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Qabul qilingan sana: 07.12.2025
Nashr etilgan sana: 30.01.2026

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THE IMPORTANCE OF ENVIRONMENTAL PROTECTION IN ENSURING ECOLOGICAL SUSTAINABILITY:NEV APPOROACHES AND PERSPECTIVES IN THE CONTEXT OF UZBEKISTON

Annotation: Ekological sustainability is one of the most pressing issues in the modern world.Environmental protection,rational use of natural use of natural resources and creation of comfortable living conditions for future generations are the main principles of ecological sustainability.

Uzbekiston,in the conditions of arid climte,water scarcity and rapidly growing urbanization,is realizing the need too apply new approaches and prospects,new approaches and prospects for ensuring ecological sustainability in the contexs of Uzbekistan.

Keywords: Ecological sustainability,environment protection,Uzbekisston,renewable energy ,water resources,soil protection,waste recycling,international cooperation.

Introduction: Uzbekistan, located in the heart of Central Asia, faces unique environmental challenges that require an integrated approach and strategic planning. In recent years, the country has been taking active steps to protect the environment by integrating sustainable development into national programs and projects. These efforts are not only aimed at improving the environmental situation in the country, but also make a significant contribution to solving global problems. Uzbekistan actively participates in global initiatives to combat climate change. The country ratified the Paris Agreement in 2016, committing to reducing greenhouse gas emissions and adapting to climate change.

Environmental policy issues play a key role on the agenda of the New Uzbekistan. Measures to transform the sphere of ecology and environmental protection to improve the activities of our ministry, actions to combat climate change and its consequences, a moratorium on tree cutting,

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the introduction of clean “green” energy, solid waste management, the development of “green” transport infrastructure, expansion networks of protected natural areas, measures to restore ecosystems and preserve biodiversity, combat desertification and drought, unify environmental legislation in accordance with international standards, supporting the introduction of modern information technologies, show positive trends.

One of the key aspects of Uzbekistan’s environmental strategy is the development of a “green economy”. The state program “Green Economy” for 2019-2030 is aimed at reducing the carbon footprint, increasing energy efficiency and developing renewable energy sources (RES). Moreover, the government of Uzbekistan has set ambitious goals to increase the share of renewable energy sources in the country’s overall energy balance. As part of the Development Strategy “Uzbekistan - 2030” and subsequent plans. As President of Uzbekistan Shavkat Mirziyoyev stated at the third Tashkent International Investment Forum held in early may this year, our country strives to create more than 20 gigawatts of renewable energy capacity by 2030 and increase its share in the energy sector. balance up to 40 percent. These goals include the construction of new solar and wind power plants, as well as the modernization of existing energy infrastructure.

In 2019, the law “On Renewable Energy Sources” was adopted, which creates a legal basis for the development of the green energy sector. The law provides benefits and preferences for investors, which stimulates the attraction of both domestic and foreign investment.

The development of “green energy” in Uzbekistan is actively supported by international organizations and financial institutions. Cooperation with the International Renewable Energy Agency (IRENA), the World Bank, the Asian Development Bank and other structures plays an important role. Investments and technical support from these organizations contribute to the rapid implementation of innovative technologies and best practices in the field of renewable energy sources.

Just last year, together with the strategic partners of Uzbekistan - the companies Masdar, Gezhouba, China Energy”, large wind and solar power plants with a capacity of 1.4 gigawatts were launched. Also, together with ACWA Power, we began implementing a project for the production of “green” hydrogen.

Currently, work is underway on the implementation of 28 eight projects in this direction. It is noteworthy that these important projects are carried out exclusively through foreign direct investment on the basis of public-private partnerships.

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Achieving global sustainable development goals is no less important for the country.

In Uzbekistan, in 2022, an updated Resolution of the Cabinet of Ministers "On additional measures to accelerate the implementation of National Goals and Objectives in the field of sustainable development for the period up to 2030" was adopted, which confirms Uzbekistan's strong determination in achieving the global Agenda for the period up to 2030 year in a comprehensive partnership with all UN member countries to achieve sixteen national sustainable development goals.

The National Goals and Objectives in the field of sustainable development for the period until 2030, the Plan of Measures for the effective implementation of the National Goals and Objectives in the field of sustainable development for the period 2022–2026, as well as the National Development Strategies of Uzbekistan, approved by the Government of our country, serve the implementation of the Goals of Sustainable Development development.

The achieved results in implementing the national goals and objectives of Uzbekistan are generally approved and recognized by the international community.

The basic principle of the new Uzbekistan "In the name of the honor and dignity of man" is consonant with the UN principle on sustainable development "Leave no one behind".

In the Interagency Ranking of Sustainable Development Goals published by the UN (SDR) in 2023, Uzbekistan took 69th place among 166 countries, increasing its ranking by 8 points.

The Voluntary National Reviews prepared in 2020 and 2023 on the implementation of the national Goals and objectives of sustainable development of Uzbekistan until 2023 were positively assessed by the UN.

Uzbekistan has achieved significant results on all Sustainable Development Goals, which were balanced and interconnected with the implementation of the "Strategy of Action for Five Priority Areas of Development of the Republic of Uzbekistan in 2017 - 2021"

An analysis of the current state of protected natural areas in Uzbekistan and current trends in this area shows that in recent years the number and area of protected natural areas in the country have been increasing. Reforms are being carried out in the forestry sector, as a result of which the amount of forest land in the country has noticeably increased.

In this context, the initiative of President Shavkat Mirziyoyev "Yashil makon" ("Green space") has become a truly national project. The forest area in relation to the total land area of

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Uzbekistan has increased over 7 years from 8.3% to 8.7%. The share of protected areas increased 2.0 times.

Uzbekistan actively participates in international mechanisms for environmental protection and human development. Various initiatives are being implemented to preserve biodiversity, restore ecosystems in the Aral Sea region, protect the ozone layer and mitigate the effects of climate change, and waste management. There are also policies and programs aimed at ensuring people's access to healthy food and clean water. Uzbekistan cooperates with the European Union, its institutional bodies for environmental protection and sustainable development, as well as with individual states such as Germany, Finland, Turkey, and South Korea.

The country is a party to 14 international conventions, as well as more than 20 protocols, agreements and memoranda of understanding in the field of environmental protection and sustainable development.

Uzbekistan regularly takes an active part in the annual meetings of the UN Framework Convention on Climate Change. During the 27th meeting, held in 2022, the Uzbek delegation advocated consolidating efforts to achieve carbon neutrality, promoting renewable energy sources, climate change adaptation projects, combating desertification and land degradation, introducing water-saving technologies and other climate actions in Central Asia.

Another significant aspect was that the UN supported the initiative of President Shavkat Mirziyoyev to hold the first International Climate Forum in Samarkand in 2024, dedicated to climate change issues, which provides for a discussion of opportunities for international cooperation to reduce risks and threats in the Central Asian region and issues of attracting climate finance . During the 78th session of the UN General Assembly in September of this year. In New York, the President of Uzbekistan took the initiative to adopt the UN General Assembly resolution «Central Asia in the face of global climate threats: solidarity for common prosperity» and proposed discussing its main provisions at the Samarkand Forum.

Uzbekistan faces critical environmental issues like water scarcity (Aral Sea disaster legacy), land degradation, and high energy intensity, necessitating urgent action for ecological sustainability, addressed through a new "Green Economy" strategy focusing on renewable energy, modernizing irrigation, forest restoration and new laws for green transport/monitoring, aiming for sustainable development by integrating economic growth with environmental protection via innovative tech and public participation for future generations.

Problem Statement: Uzbekistan's Ecological Challenges

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Water Stress & Aral Sea: Vulnerability due to reliance on transboundary water, exacerbated by climate change, leading to droughts, land salinization, and reduced productivity.

Energy Inefficiency: High energy intensity (costly energy use) costs around 4.5% of GDP annually, requiring efficient energy transition.

Land Degradation: Soil erosion, desertification, and loss of arable land threaten food security, especially for rural populations.

Air & Water Pollution: Industrial and urban pollution impacts public health and ecosystems.



Proposed Solutions & New Approaches

Renewable Energy: Adopting the 2019 Law on Renewables to boost solar, wind, and biomass, reducing reliance on fossil fuels.

Energy Efficiency: Modernizing industry, construction, and transport (e.g., "green" transport, gas conversion) to cut costs and emissions.

Sustainable Resource Management:

Water: Modernizing irrigation, adopting water-saving tech, and restoring ecosystems.

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Forests: Implementing the **(Green Blanket)** project to plant 1 billion trees, expanding forests and eco-tourism.

Sustainable Urbanization: Developing "green" urban infrastructure and promoting energy efficiency.

Circular Economy: Improve solid waste management and promote resource efficiency.



Methodology of the study.The following methods were used during the research:

1.Analytical analysis-the study of environmental data.

2.Monitoring-assesing the state of air,water and soil.

3.Statiscial analysis-calcylation of the dynamics of indicators.

Analytical analysis-examination of environmental statiscial data.Observation method-assessing air,water,and soil quality indicators.

Statiscial modeling-calculating pollution dynamics and trends.

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Causes of the Global Ecological Crisis

Major factors contributing to the global ecological crisis include:

1.Uncontrolled increase in industrial emissions.

2.Excessive use of on renewable and polluting energy sources.

3.Deferetation and reduction of green areas.

4.Increase in atmospheric green house gases.

5.Pollution and deplation of water resources.

6.Overuse of chemicals,pesticides,and plastic materials.

7.Rapid population growth and urbanization.

Climate change in Central Asia is one of the global environmental problems that is also important for the people of the region. It is known that in recent years, climate change has been rapidly progressing worldwide. Such changes have a major impact not only on natural systems and human lifestyles but also on socio-economic conditions and healthcare systems. At the same time, it hinders efforts aimed at ensuring food security, poverty reduction and sustainable development. Uzbekistan is coming forward with a number of initiatives aimed at combating these problems and ensuring the ecological sustainability of the region.

Climate change and its effects

According to the conclusion of the Intergovernmental Panel on Climate Change (IPCC), climate change risks appear to be more serious than expected. Adapting to increasing global warming is becoming increasingly difficult. Reports indicate that 3.6 billion people in the world live in areas highly exposed to climate change. It has also been recognized that the death rate associated with extreme weather events is 15 times higher in vulnerable areas.

Due to the Aral Sea tragedy, the negative consequences of climate change are more acute in Central Asia. The increase in air temperature in our region is twice the world average. The number of extremely hot days is expected to double and the area of glaciers will shrink by a third. In the last 30 years, the rate of warming in Central Asia is higher than the global average, and the

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average annual temperature has increased by 0.5 degrees. According to forecasts, the temperature is expected to increase by 2.0-5.7 degrees by 2085.

Uzbekistan's initiatives aimed at ensuring environmental sustainability

Uzbekistan is making active efforts to improve the quality of the environment and prevent the negative consequences of environmental problems. In particular:

Within the framework of international cooperation

Currently, the need for international cooperation in the field of environmental protection is determined by the growing ecological interdependence of all countries. Ozon layer depletion, pollution of the atmosphere and oceans, and the rise in temperature on our planet affect the entire world community, not just the countries engaged in environmentally dangerous activities. Therefore, today, a number of countries have established cooperation with the United Nations Organization on issues of environmental safety.

Such cooperation is based on a number of principles generally recognized by the international community. They are partly reflected in interstate agreements and acts, normative documents of international organizations, and summarized in the decisions of the most important international conferences dedicated to environmental protection and the regulation of cooperation between states and peoples in this field.

Based on this, Uzbekistan is actively promoting important climate initiatives aimed at uniting the region to combat climate change. These ideas of the President of Uzbekistan Shavkat Mirziyoyev are constantly supported by the countries of the region.

As a logical continuation of the formation of a unified climate agenda for Central Asia, the initiative to develop a regional strategy for adaptation to climate change was announced by Uzbekistan at the 5th meeting of state leaders. In addition, the Head of Uzbekistan proposed **to establish a multilateral platform at the level of the ministers of ecology - "Central Asian climate dialogue"**, which can be an integrating link in the path of "green" development in Central Asian countries.

In addition, Sh. Mirziyoev put forward a number of proposals at the United Nations Climate Change Conference (COP28). In particular, our country's President advocated for an **expeditious agreement on the Global Framework** for Climate Adaptation within the framework of the

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Paris Agreement. At the same time, he noted the need for a fair, transparent and inclusive transition to a low-carbon economy on a global scale, in which the interests of developing countries must be taken into account. He proposed to consider this urgent problem on a permanent basis, including within the framework of the "G7" and "G20" summits.

Within the framework of environmental reforms in our country

A strategy for the transition to a green economy

Uzbekistan adopted the strategy of transitioning to a "green" economy for 2019-2030. The main goals of this strategy are:

Preservation of natural resources: Modernization of irrigation systems, introduction of water-saving technologies.

Use of alternative energy sources: Expanding the use of solar, wind and biomass energy.

Introduction of cost-effective means in economic sectors: Improving energy efficiency in manufacturing and service sectors.

Legislation is also being improved to ensure environmental stability in Uzbekistan. These laws are aimed at providing legal groundwork to the reforms implemented in the fields of environmental protection and ecological stability.

Research methodology

The study uses a mixed-method approach, which is based on qualitative and quantitative data.

This approach allows for a comprehensive understanding of how the green economy affects the

development process. A review of the existing scientific literature on the green economy and environmental security, study of global and national policy strategies, and an assessment of the economic impact of environmental innovations in industry and agriculture. The study uses statistical methods to identify the relationship between economic growth and environmental security, conducts analyses based on practical data to assess the economic efficiency of the green economy, and calculates the investment efficiency of environmental innovations. Secondary

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sources are used for the study, since a lot of scientific and economic data on the green economy has been previously studied. The main sources are:

1. Official government reports and statistical data (UN, World Bank, OECD, State Statistics Committee of the Republic of Uzbekistan),
2. Scientific articles, dissertations and conference proceedings,
3. Reports on international and national environmental policies,
4. Publications of research institutes and research centers.

This study aims to compare experiences in developing a green economy in different countries and assess their effectiveness, examine the impact of green economy investments on economic growth in recent years, and analyze the economic effectiveness of green economy development strategies.

Analysis and results

The analysis shows that the green economy model, along with ensuring economic growth, also guarantees environmental sustainability. The study assessed the economic effectiveness of investments in the green economy, innovative technologies, and environmental protection measures. Investments in renewable energy sources can reduce production costs, which ensures long-term economic sustainability. Green economy programs play an important role in creating new jobs in the field of environmentally friendly technologies. For example, the renewable energy production of environmentally friendly products can develop and the volume of national exports can increase.

One of the main goals of the green economy model is to protect the environment and ensure environmental safety. Your document deeply analyzes this issue and achieves the following results;

As a result of the transition to green technologies, air pollution will decrease, which is of great importance in combating climate change.

By switching to renewable energy sources, the use of traditional energy resources will decrease, and the ecological balance will be maintained.

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As a result of the development of modern waste management systems, environmental problems can be reduced.

The main problems in the process of transition to a green economy and ways to solve them are discussed in detail. The following are important conclusions based on these analyses: the

transition to a green economy requires large investments, which may pose challenges for some developing countries; research and development and the introduction of modern technologies are necessary to develop ecological innovations. In some countries, the legal framework for the transition to a green economy is not sufficiently developed, which slows down the process. Obstacles can be overcome by cooperating with international organizations on financing green economy projects and transferring ecological technologies. Tax incentives and subsidies for the introduction of environmentally friendly technologies can stimulate the development of a green economy. Innovative technologies and artificial intelligence-based systems based on a green economy allow for the efficient use of resources. The analysis shows that a number of measures are being implemented in Uzbekistan to develop a green economy strategy. Including: State programs for the development of renewable energy sources Adoption of new regulatory and legal acts to ensure the environmental sustainability of the industry Establishment of cooperation with international financial institutions to encourage environmental investments However, there are still problems, and strengthening scientific research and additional support from the state in this regard is important.

Conclusions

Ensuring environmental sustainability requires intagreted strategies,including technological innovation,strict environmental legislation,and efficient resorce management. Preventive and proactive environmental meansures are more effective and less costly than remedation efforts.

The ecological crisis can be mitigated only through global cooperation,continuous monitoring ,and the widespread adoption of sustainable practices.

Raising public environmental awereness reains fundamental factor in promoting long-term ecological balance.

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