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IMPACT OF CLIMATE CHANGE ON ECOSYSTEMS

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ABSTRACT

This article analyzes the negative impacts of climate change on various ecosystems. It is shown that increasing temperatures, changing precipitation patterns, rising sea levels, species migration, and the spread of new diseases pose significant threats to ecosystems. In particular, these impacts are explained with specific examples such as the loss of polar bear habitat, the disruption of food chains due to drought, and the destruction of coral reefs. The article emphasizes that climate change is a serious threat to the stability of global ecosystems and emphasizes the need to take effective measures to address these problems.

Introduction: Climate change is one of the global environmental problems today, and its impact poses a great threat not only to humanity, but also to all ecosystems on planet Earth. Because of the increase in greenhouse gases in the atmosphere, phenomena such as temperature increase change in precipitation patterns, and sea level rise are observed. These changes are altering the habitats of plants and animals, leading to species migrations, disruption of food chains, and the spread of new diseases. In particular, the melting of polar ice caps, increased droughts, and the loss of coral reefs demonstrate the serious impact of climate change on ecosystems. This article provides a detailed analysis of how climate change is affecting different ecosystems, the consequences, and solutions to this process.

Materials and methods: This study used scientific literature review and statistical data analysis methods to study the impact of climate change on ecosystems. The study was carried out in the following stages: Data collection: Scientific articles, reports, and databases of international environmental organizations (e.g., IPCC and FAO reports) were studied. The main focus was on factors affecting temperature changes, precipitation patterns, sea level rise, and species migration. Analysis methods: Statistical analysis: The data obtained were analyzed using statistical programs. Correlation and regression analyses were conducted to assess the impact of temperature increases and changes in precipitation on ecosystems. Comparison method: Changes observed in different geographical regions were compared with each other, and regional characteristics of climate change were studied.

Limitations and improvement of accuracy: The reliability of data sources was checked, and only data from scientific articles and official reports were analyzed. Given the



uncertainties surrounding extreme weather events and their long-term impacts, the results were interpreted with caution.

Using these methods, the impacts of climate change on ecosystems were comprehensively analyzed and scientifically sound conclusions were drawn.

Results: In this study, the impact of climate change on ecosystems was analyzed based on the following statistical data:

Temperature increase: Globally: The Earth's average annual temperature has increased by 1.6°C since 1880. This change is higher than the global average. In the case of Uzbekistan: Since 1880, the average annual temperature in Uzbekistan has increased by 1.6°C. According to expert forecasts, the temperature in the region may increase by another 1.5-3°C in 2030-2050.

Sea level rise: Global sea levels have risen by 20 centimeters since 1900. This change is negatively affecting coastal ecosystems, particularly mangrove forests and coral reefs.

Extreme weather events: Climate change is increasing the frequency and intensity of extreme weather events such as droughts, heat waves, and heavy rainfall. These events are negatively affecting the habitats of plants and animals and leading to a loss of biodiversity.

Biodiversity Loss: Due to climate change, many species are losing their habitat or are unable to adapt, leading to a decline in species numbers and disruption of food chains.

The above data show the serious impact of climate change on ecosystems. These changes can have a negative impact not only on the environment, but also on the economic and social life of humanity. Therefore, it is important to take measures to combat climate change and protect ecosystems.

Conclusions and recommendations: The results of this study show that climate change poses a significant threat to ecosystems. Increased temperatures, sea level rise, and increased extreme weather events are leading to species migration, loss of biodiversity, and disruption of food chains. The melting of glaciers in polar regions and the loss of mangrove forests and coral reefs in coastal areas, in particular, confirm the strong negative impact of climate change.

Suggestions:

1. **Climate change adaptation measures:** to prepare ecosystems for adaptation, It is necessary to establish protection zones and develop green infrastructure. Special conservation measures must be taken to maintain the genetic diversity of plants and animal species.

2. **Reducing greenhouse gases:** To limit global warming, it is necessary to pursue strict policies aimed at reducing greenhouse gases such as carbon dioxide (CO₂) and methane (CH₄).

Expanding renewable energy sources (solar, wind, and biogas) can help slow climate change.

3. **Scientific research and monitoring:** Regular monitoring and scientific research should be expanded to determine the long-term impacts of climate change. In particular, research should be conducted to monitor and prevent the spread of new diseases due to climate change.



4. Public education and training: It is necessary to inform the public about the risks and environmental problems associated with climate change and to strengthen environmental education.

Various activities and projects should be organized to involve local communities in actively participating in the fight against climate change.

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