

Impact of Climate Change on Biodiversity

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Received: july 04, 2025; Accepted: july 18, 2025; Published: july 27, 2025

Abstract

Climate change has emerged as a major driver of biodiversity loss worldwide, affecting species distribution, ecosystem structure, and ecological processes. Rising temperatures, altered precipitation patterns, and increased frequency of extreme weather events disrupt habitats and threaten the survival of many species. These changes undermine ecosystem resilience and the services biodiversity provides to human societies. This article examines the impacts of climate change on biodiversity and highlights the importance of conservation and adaptation strategies to protect ecosystems in a changing climate.

Keywords: Climate change, biodiversity loss, ecosystem resilience, species distribution, conservation strategies

Introduction

Biodiversity encompasses the variety of life forms, ecosystems, and genetic resources that sustain ecological balance and human well-being. Climate change has become one of the most significant threats to biodiversity by altering environmental conditions at unprecedented rates [1]. Over the years, India has enacted several environmental laws and policies aimed at regulating pollution, conserving natural resources, and promoting sustainable development. Key legislative instruments such as environmental protection acts, pollution control laws, and biodiversity regulations form the backbone of India's environmental governance system [2]. These laws are implemented through central and state-level institutions responsible for monitoring, regulation, and enforcement. However, rapid industrialization and urbanization have placed immense pressure on regulatory agencies, often exceeding their administrative and technical capacity [3]. Environmental

Citation: Erik Johansson, Impact of Climate Change on Biodiversity. Environ Sci Ind J. 21(2):286.

governance in India is further shaped by the role of the judiciary, which has actively intervened in environmental matters through public interest litigation [4]. Judicial decisions have strengthened environmental protection by enforcing the precautionary principle, polluter pays principle, and sustainable development. While judicial activism has enhanced accountability, it has also raised concerns about overlaps between judicial and executive functions. Challenges such as poor coordination among institutions, inadequate public participation, and limited access to environmental information continue to hinder effective governance [5]. Addressing complex environmental issues requires transparent decision-making, stakeholder engagement, and integration of environmental considerations into development planning. Strengthening environmental governance is essential for balancing economic growth with ecological sustainability.

Conclusion

Climate change poses a serious and growing threat to global biodiversity by altering habitats, species distributions, and ecosystem processes. Protecting biodiversity requires proactive conservation measures, climate adaptation strategies, and reduction of greenhouse gas emissions. Strengthening ecosystem resilience and integrating climate considerations into conservation planning are critical for safeguarding biodiversity. Sustained global efforts are essential to preserve ecosystems and the services they provide for future generations.

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