Climate change in Uzbekistan

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This article discusses climate change in Uzbekistan, one of the global problems facing humanity, as well as its causes and consequences. The article focuses on the directions and measures taken in the country to mitigate and eliminate the negative consequences of climate change.

Keywords: "green" economy, climate change, greenhouse gases, renewable energy, energy security, national project "Green Space".

Изменение климата в Узбекистане

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В данной статье рассматривается изменение климата в Узбекистане, одна из глобальных проблем стоящих перед человечеством, а также ее причины возникновения и последствия. В статье основное внимание уделяется направлениям и принимаемым мерам, реализуемым в стране по смягчению и устранению негативных последствий изменения климата.

Ключевые слова: «зеленая» экономика, изменение климата, парниковые газы, возобновляемая энергетика, энергетическая безопасность, общенациональный проект «Зеленое пространство».

Today, climate change is recognized by the international community as one of the most serious issues facing humanity. Climate change affects all aspects of human life and demands attention not only to mitigate its negative consequences but also to adapt to new living conditions. Modern science confirms significant evidence that industrial activities, particularly the emission of greenhouse gases, contribute noticeably to climate change, amplifying its effects.[1]

In Uzbekistan, the average annual temperature has risen by 1.6 degrees (from 13.2 to 14.8 °C) from 1880 to the present, which exceeds the average rates observed globally. According to experts' forecasts, by 2030-2050, temperatures in the region may rise by another 1.5-3°C. Particularly concerning is the projected increase in temperatures in the Ferghana Valley, exacerbating local climate change. Uzbekistan is among the countries most vulnerable to the consequences of climate change. The increase in the concentration of greenhouse gases in the atmosphere, resulting from

industrialization, leads to water and food shortages due to desertification, prolongs hot seasons, exacerbates heatwaves, and contributes to the recurrence of floods, landslides, and other dangerous events.Moreover, such environmental imbalances negatively affect the ecological situation, exacerbating in regions like Ferghana, Karakalpakstan, Surkhandarya, Bukhara, and Khorezm. The ecological disaster caused by the drying up of the Aral Sea, once the fourth largest lake in the world, has brought various challenges to the socio-economic development of Uzbekistan's territories. Water scarcity, desertification, extreme weather events, uncontrolled deforestation, mudflows, and other consequences of climate change inflict increasingly severe damage on both people and the economy. The significant impact of global climate change and the susceptibility of the country's natural-resource complex to these changes underline the necessity of shaping a robust climate policy.

The UN Framework Convention on Climate Change (UNFCCC) is the cornerstone of international efforts to combat climate change, aiming to stabilize the concentration of greenhouse gases in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system. Uzbekistan joined the UNFCCC in 1993. Coordination of actions to implement the UNFCCC in Uzbekistan is entrusted to the Center for Hydrometeorological Service under the Ministry of Ecology and Environmental Protection of the Republic of Uzbekistan.The publication of the BMTTD/FCDO project "Political Actions on Climate Resilience in Central Asia - Phase II" emphasizes the importance of addressing these issues and strengthens international cooperation among countries.

- Recommendations for the implementation of energy-efficient technologies for private sector enterprises;

- Participation in Clean Development Mechanism (CDM) projects under the Kyoto Protocol;

- Recommendations for the development of projects under the Paris Agreement in accordance with Article 6.4 for private sector participation in the 26th Conference of the Parties (COP26);

- Examples of global practices on projects registered in 2021.

In 1999, Uzbekistan ratified the Kyoto Protocol, an international instrument obliging developed countries to reduce or stabilize greenhouse gas emissions. To strengthen the complex response to the advancing climate change-related global threats, the Kyoto Protocol was replaced by the Paris Agreement under the UNFCCC in December 2015, which entered into force in 2020.

Uzbekistan signed the Paris Agreement on April 19, in 2017, and ratified it on November 2, in 2018. The Law of the Republic of Uzbekistan "On Ratification of the Paris Agreement" No. O‘RQ-491 was adopted on October 2, 2018. The Agreement became effective for Uzbekistan on December 9, in 2018.

The goal of the Paris Agreement is to facilitate the implementation of the UNFCCC, aiming to limit global warming to well below 2°C above pre-industrial levels (1750) and to pursue efforts to limit the temperature increase to 1.5°C, which requires reducing global emissions by 40-70% by 2050 and reaching net zero emissions by 2100. A necessary condition for signing the Paris Agreement is the preparation and submission to the UNFCCC of a nationally determined contribution (NDC) defining the country's intended reductions in greenhouse gas emissions by 2030. The NDC is the main mechanism for countries to contribute to the global goals of the Paris Agreement. Uzbekistan's main obligation under the Paris Agreement is to reduce its greenhouse gas emissions intensity per unit of GDP by at least 10% from the 2010 level by 2030.[3]

Uzbekistan's NDC encompasses measures and actions to mitigate and adapt to climate change until 2030. The implementation of the NDC is actively underway, contributing significantly to Uzbekistan's economic development. Additionally, in accordance with Articles 4.1 and 12.1 of the UNFCCC, Parties to the Convention are required to regularly provide their National Communications on Climate Change, which are then included in the reporting process of the UNFCCC and the Paris Agreement. National communications detail national measures aimed at mitigating and adapting to climate change, enhancing resilience, technological innovation and transfer, and improving the education and awareness of various social groups, among other things.

In accordance with the requirements and guidelines of the UN Framework Convention on Climate Change (UNFCCC) under the BMT Framework, the relevant ministry and agencies, in conjunction with Uzhydromet, prepared and presented the following reports: the First National Communication (1999) and its 2nd section report (2001), the Second National Communication (2008), and the Third National Communication (2016). Additionally, Uzhydromet, in collaboration with ministries and agencies, prepares the inventory of greenhouse gas emissions from the heating plants. Reports on inventories for the years 1990-2012 have been prepared. Currently, work is underway to prepare the Fourth National Communication. The first biennial report on updated data has been prepared and submitted to the UNFCCC Secretariat. The biennial report includes two main directions: the inventory of greenhouse gas emissions from 1990 to 2017 and the evaluation of the effectiveness of measures to mitigate climate change.

Uzhydromet is developing the National Adaptation Plan for Climate Change in cooperation with Development Programs and Beneficial Organizations to prioritize economic sectors and regions most vulnerable to climate change. This is also a commitment under the Paris Agreement. Uzbekistan is implementing a targeted policy aimed at reducing greenhouse gas emissions in key economic sectors as part of its Nationally Determined Contributions and the Paris Agreement. The

government has adopted a series of documents to organize measures and actions in the field of climate change. In accordance with the Presidential Decree PQ-4477 of October 4, 2019, the "Green Economy Transition Strategy of the Republic of Uzbekistan for 2019-2030" prepared in collaboration with relevant ministries and agencies by Uzhydromet was approved, and an Interdepartmental Council was established to oversee the implementation and advancement of this Strategy. According to the Action Plan (Roadmap) of this Strategy, each ministry and agency is assigned tasks related to mitigating or adapting to climate change.

The adoption of laws on "Use of Renewable Energy Sources" and "Public-Private Partnerships" has created a legal and regulatory basis in Uzbekistan to expedite the deployment of renewable energy sources (solar and wind power stations). Adaptation to climate change and decarbonization of Uzbekistan's energy-intensive economy will contribute to achieving development goals and enhancing citizen welfare, as stated in the "Climate Change and Development Report" (CCDR) released by the World Bank Group.

In the framework of implementing obligations under the UNFCCC and the Paris Agreement, reducing greenhouse gas emissions and adapting to climate change are reflected in the country's relevant strategic and sectoral policies and programs. Uzbekistan's participation in the UNFCCC and the Paris Agreement as a developing country enables the mobilization of funds for climate finance initiatives, including the Green Climate Fund (GCF), Adaptation Fund (AF), Global Environment Facility (GEF), and others.

Through financial support from the Global Environment Facility (GEF), the UN Development Programme (UNDP), the UN Environment Programme (UNEP), and other international organizations, many projects have been successfully implemented and are currently underway to fulfill the country's obligations to mitigate and adapt to climate change.The consequences of climate change affect Uzbekistan's population significantly. By 2030, it is expected that at least 8 million people across urban and rural areas in the country will reside in areas highly vulnerable to climate change. According to the Climate Change Development Report (CCDR), if adaptation measures are not implemented, by 2050, the national economic output will be reduced by at least 10% from the level without climate change impacts. This will lead to a significant decrease in living standards and household incomes. By 2060, plans for decarbonizing the economy (reducing carbon dioxide emissions) will require special attention to the energy sector, which accounts for approximately 75% of Uzbekistan's greenhouse gas emissions. Improving energy efficiency and expanding the use of renewable energy sources contribute to reducing dependence on natural gas resources, enhancing energy security in the country. Furthermore, reducing reliance on fossil fuels also mitigates air pollution, which contributes to early deaths and diseases from 10 major factors listed in the CCDR

report. Effective adaptation measures to climate change can bring tangible benefits to Uzbekistan. Firstly, they help to mitigate negative consequences like land degradation resulting from climate change. Secondly, implementation of adaptation measures leads to improvements in food security and natural landscape conditions, providing economic benefits. Thirdly, they contribute to positive ecological outcomes, such as reducing greenhouse gas emissions. [2]

Without adequate responses to climate change impacts, Uzbekistan will struggle to achieve its ambitious development goals, and the economy and well-being of its people will be seriously affected. "Climate Change and Development Report" suggests a range of actionable measures for adaptation and decarbonization. Their implementation will expedite Uzbekistan's transition to a "green" economy and ensure sustainable economic growth in the long term. One of the main recommendations from the report is to develop a current action plan to create favorable conditions for the development of a specialized sector playing a key role in transitioning to a "green" economy. It is recommended to establish mechanisms for monitoring, reporting, and evaluating the impact to assist in implementing climate and "green" projects. The development of arrangements for financial and investment management enhances the attraction of investments in ecological projects and the management of climate risks. Moreover, it is recommended to establish substantial incentives aimed at reducing emissions to the atmosphere, primarily focused on reducing carbon dioxide emissions. The CCDR is prepared based on information and serious scientific research findings. They outline the main ways to reduce greenhouse gas emissions and mitigate the effects of climate change, including associated costs and challenges, as well as benefits and opportunities. The reports propose specific measures to support the transition to a low-carbon and climate-resilient economy. They are communicated to governments, citizens, private sectors, and the World Bank group, facilitating cooperation and coordination in development and climate change efforts.

The CCDR contributes to allocating funds for implementing effective measures in the fight against climate change. The "Climate Change and Development Report for Uzbekistan" examines the interconnection between the country's economic growth and development strategies and achieving carbon neutrality by 2060. The report suggests leading measures to reduce carbon emissions and enhance resilience to climate change, thereby contributing to the country's inclusive economic growth and reducing vulnerability.

Various measures are being taken in Uzbekistan to improve climate conditions. For example, with the initiative of the Ministry of Ecology, Environment Protection, and Climate Change, electric vehicles are being introduced for transportation, aimed at reducing emissions. At the same time, all trees in the country are being inventoried and transferred from nurseries. In Tashkent, trees are being cataloged as part of the

testing process. This initiative aligns with the implementation of Presidential Decree No. 199, dated November 23, 2023, aimed at enhancing environmental sustainability through the implementation of the "Green Home" national project.

For your information, tree passporting is carried out in 3 stages. In the first stage, using aerospace imagery and software tools, existing trees are fully inventoried. In the second stage, a database is created that reflects the type, age, height, condition, and location coordinates of identified trees based on the results of the inventory. In the third stage, based on the database, a passport is created for each tree on the "Green Home" electronic platform, and an ID number is assigned.

During the first stage, all green areas in the regions were identified. Utilizing photographs obtained through artificial satellites, all trees and shrubs in the areas were surveyed, and data processing was carried out using a geoinformation system. The experiences of countries such as the United States, Canada, China, India, Australia, Russia, Germany, and Japan were studied. Trees older than 5 years were considered in the tree count. This research was conducted in all regions and districts of the Republic of Uzbekistan. Coordinates of a total of 254,162,505 trees were identified, and a digital map was created. Additionally, in the second and third stages, passporting work is being carried out by inspectors on-site. The "Green Home" electronic platform has been finalized, and a registry system for trees based on their passport has been established. Through this system, information such as tree type, diameter, condition, coordinates, photos, and responsible organization details are recorded using special tablets. Currently, over 200,000 trees across the country have been passported, and the data has been entered into the electronic platform.

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