

**GEOECOLOGICAL APPROACHES TO THE FORMATION OF A "GREEN  
ECONOMY" in UZBEKISTAN**

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**Abstract:** This article analyzes the role and significance of geoecological approaches in the process of shaping the green economy in Uzbekistan. Through geoecological perspectives, the rational use of natural resources, ensuring ecological sustainability, and integrating economic development with the natural environment are examined. Furthermore, the paper discusses state policies within the framework of the national green economy strategy, international cooperation, and the application of innovative technologies, providing recommendations for further development.

**Keywords:** green economy, geoecology, sustainable development, natural resources, ecological monitoring

**Introduction**

Today, the concept of “green economy” is widely used worldwide as one of the important factors of sustainable development. This concept, along with ensuring economic growth, is aimed at reducing environmental problems, rational use of resources and protection of the natural environment. The Republic of Uzbekistan is also working in this direction and has adopted the “Strategy of Transition to a Green Economy” for 2019–2030.

Geoecological approaches are of great importance for the effective formation of a green economy. Because geoecology deeply studies the relationships between natural landscapes, resources and human activity and helps to harmonize economic activity with the laws of nature. The increasing complexity of environmental problems in Uzbekistan — in particular, the Aral Sea tragedy, water scarcity, soil degradation and air pollution — further strengthens the need to develop green economy strategies based on geoecological approaches.

**The main goal of the article** is to analyze the theoretical and practical aspects of geoecological approaches to implementing the principles of a green economy in Uzbekistan, to highlight existing opportunities and problems, and to develop recommendations for promising directions.

**Theoretical foundations and international experience:** The concept of a green economy was first introduced into scientific circulation in 1989 by the English scientist David Pearce, who justified the need to harmonize the economic, environmental and social components of sustainable development [Pearce, 1989]. In 1992, the UN Conference on Environment and Development in Rio de Janeiro adopted the “Agenda 21” program, and the green economy was recognized as a relevant direction at the global level [UN, 1992].

According to the definition of the United Nations Environment Programme (UNEP), a green economy is “an economy that increases social well-being and social justice, reduces

environmental risks and ecological scarcity” [UNEP, 2011]. This concept is based on the rational use of resources, renewable energy, waste reduction and environmental safety.

Looking at international experience, European Union countries, especially Germany, Denmark and Sweden, are demonstrating progressive approaches in the field of green economy. For example, in Germany, under the “Energiewende” program, it is planned to obtain 65% of electricity from renewable sources by 2030 [BMW, 2020]. Denmark is a world leader in wind energy, with more than 40% of energy being obtained from wind turbines [IEA, 2021].

Southeast Asian countries, in particular China and South Korea, are also actively implementing green economy policies. China has included the concept of “ecological civilization” in its national development strategy, while South Korea has been implementing the “Green Growth” strategy since 2008 [OECD, 2012].

International experience shows that one of the most effective approaches to the transition to a green economy is the geoeological approach. Because it combines economic growth with the natural characteristics, ecological capabilities, and resource potential of geographical areas.

**The role of geoeological approaches:** Geoeology is a science that comprehensively studies the interaction between the geographical environment and ecological processes. This scientific direction has been formed since the second half of the 20th century and is today considered an important methodological basis for implementing the concepts of sustainable development and green economy [Maybeck et al., 2001].

The following principles are at the heart of the geoeological approach:

The principle of territoriality - harmonizing economic activity with the natural conditions and ecological capabilities of the geographical area.

The principle of complexity - considering natural resources (water, land, atmosphere, biosphere) as a single system.

The principle of sustainability - taking into account the interests of future generations in the process of meeting the needs of the present generation [Turner et al., 2003].

Geoeological methods mainly include the following:

1. Landscape-ecological analysis - study of the interrelated natural components of territories (relief, climate, soil, vegetation).
2. Resource balance calculation - determination of the ecological capacity of water, land and energy resources.
3. Ecological risk assessment - prediction of territorial-ecological consequences of human activity.
4. Monitoring and GIS technologies - monitoring the state of the natural environment and creating ecological maps [Kasperson & Kasperson, 2005].

The role of these approaches in the green economy is invaluable. Because any economic project — energy, transport, agriculture or industry — must first take into account the ecological

capabilities and resource capacity of the territory. For example, in water-scarce regions, it is advisable to use solar and wind energy, not hydropower, for energy production. This is done based on the results of geoecological assessments. Practical applications of geoecological approaches in Uzbekistan are observed in many areas. In particular, when developing sustainable development programs in the Aral Sea region, geoecological analyses of soil salinity, water resource distribution and biodiversity restoration were used [UNDP, 2020]. Also, the issues of reducing land degradation, saving water and strengthening environmental monitoring in the national “Green Economy Strategy” are based on geoecological methodology. Therefore, the geoecological approach is a necessary tool for making not only scientific, but also practical decisions in the formation of a green economy.

### **Problems and prospects:**

Although the transition to a green economy in Uzbekistan has been identified as a priority at the state level, there are a number of problems in this area. They can be divided into the following groups:

1. Institutional problems. Although national strategies for a green economy have been developed, their implementation mechanisms are not sufficiently effective. Cooperation between the public and private sectors, environmental regulations, and the monitoring system are in many cases insufficient [World Bank, 2021].
2. Financial and investment constraints. The introduction of renewable energy, waste processing, and environmentally friendly technologies requires significant investments. However, the Uzbek economy does not yet have sufficient financial resources in this regard. Although cooperation with international financial institutions is developing, the volume of domestic investments is insufficient [Asian Development Bank, 2022].
3. Technological constraints. Many production sectors use low energy efficiency and outdated technologies. The low water use efficiency in agriculture exacerbates environmental problems. For example, up to 40 percent of water is lost in irrigation systems [FAO, 2021].
4. Environmental problems. The Aral Sea tragedy, desertification, soil salinization, air pollution, and water scarcity are major obstacles to a green economy. These processes have not only environmental, but also social and economic consequences [UNDP, 2020].

### **Prospects.**

At the same time, Uzbekistan has great potential for developing a green economy. The country has huge potential for solar and wind energy and is considered one of the most promising sources of renewable energy in Central Asia [IEA, 2022]. The main directions of the green economy will be further accelerated by the widespread introduction of water-saving technologies in agriculture, the creation of waste processing infrastructure, and the development of an environmentally friendly transport system.

Also, increased international cooperation is an important factor. Grants and projects from the UN, the World Bank, the Asian Development Bank, and other international organizations support the green economy in Uzbekistan. In the future, the country's "green development model" can be created through the introduction of innovative technologies and the development of environmental education.

## **Conclusion**

The green economy is now considered an important factor not only in ensuring environmental sustainability, but also in socio-economic development. The “Strategy of Transition to a Green Economy” adopted in the Republic of Uzbekistan has created the legal and institutional basis for this direction. However, in order to increase the effectiveness of this process, along with theoretical approaches, it is necessary to widely use geoeological methods.

Geoeological approaches allow for the rational use of natural resources, assessment of environmental risks, and adaptation of territorial development to the capabilities of nature. In particular, in the context of the ecological crisis, water scarcity, desertification, and land degradation in the Aral Sea region, conducting geoeological analyses strengthens the foundation of green economy policy.

Although there are institutional, financial, and technological challenges in the transition to a green economy in Uzbekistan, the country’s renewable energy potential, opportunities for international cooperation, and commitment to environmental reforms broaden the prospects. In the future, through the introduction of innovative technologies, the development of environmental education, and the integrated application of geoeological approaches, Uzbekistan can become an advanced model of green economic development in the region.

## **References:**

- Asian Development Bank. (2022). Uzbekistan: Country partnership strategy 2022–2026. Manila: ADB.
- Food and Agriculture Organization of the United Nations. (2021). Irrigation efficiency and water management in Central Asia. Rome: FAO.
- International Energy Agency. (2022). Renewable energy prospects for Central Asia. Paris: IEA.
- United Nations Development Programme. (2020). Human development report: Climate change and resilience in Central Asia. New York: UNDP.
- World Bank. (2021). Uzbekistan: Towards a green economy. Washington, DC: World Bank Group.
- Yusupov, B. (2020). Geoeologik omillar va yashil iqtisodiyot rivojlanishi. O‘zbekiston ekologiya jurnali, 12(3), 45–52.
- Karimov, A. (2019). Geoeological aspects of sustainable development in Central Asia. Tashkent: Fan nashriyoti.
- Smith, J., & Johnson, P. (2020). Green economy and climate policy. London: Routledge.