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ECOLOGY OF UZBEKISTAN: STATUS, PROBLEMS AND DIRECTIONS OF SUSTAINABLE DEVELOPMENT

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Abstract:

Uzbekistan is facing a number of environmental challenges that have developed slowly over many decades. These issues ranging from the tragedy of the Aral Sea to everyday problems like water shortages and polluted city air continue to shape the lives of millions of people. This article looks at the country's main ecological problems and highlights some of the steps being taken to address them.

The goal is simply to give a clearer picture of what is happening today and what might help create a healthier, more sustainable future.

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Keywords: Uzbekistan, Environmental challenges, Aral Sea, water shortages, air pollution, ecological problems, sustainability, public health, environmental policy, climate resilience

One of the most urgent global problems facing humanity in the 21st century is the disturbance of the ecological balance. Anthropogenic pressure on the environment is increasing as a result of excessive use of natural resources, rapid industrial development, urbanization and climate change. This process is clearly felt in the territory of Uzbekistan. The country's geographical location, continental climate, limited water resources, and environmental crises inherited from the former Soviet Union have a significant impact on today's ecological situation. Therefore, the Republic of Uzbekistan has defined environmental security as one of the priorities of the national development strategy.

The drying up of the Aral Sea is one of the biggest tragedies in the history of the ecology of Uzbekistan. Since the 60s of the 20th century, the main part of Amudarya and Syrdarya waters has been diverted to irrigate cotton plantations. (Annayeva Z. M., 2022) As a result, the Aral Sea, which had an area of 68,000 km² in the 1960s, has lost more than 90 percent of its volume by the 2020s. Today, hundreds of thousands of hectares of salt and sand layers have formed in the former seabed.

The dust-salt aerosols rising into the air from this area spread over thousands of kilometers and have a negative impact not only on the environment of Uzbekistan, but also on the neighboring countries. Respiratory diseases, allergic and cardiovascular diseases have increased in the inhabitants of the island. Therefore, this area has been recognized by the UN as an ecological disaster zone. (D. Urakov, 2024)

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Air pollution. The level of atmospheric air pollution is high in the major industrial centers of Uzbekistan - Navoi, Almalyk, Angren, Fergana, Tashkent and Chirchik. as a result of the increase in the number of pcars, the amount of harmful gases in the air - nitrogen oxides, sulfur dioxide, carbon compounds and dust particles is increasing. (Toymbaeva D., Mamatova D., Ergashev X., 2025)

Water pollution. The country's water resources mainly belong to the Amudaryya and Syrdaryya basins. In agriculture, 85-90 percent of water is used for irrigation. In some regions, drinking water does not fully meet sanitary standards. In the last 30 years, the average temperature in Uzbekistan has increased by 1.5-2°C. In such conditions, many plant and animal species are losing their habitats. The Republic of Uzbekistan has been implementing systematic reforms in the field of ecology in recent years. The "Concept of the Environmental Policy of the Republic of Uzbekistan" and the national program "Green Space" adopted in 2017 are important documents in this direction (Sadiyeva I., 2025).

Within the framework of these programs, millions of trees are planted every year, the waste treatment system is being improved, and the construction of "green energy" - solar and wind power plants - is expanding. In addition, Uzbekistan has undertaken international environmental obligations within the framework of the Paris Climate Agreement and the UN Sustainable Development Goals.

Reviving the Aral Sea Region

While the Aral Sea cannot be fully restored, Uzbekistan is working to improve life in the affected region. Key efforts include:

- Planting saxaul trees to stabilize the sandy seabed
- Supporting new industries and jobs to help families rebuild
- Creating special zones focused on environmental research and innovation

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These steps aim to bring hope and stability to an area that has suffered for far too long.

Improving Water Management

Better water management is essential for Uzbekistan's future. Important strategies include:

- Expanding modern irrigation systems such as drip and sprinkler methods
- Repairing and lining canals to prevent water loss
- Using digital tools to monitor and manage water more accurately
- Cooperating more closely with neighboring countries that share river basins

If adopted widely, these measures can significantly reduce waste and protect water supplies.

Reducing Air Pollution

Improving air quality requires action on multiple fronts, including:

- Modernizing old industrial equipment
- Encouraging the use of electric or hybrid vehicles
- Strengthening public transportation systems
- Planting more trees and expanding green spaces in cities

These steps can make urban environments healthier and more livable.

Conclusion

The ecology of Uzbekistan is a system of complex, but solvable problems. Problems ranging from the Aral Sea crisis to water and air pollution require an integrated approach. Strengthening environmental policy, development of environmental education, expansion of renewable energy sources and improvement of environmental culture of citizens are the basis of sustainable development. (Tursunov A.A., 2022). Nature protection is not only the responsibility of the government, but also of every member of society. Only in this way can Uzbekistan leave a healthy, green and prosperous environment to future generations.

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