

Transition of Uzbekistan to Sustainable Environmental Development

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Abstract. Environmental issues are high on the global agenda. They play an increasingly important role in the development and implementation of national and regional plans. The article examines the key aspects of the transition of the Republic of Uzbekistan to sustainable environmental development based on the concept of a green economy. It discusses such important areas as energy efficiency, resource use, waste management, as well as the introduction of innovative technologies in various sectors of the economy. Secondary data analysis techniques are used. The results of the work may be useful for the development of policies and programs aimed at ensuring sustainable growth and environmental protection in Uzbekistan and other countries with similar conditions.

Key Words: Sustainable development; Green economy; Uzbekistan.

1 Introduction

Problems of sustainable development are becoming increasingly relevant in the modern world, especially in the context of global environmental challenges and the need to transition to a green economy. In the context of increasing anthropogenic impact on nature caused by accelerated economic growth, the concept of sustainable development is of particular importance. Economic modernization must take into account issues of environmental protection, conservation of nature and living conditions for future generations. This problem is actualized by the difficult environmental situation in the Central Asia region. The main part of environmental development at the regional level is the problem of the Aral Sea and related issues of rational water use and desertification. These problems are recognized at the UN level, and the international community supports the relevant initiatives of Uzbekistan.

In recent years, many countries, including the Republic of Uzbekistan, have made significant efforts to introduce the principles of a green economy and achieve sustainable

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development goals. These efforts are aimed at reducing carbon emissions, increasing energy efficiency, rational use of natural resources and introducing innovative technologies. An important aspect of these processes is the adoption of strategies and programs aimed at long-term development and environmental protection.

The updated Uzbekistan-2030 Strategy, adopted in 2023, states the need for a transition to a green economy. At the heart of this transition is the transition of energy supply to the predominant use of renewable energy. In addition, the expansion of green spaces throughout the country, primarily in the Aral Sea region, is of great importance [1].

In this regard, it is relevant to analyze the environmental development of the Republic of Uzbekistan, the priorities in this area, measures taken in the framework of the use of energy resources, the main problems associated with the implementation of the green transition, and the prospects for its implementation.

2 Methods

As part of the use of various methods of scientific knowledge to successfully fulfil the purpose of this study, we used approaches such as content analysis of statistical information. All of them mainly took place under desk research conditions, so the main data presented in the article are the product of secondary analysis. At the same time, we obtained the main data both from scientific literature and various kinds of statistical brochures and analytical reviews.

3 Results and Discussion

3.1 Green economy and sustainable development of the Republic of Uzbekistan

Long-term and accelerating global economic development, which was aimed solely at maximizing profits and minimizing costs, has led to serious violations in the environmental sphere, degradation of the environment and even the social environment. The concept of sustainable development has become an integral part of the global, regional and national agenda. The UN identifies 17 sustainable development goals aimed at improving human well-being, regardless of country of residence. Combating climate change and protecting the environment are among these goals. Clean water and sanitation, affordable and clean energy, sustainable development of cities and other human settlements, combating climate change, conservation of marine and terrestrial ecosystems are among sustainable development and are recognized as goals by all countries of the world [2].

Table 1. General indicators for the Eurasian region, 2021 (EAEU, Tajikistan, Uzbekistan)

Index	%
Share in global CO ₂ emissions	6.0
Share in global GDP (PPP)	3.9
Share in world population	2.9

Source: The World Bank, Global Carbon Project.

Sustainable development means not just meeting needs, but preserving the ability of future generations to meet their own needs [3]. Economic growth while preserving nature and natural resources for future generations is the basis of this approach [4]. This issue has become so relevant that even a special term “climate migrant” has appeared, meaning forced relocation under the pressure of an unfavorable environment [5].

Green economy based on low carbon, resource efficient and socially inclusive principles is the basis for achieving sustainable development goals in the area of global warming and environmental protection. “In a green economy, growth in employment and income are driven by public and private investment into such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services” [6]. The Republic of Uzbekistan is pursuing a policy aimed at achieving sustainable development goals. Uzbekistan ratified the Paris Agreement and assumed corresponding obligations to combat global warming, including reducing greenhouse gas emissions into the atmosphere [7].

In 2019, Uzbekistan adopted the Strategy for the Transition of the Republic of Uzbekistan to a Green Economy for the Period 2019-2030 [8]. The document stated the presence of such problems as an insufficient level of energy efficiency and irrational use of natural resources, technological lag, and weak involvement of small businesses in these processes, primarily in the field of innovative solutions. The priority areas of the green transition are low-carbon development and the principles of resource conservation, the introduction of environmentally friendly and highly efficient technologies, and sustainable agriculture [9]. In the field of electric power, the document provided the modernization of existing power plants based on the introduction of energy-saving technologies. Priority measures in the field of heat and power engineering were aimed at the reconstruction and modernization of outdated equipment and the introduction of modern technologies. In the oil and gas sector, the state directed efforts to reduce losses during the production and transportation of natural gas and the introduction of alternative energy sources in the extraction of these natural resources [10]. Much attention is paid to renewable energy sources in the strategy. Among the measures taken are the improvement of tariff policy, modernization of the power supply system, and localization of the production of equipment for the generation of renewable energy sources.

The strategy provides for stricter requirements for the energy efficiency of buildings, the adoption of relevant government programs, the introduction of a system of differentiated tariffs to stimulate energy saving, etc.

Transport is one of the main sources of environmental pollution. In this regard, the green transition envisages tightening requirements for the production and operation of cars, stimulating the production and use of electric vehicles and cars with hybrid engines, as well as those powered by gas fuel. In addition, it is necessary to prevent further salinization and land deterioration, reconstruct and modernize hydraulic structures, pumping stations and reservoirs, digitalize processes, and introduce innovations based on energy-efficient and water-saving technologies in agriculture.

Finally, another source of pollution is municipal solid waste. Uzbekistan is implementing a policy to develop sanitary treatment infrastructure, create an effective and modern system for processing solid household waste, and use it as sources of alternative energy [10].

3.2 Issues of economic and environmental development of the Republic of Uzbekistan

The economy of the Republic of Uzbekistan demonstrates stable and sustainable growth. Thus, in 2023, the country's economy managed to achieve key growth indicators, totaling 6% of GDP [10]. This level indicates that the course has been correctly chosen, and even the unfavorable international situation, in particular, disruption of logistics supply chains and cargo transportation, the growth of local and regional conflicts, terrorist threats, the external environment, in particular, the growth of conflict potential, disruption of logical chains, supplies of raw materials and products, did not play a significant role in the final indicators of economic development.

At the end of 2023, Uzbekistan's GDP exceeded 90 billion USD. In the context of the green transition, it is important that the growth of industrial production amounted to 6% compared to 2022, construction work - 6.4%, agriculture, forestry and fisheries - 4.1% [11].

Consumption of energy resources is the basis of economic growth. In this regard, some indicators point to possible problems in the energy green transition. Thus, in 2023, natural gas production decreased by 5 billion m³, and Uzbekistan became a net importer of this type of energy resources. Oil production has also declined, increasing dependence on imports. Along with this, coal production increased by 15.5%. Of all types of energy resources, coal pollutes the environment the most. It is environmentally unprofitable, especially in the transition to a green economy [11].

Renewable energy sources are becoming the best alternative and way out of the current situation for Uzbekistan. In the future, environmentally friendly energy production will replace current production facilities. Along with this, Uzbekistan is making efforts to maintain the level of production of non-renewable natural resources. In particular, the incentive for this is the reduction of tax rates on oil and natural gas production [12].

Water scarcity is another challenge of the green transition. According to experts, Uzbekistan annually experiences a shortage of water resources in the amount of 10-15% of the communities' needs. The problem of water resource shortage entails insufficiently efficient use of hydroelectric power plants, and also calls into question the implementation of the nuclear power plant construction project. Implementing a green transition is an extremely expensive project that requires technological innovation. The entire structure of the modern economy was formed on the basis of the consumption of non-renewable natural resources, and the green transition requires investments that are probably available only to the most developed countries. It is no coincidence that the United States and the countries of the European Union repeatedly revise the timing of the transition to a green economy, and the implementation of the Paris Agreement is questioned by most experts [13].

Improving energy management efficiency is another important issue in the green transition. Energy efficiency is extremely important, as energy consumption per unit of GDP is approximately twice as high as in Kazakhstan and three times higher than in the European region [14].

Other aspects include landscape restoration, efficient water management, measures to reduce air pollution, and sustainable land use. Government measures for a gradual green transition will provide the necessary incentives to achieve these goals [15].

3.3 Prospects for environmental development of Uzbekistan

Adopted in 2022, the Resolution of the President of the Republic of Uzbekistan is aimed at increasing the effectiveness of measures to implement the transition to a green economy. Among these measures, it was envisaged to reduce greenhouse gas emissions per unit of GDP by 35% compared to 2010; increasing the share of renewable energy sources to 30%; increasing energy efficiency in industry by at least 20%; introduction of innovative water-saving technologies for agricultural irrigation on an area of up to 1 million hectares; expansion of green zones by 30% by planting 200 million seedlings annually for five years and increasing the republic's forest reserves to more than 90 million cubic meters; the level of recycling of solid household waste must be at least 65% [1].

The Uzbekistan-2030 Strategy, updated in 2023, includes reforms in the field of environmental development among its important tasks. Among them:

- transition to a green economy through a gradual increase in the share of renewable energy in the energy supply of the country's economy;
- uninterrupted supply of energy resources to all sectors of the economy.

By 2030, Uzbekistan plans to double the energy efficiency of the economy compared to 2023, including by increasing energy production from renewable sources to 25,000 megawatts with a total share of 40% in the energy supply.

The Strategy envisages the introduction of green certificates and the development of this market segment to stimulate an accelerated transition to a green economy. Modernization of thermal power plants will make it possible to maintain the volume of non-renewable energy resources and thereby reduce emissions into the atmosphere. Public transport is planned to be completely converted to environmentally friendly fuel.

An important direction is to expand the forest area. Thus, the Uzbekistan-2030 Strategy involves planting an additional 26,000 forests and increasing their total area to 6.1 million hectares.

The Aral Sea region is an internationally recognized region of environmental disaster. Therefore, stabilizing the environmental situation in this region is an important part of environmental protection, which is important not only for Uzbekistan, but also for the entire Central Asia.

As noted by the President of Uzbekistan Shavkat Mirziyoyev at the 78th session of the UN General Assembly, “1.7 million hectares of green areas with drought-tolerant plants had been created on the dried-up bed of the Aral Sea”. The total area of forest plantations in the Aral Sea region should be increased to 2.3 million hectares by 2030.

Uzbekistan’s desire to make a successful transition to a green economy is based not only on promising strategies and plans for their implementation. This desire is obvious based on practical steps that Uzbekistan is taking in this direction. In particular, in December 2023, Uzbekistan, together with companies from China and the UAE, launched six new power plants, of which five are powered by solar energy and another one is powered by wind.

A real breakthrough in the automotive industry in Uzbekistan is the start of construction of a plant for the production of electric vehicles by the Chinese company BYD, the leading automaker in the modern world. The launch of the plant construction project in the Jizzakh region was carried out during the visit of the President of the Republic of Uzbekistan Shavkat Mirziyoyev in China in January 2024.

4 Conclusion

Environmental development issues play an important role on the agenda of modern Uzbekistan. Modernization of the economy and the desire to implement a technological transition occur against the background of awareness of the need for sustainable development, i.e., preservation for future generations of those natural conditions that currently exist.

For Uzbekistan, the problems of environmental development are aggravated by the constantly operating factor of the Aral Sea. This region is recognized by the international community as an environmental disaster zone that requires increased attention.

Issues of environmental development are reflected in a number of documents adopted in the Republic of Uzbekistan. On their basis, practical projects are being implemented in the field of energy saving, increasing energy efficiency, and introducing renewable energy sources in order to make the most gentle and painless transition to a green economy without jeopardizing energy security or economic growth.

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