0
% in government budget	11,1%	0,3%	10,7%	0,4%

*Source: Analysis of the State Budget and Expenditures of the Republic of Uzbekistan. (in-academy.uz,2023).*

Analyzing the figures given in **Table 1**, it is possible to examine the share of the State Budget of Uzbekistan allocated to climate-related activities and expenses. Total positive climate-related expenses amount to 26,302.4 billion UZS, which constitutes 11.1% of the total state budget. This indicates that a significant portion of the government's overall expenditures is directed towards positive climate-related activities, such as mitigating the impacts of climate change and adapting to it. However, expenses related to climate impact

mitigation, such as reducing carbon emissions and developing renewable energy sources, amount to only 612.7 billion UZS, making up a mere 0.3% of the total budget. This demonstrates a low level of investment in combating climate change, suggesting that more resources could be allocated to this area.

On the other hand, expenses related to climate adaptation, including activities in areas such as water supply, agriculture, and regional infrastructure, amount to 25,414.8 billion UZS, which constitutes 10.7% of the total budget. This reflects significant attention being paid to protecting against the adverse effects of climate change, such as droughts, floods, and water shortages. Negative climate-related expenses, or efforts to address the damages caused by climate change, amount to 1,006.0 billion UZS, accounting for 0.4% of the total budget. This is also a low indicator, suggesting that activities in this area need to be expanded.

The analysis shows that while Uzbekistan is dedicating considerable resources to climate adaptation, investments in climate mitigation and combating the negative impacts of climate change remain relatively low and could benefit from greater allocation.

Uzbekistan continues its efforts in combating climate change and adapting to it; however, more funding is required in certain areas, such as climate impact mitigation and combating adverse effects. This creates significant opportunities, particularly for investments in renewable energy sources and more effective methods of reducing carbon emissions.

The government, in collaboration with international organizations, is developing a sustainable development strategy. According to long-term plans, maintaining ecological balance and adapting to climate change will remain key priorities for Uzbekistan. According to the Global Green Economy Index, Uzbekistan ranks 1st in Central Asia and 2nd among CIS countries, showing strong progress in adopting green economy principles. Its global ranking of 13th reflects significant achievements in renewable energy development, environmental legislation, and collaboration with international partners. This table underscores Uzbekistan's emergence as a regional leader in green policy, offering a replicable model for sustainable development in resource-dependent economies. Uzbekistan's achievement of ranking first in Central Asia and second among CIS countries demonstrates its success in green economy initiatives. This is particularly evident through major investment projects and political initiatives in areas such as renewable energy, enhancing energy efficiency, and adapting to climate change (Table 2).

**Table 2. Uzbekistan international rank in terms of green economy[9]**

Area	Rank
Central Asia	1
CIS countries	2
Asia	4
World	13

*Source: Global Green Economy Index, 2023*

Uzbekistan's international ranking in the green economy, being 4th in Asia and 13th globally, highlights its strong position in this field. This achievement emphasizes Uzbekistan's successes and demonstrates its positive influence on other countries. It reflects the nation's serious approach to combating climate change and promoting sustainable development, as well as its commitment to adapting to global changes.

Water conservation remains a critical issue in Uzbekistan's agriculture. In recent years, technologies such as drip irrigation, sprinkler irrigation, and laser-assisted land leveling have been widely implemented. These methods reduce water consumption and enhance productivity. Additionally, smart water management systems have been introduced to monitor real-time water distribution. The government has launched various programs to support farmers and promote innovative solutions, ensuring efficient use of water resources in the country.

According to the World Bank report, global climate change necessitates the accelerated implementation of green economy principles in Uzbekistan. The depletion of water resources and environmental challenges urge sustainable solutions in agriculture and industrial sectors. Consequently, the country has been widely implementing water-saving technologies, renewable energy sources, and environmentally friendly production methods. Transitioning to a green economy is a key direction for long-term sustainable development and maintaining ecological balance.

## 5. Conclusion

In summary, the green economy is not only a new model for economic growth and development but also an essential tool for environmental protection and efficient resource utilization. Globally, the transition to a green economy is accelerating, with many countries introducing innovative technologies to ensure ecological sustainability. Uzbekistan, too, is actively contributing to this trend, taking significant steps toward utilizing renewable energy sources, implementing water-saving technologies, and enhancing its environmental policies.

The measures being undertaken in Uzbekistan to transition to a green economy aim to mitigate the adverse effects of climate change, efficiently utilize natural resources, and ensure sustainable economic development. In the future, by widely implementing innovative technologies, strengthening environmental legislation, and fostering international cooperation, Uzbekistan has the potential to become one of the leading countries in the green economy. The concept of the green economy has become one of the most important global strategies for addressing the complex challenges of climate change, environmental degradation, and sustainable development. The research shows that this model—based on the rational use of natural resources, renewable energy, and environmental justice—has increasingly become a pillar of economic policy in both developed and developing countries.

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