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## The Economic Impact of Climate Change on India: Challenges, Vulnerabilities, and Adaptation Strategies

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### Abstract

Climate change-related environmental issues are currently one of the world's most pressing challenges. India is dealing with a number of issues related to climate change, including harmful effects on agriculture, water resources, forests, biodiversity, health, and temperature rise. The primary impact of climate change in India has been on agricultural productivity. Most of the population depends directly or indirectly on agriculture. The route to becoming a developed India has seen increased industrialisation and urbanisation, but we are also dealing with the growing requirements of an expanding population. This study seeks to investigate the consequences and many facets of this issue. To better understand this problem we obtained the secondary data from various media outlets, research agencies, policy papers, newspapers, and other sources which threw light on the following aspects- 1) How an increasing lifestyle is a challenge for the environment, and 2) how the environment, which is both a natural and human-made habitat, affects and sustains life on Earth? These findings concluded that though it is vital for humanity to evolve over time, but it is also crucial to safeguard resources for future generations by strict accountability of resources and regulations implemented in the past to generate cutting-edge climate policy.

**Keywords:** Environment, Climate Change, Economic development

### Introduction

Anything we observe around us, whether living or non-living, is considered part of the environment. This comprises soil, water, air, plants, and animals, all of which have an impact on human health. All plants and animals are considered biotic components, whereas water, sunlight, air, and climate are abiotic. As a result, we can define the environment as the area around us that contains both living and non-living things.

When we refer to ecology, the environment refers to the surroundings in which living organisms live. In contrast, the human environment encompasses physical, social, cultural, and economic variables that influence human communities' quality of life and well-being.

The human environment can encompass elements like air, water, housing, employment, and social interactions. The psychological environment deals with thoughts and emotions, while in business and economics, the environment involves the study of external factors such as market conditions, competition, partnerships, etc (<https://www.adda247.com>> school).

### Related studies and their approaches-

1. The World Bank Group, in its study "Environmental Management in India, September 22, 2011," stated that the dual emergence of environmental sustainability requires policy responses to align with the rising challenges and the development of strategies.
2. The article published in the Asian Development Blog (ADB) on May 4, 2024, titled "Red Alert: How Can We Help the Millions of Workers Who Work in Extreme Heat," mentions that to assist workers

currently at risk from heat stress, policy approaches need to be advanced alongside government efforts to reduce carbon dioxide emissions.

3. In his article, *"Bamboo Bundling Technique for Riverbank Conservation and Flood Control - A Critical Review,"* M. D. Shahir Ali mentioned that there is a need for an extensive investigation into the efficiency of BLS in trapping silt in rivers, with the objective of evaluating its practicality as a nature-based solution for land restoration in coastal areas.

Thus, from the various literature reviews mentioned above, it is evident that taking steps to rectify the adverse environment is essential today. If we are to sustain life, we must protect the environment. Environmental conservation is a crucial need of the present.

**Climate change and environment-** When we talk about climate change, it refers to long-term changes in temperature and weather patterns. These changes can be natural, caused by variations in solar activity or large volcanic eruptions. However, since the 1800s, human activities have been the primary cause of climate change. These activities, primarily the burning of fossil fuels like coal, oil, and gas, have led to a severe environmental crisis. The burning of fossil fuels releases greenhouse gases into the atmosphere, which trap the Sun's heat, causing the Earth's temperature to rise. The main gases involved are carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>). For example, gasoline used in cars or coal used to heat buildings release these gases, and large-scale deforestation prevents CO<sub>2</sub> absorption, leading to environmental crises and climate change (<https://www.un.org>>climate change).

**Environmental issues-** Sometimes, due to human activities or natural causes, the environment suffers serious damage. Modern humans have become accustomed to comfortable items, and in today's world, things like bikes and other such items have become essential for life. However, has anyone thought about how much pollution is caused by these activities? Additionally, due to the increasing population, the demand for essential goods for survival is rapidly growing. These goods include housing, food, water, etc. If we look at the current state of the environment, we will see that large-scale deforestation is taking place. Forests and fields are quickly being transformed into homes and roads, which is causing significant harm to the environment. In India, many environmental issues, such as air pollution, water pollution, depletion of groundwater, deforestation, and soil erosion, are of great concern. Most of these environmental problems are due to human activities. Similarly, natural phenomena like cyclones, floods, storms, and hail also impact the environment (<https://hi.wikipedia.org>>wiki>2P..)

**Global warming-** When we talk about global temperature, it refers to the continuous increase in the Earth's atmospheric temperature, which is due to the rising concentration of greenhouse gases in the atmosphere. Global temperature is an aspect of climate change. The increase in global temperature leads to problems such as the melting of glaciers, the rise of heat-induced diseases, malaria, changing agricultural patterns, and pollution, among others. The rise in global temperature has been observed over the last one or two centuries, which has disrupted Earth's climate patterns (<https://byjus.com>>global.warming).

The increase in global temperature is evident since the industrial revolution. Since 1880, the average global temperature has increased by approximately 1°C. Global temperature is a continuous process, and by 2035, the average global temperature could rise by an additional 0.3 to 0.7°C. Under a high-emission scenario, sea levels could rise by more than 8 feet by the year 2100 compared to the levels in 2000 (<https://hindi.downtoearth.org.in>>w...).

**Economic strategy-** Achieving economic development and ensuring a better life for the citizens of a country is crucial for any nation. In this context, the role of the environment becomes extremely important in India's journey towards becoming a developed nation. In today's time, unseasonal rains, floods, droughts, and increasing pollution are impacting our lives, not only economically but also socially and in terms of health. In the Climate Change Performance Index 2023, India secured the eighth position. India has become the third-largest energy consumer, the third-largest LPG consumer, and the fourth-largest automobile market in the world. By 2047, India can expect strong economic growth with the increasing contribution of the blue economy, which will bring its per capita GDP (gross domestic product) and Human Development Index in line with those of developed nations. According to Divya Sharma, the Executive Director of Climate Change, India's journey to becoming a developed nation by 2047 is a special one for every citizen of the country. While the world may see it as a journey of development, for India, it will be a journey of reviving its glorious history. Many countries across the globe are pushing to achieve net-zero carbon dioxide emissions as soon as possible, while India has set a target of achieving net-zero carbon emissions by 2070 (<https://www.jagran.com/news/na...>)

The 2024 guidelines emphasize moving towards clean energy for climate and environmental protection. Clean energy reduces the emission of harmful gases and provides clean air. In the Environmental Performance Index 2024, India ranked 176th out of 180 countries, while in the Climate Change section, India ranked 133rd. This is because India has increased its investment in renewable energy and set a target of achieving net-zero emissions by 2070.

### **Challenges of environment and climate change**

The challenges related to the climate change can be outlined under the following points:

1. Decreasing groundwater levels and reduced crop yields due to environmental and climate change.
2. Day by day, several districts are facing droughts, which could lead to a food crisis.
3. Climate change is causing significant harm to wildlife.
4. Global temperature is increasing day by day in relation to the above.
5. Environmental and climate change are causing untimely weather changes. There could be unseasonal rains, or cold and heat could become unpredictable.
6. In India, air pollution, water pollution, soil pollution, and noise pollution have caused significant damage to biodiversity.

**Conclusion and Suggestions-** Climate change have had serious impacts on capital, human health, ecosystems, migration, agricultural production, and biodiversity. Approximately 70% of the labor force is directly or indirectly dependent on agriculture for livelihood and employment because the agricultural sector ensures higher productivity and food security. The agricultural sector also provides the necessary labour and capital for the manufacturing and service sectors. There should be regular discussions on climate change and the government should take stringent actions regarding related policies and programs. Adequate financial resources should be provided to ensure environmental protection. Both environmental conservation and poverty eradication should be prioritized. Additionally, every citizen of the country should have personal responsibility in relation to these issues.

## References

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