

## GREEN ECONOMY DEVELOPMENT AND SUSTAINABILITY INDICATORS

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In today's realities, economic prosperity increasingly depends on the introduction of environmentally friendly, resource-saving technologies and approaches. After all, the world's population is growing, and natural resources are constantly declining. From this point of view, the transition to a "green" economy has a number of advantages. Because it not only improves human well-being and ensures social justice, but also significantly reduces environmental risks. According to the United Nations Environment Programme, investing 50% of global GDP in greening the economy in the 2020s will ensure long-term economic growth in the present and future, preventing serious risks associated with climate change, water scarcity and loss of ecosystem services.

Fundamental changes are continuing in Uzbekistan in all spheres of State and public life. At the same time, the individual, his rights and legitimate interests are at the center of the changes. Investments in human capital, knowledge and innovation, and the transition to a "green" economy are considered as one of the priorities for economic development, a condition for increasing its competitiveness and sustainable development.

The problems of climate change and the crisis in the energy market have led to the development of alternative, environmentally friendly and possibly renewable resource technologies called "green" technologies.

The program of transition to a green economy and green growth in Uzbekistan until 2030 was adopted at the end of 2022. Earlier, the government announced

plans to completely eliminate the use of coal, natural gas and petroleum products as fuels by 2050 in order to achieve carbon neutrality, or "zero emissions" (the amount of carbon dioxide emissions that does not exceed the amount absorbed by the oceans.and forests).

According to the program, by 2030, the share of renewable energy sources (RES) used will amount to about 30% of the total electricity production in the country. By this time, wind farms with a total capacity of at least 5,000 MW and solar photovoltaic plants (SPPs) with a total capacity of 7,000 MW will be commissioned.

In this regard, the issue of informing the population as consumers about the relevance of energy consumption diversification, the advantages and disadvantages of alternative energy sources is relevant.

Problems of energy security in Uzbekistan

Uzbekistan is located in the center of Central Asia, in a region where the problem of water scarcity is acute. According to the World Resources Institute, Uzbekistan ranks 29th among countries with high levels of water exposure by 2040. It is predicted that the expected stress level will be more than 80% in the entire Central Asian region. These figures are depressing, especially considering that by the age of 42, the population of Uzbekistan will exceed 2040 million people. According to forecasts, rapid population growth can lead to water shortages of 44-46%. Given the growing demand for water resources and their rapid decline, it is important to take appropriate measures to address the problem.

According to forecasts set out in the Presidential Decree dated 04/01/2023, by 2023, water resources are expected to decrease from the long-term norm by 10-15% in the Syr Darya basin and 15-20% in the Amu Darya basin. At the same time, in the concept of water management development of the Republic of Uzbekistan for 2020-2030, the average annual volume of water resources used by Uzbekistan is 51-53 billion m3, of which 80% (about 41 km3 per year) falls on transboundary rivers. The decrease in water volume in the Amudarya and Syrdarya rivers has a significant impact on Uzbekistan's water supply, which has serious socio-economic consequences.

In Uzbekistan, 91% of water resources are used for agriculture

Agriculture (91.0%)	
Utilities (4.5%)	
Production (1.4%)	
Other Industries (1.4%)	
Fishing (1.2%)	



Thermal energy (0.5%)

In addition to the above, it should be noted that in neighboring Afghanistan, the Kosh Tepa canal (Kushtepa) is 280 km long, 100 meters wide, and 8.5 meters deep, which will irrigate 550 thousand hectares of Afghan land. Currently, a third of the canal has been built. After the construction is completed, water consumption in the Amu Darya in Afghanistan may increase from 7 cubic meters to 17 cubic meters.

While the construction of a canal is not a big problem for Tajikistan, located in the upper reaches of the Amu Darya, as well as for Afghanistan, Uzbekistan and Turkmenistan, located in the lower reaches of the main river in Central Asia, may lose up to 15% of their irrigation water. However, the new government that came to power does not want to stop building the canal: by 2030, it is planned to build the Dashti-Jum hydroelectric power station in Afghanistan, which will collect most of the summer runoff of the Panj River. Thus, the Taliban requires most of the water from the northern transboundary rivers.

According to experts, the implementation of these two projects can lead not only to economic and social problems in Uzbekistan and Turkmenistan, but also to an environmental disaster in Central Asia as a whole.

The situation in Central Asian countries, especially in Uzbekistan, is aggravated by the fact that Afghanistan is not a party to the UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes and has not signed any agreements on water issues with other countries in the region. In other words, Afghanistan has no obligations to its neighbors in the region or to the international community.

In addition to the controversial issues related to Afghanistan, the conditions for the joint use of hydroelectric power plants such as Rogun, Gambarat HPP and the Karakum Canal remain relevant.

It follows from this that Uzbekistan must solve a serious problem of water resources, which affects the national security of the country and has a profound impact on all important sectors.

The role of water resources in Uzbekistan's energy sector

The depletion of the water resources of the Amu Darya and Syr Darya also affects the energy sector of Uzbekistan, as there are more than 30 hydroelectric power plants in the country, the performance of which depends, among other things, on the annual runoff of water from these rivers[1]. According to the Ministry of Energy of Uzbekistan, in 2021, the total volume of electricity production at hydroelectric power plants decreased by 23% due to lack of water. At the same time, in terms of the share of electricity sources in Uzbekistan, hydropower occupies the largest share – 11.9%. The shortage of electricity in the country, in turn, amounts to 10-15%, as a result of which there is a shortage of electricity not only for the population, but also for enterprises, and a decrease in the capacity of hydroelectric power plants only exacerbates the problem[2].

Unfortunately, alternative or renewable energy sources are less sustainable and sustainable in generating electricity. The use of green energy sources depends on many factors and has its pros and cons. Paradoxical as it may sound, REE, in particular, argues that increasing the use of solar energy increases dependence on traditional forms of energy such as coal. Thus, despite significant investments in solar energy and an increase in the number of solar power plants, China continues to use coal to compensate for power outages caused by shallow rivers and low hydroelectric power generation due to drought and heat.instability of electricity supply during the day and due to climate change.

An important component of the "green economy" is the creation and use of renewable energy sources. Uzbekistan's potential in this regard is quite high. According to estimates by international financial institutions, the annual supply of alternative energy (especially solar) in the republic amounts to 270 million tons of conventional fuel equivalent. This is three times more than our actual need. In addition, the implementation of projects in the field of "green energy" will increase the share of renewable energy sources in Uzbekistan by more than 3 times in the next ten years. This is an unprecedented benefit for the economy.

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