

PROBLEMS OF ENVIRONMENTAL PROTECTION AND ENSURING ECOLOGICAL SUSTAINABILITY

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Abstract

This article broadly covers the issues of environmental protection, ensuring ecological sustainability and rational use of natural resources. Scientifically based ideas presented about environmental problems that arise along with human development, global warming, waste reduction and recycling, increasing energy efficiency and the principles of a green economy. The importance of environmental culture and raising public awareness is also considered.

Keywords: Ecology, environment, sustainable development, waste, global warming, green economy, ecological culture.

Introduction

One of the most important issues facing humanity in the 21st century is environmental protection and ensuring ecological sustainability. In recent decades, while technology, industry and urbanization have been developing rapidly, the pressure on nature has also increased sharply. This has led to global warming, air pollution, water scarcity and a decrease in biodiversity.

Ecological problems are a direct result of human activity. People use resources excessively to make their lives more comfortable, but do not pay attention to their regeneration process. Therefore, today, problems such as the depletion of energy sources, deforestation, and atmospheric pollution are becoming serious.

Global warming is one of the most dangerous environmental problems. Because of human industrial activity, the increase in transport and the increase in carbon dioxide, the Earth's temperature has increased by an average of 1.2°C. This leads to climate change, drought, melting glaciers and rising sea levels. Scientists believe that if this process continues, by the end of the 21st century, some regions of the world will become uninhabitable.

One of the most important areas of environmental protection is waste reduction and recycling. Today, more than 2 billion tons of household waste generated worldwide annually. Important reforms are also being implemented in this area in the Republic of Uzbekistan. In 2021, a new law "On Waste" adopted, and measures taken to support the activities of recycling enterprises.

Environmental protection and ensuring ecological sustainability are among the most critical global challenges of the 21st century, driven by the need to balance economic development with the preservation of natural ecosystems. Widespread environmental degradation is caused by human



activities—including rapid urbanization, intensive industrialization, and over-consumption—which threaten biodiversity, air and water quality, and the climate.

Major Environmental Protection Problems:

- **Climate Change and Greenhouse Gases:** Excessive burning of fossil fuels (coal, oil, gas) has increased CO₂, methane, and nitrous oxide emissions, causing global temperatures to rise. This leads to melting glaciers, sea-level rise, and increased frequency of extreme weather events like floods and droughts.
- **Pollution (Air, Water, Soil):** Over 99% of the global population breathes air exceeding WHO pollutant limits. Water bodies are polluted by industrial waste, agricultural runoff, and untreated sewage, with 2 billion people lacking access to safe drinking water. Soil degradation affects 40% of the world's land, reducing its productivity.
- **Biodiversity Loss:** Habitats are being destroyed by deforestation and urbanization, leading to an extinction rate that is 100 to 1,000 times higher than the natural rate.
- **Deforestation:** Forests are shrinking to make way for agriculture and urban growth, destroying natural carbon sinks and reducing oxygen production.
- **Waste Management:** Plastic pollution is a major crisis, with millions of tons entering the oceans annually, affecting marine ecosystems and entering the human food chain.

The concept of a green economy is one of the main directions for ensuring environmental sustainability. This model, along with economic growth, is aimed at reducing the negative impact on the environment. Green energy, renewable sources - solar, wind, hydropower - will ensure energy security in the future and reduce environmental damage.

The formation of an ecological culture is also an integral part of environmental protection. Every citizen should be responsible for the environment, properly separate waste, save energy and use water rationally. Strengthening environmental education in educational institutions, instilling a love for nature and a sense of responsibility in children is a guarantee of sustainable development.

The Republic of Uzbekistan is also actively implementing an environmental policy. In 2019, the “Environmental Protection” and “Green Space” programs adopted. Within the framework of these initiatives, tree planting campaigns, the development of a waste recycling system, and the introduction of energy-saving technologies are being carried out.

In addition, international cooperation is also important in solving environmental problems. The United Nations, UNESCO, the World Health Organization and other international institutions are encouraging countries to develop sustainable development by developing global environmental strategies. Uzbekistan has also joined the Paris Climate Agreement and has committed to reducing carbon emissions.

Technology is also playing an important role in solving environmental problems. Air quality, water resources and waste are being monitored through artificial intelligence, digital monitoring systems and drone technologies. For example, the area of green areas is being determined and their condition is being analyzed using artificial intelligence.

At the same time, environmental sustainability requires the joint efforts of not only the government, but also the entire society. Every individual, organization and enterprise must take responsibility for



reducing his or her ecological footprint. Only then can we preserve clean air, clean water and a green planet for future generations.

In conclusion, protecting the environment and ensuring environmental sustainability are one of the most important tasks of humanity. Every state, every citizen and organization must actively work in this direction. By transitioning to a green economy, saving energy, reducing waste and strengthening environmental education, we can strive for a sustainable future. Preserving nature is not just an obligation, but should be a vital value for every person.

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