

GLOBAL WARMING: LEGAL, ENVIRONMENTAL AND INTERNATIONAL DIMENSIONS

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I. Introduction

Global warming has emerged as a defining issue of the twenty-first century, posing significant threats to environmental stability and human survival. It refers to the long-term rise in Earth's average temperature resulting primarily from human activities that increase the concentration of greenhouse gases in the atmosphere. Unlike short-term climatic variations, global warming reflects a persistent trend with irreversible consequences if left unaddressed.

From a legal perspective, global warming challenges traditional notions of sovereignty, responsibility, and environmental governance. The transboundary nature of its impacts necessitates collective international action and coordinated legal responses.

II. Meaning and Concept of Global Warming

Global warming denotes the gradual increase in global temperatures caused by the accumulation of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. These gases trap heat in the atmosphere, creating the greenhouse effect, which disrupts natural climatic balance.

Although natural factors contribute to climatic changes, scientific consensus recognises that anthropogenic activities—particularly since the industrial revolution—are the primary drivers of contemporary global warming.

III. Causes of Global Warming

A. Greenhouse Gas Emissions

The principal cause of global warming is the excessive emission of greenhouse gases through:

- A. Burning of fossil fuels for energy and transport
- B. Industrial processes and manufacturing
- C. Deforestation and land-use changes
- D. Agricultural activities

These emissions intensify heat retention in the atmosphere, leading to rising global temperatures.

B. Industrialisation and Urbanisation

Rapid industrial growth and unplanned urbanisation have significantly increased energy consumption and waste generation. The reliance on carbon-intensive energy sources has accelerated environmental degradation and contributed substantially to global warming.

C. Deforestation

Forests act as carbon sinks by absorbing atmospheric carbon dioxide. Large-scale deforestation reduces this capacity, increasing greenhouse gas concentrations and amplifying warming effects.

IV. Effects of Global Warming

A. Environmental Impacts

Global warming results in:

- I. Melting of glaciers and polar ice caps
- II. Rising sea levels

- III. Increased frequency of extreme weather events
- IV. Loss of biodiversity and ecosystem imbalance

These changes threaten ecological stability and natural resource availability.

B. Economic Consequences

Climate-induced disasters impose heavy economic costs, particularly on developing nations. Damage to agriculture, infrastructure, and livelihoods undermines economic growth and exacerbates poverty.

C. Social and Human Impacts

Global warming adversely affects human health through heatwaves, spread of diseases, food insecurity, and displacement of populations due to environmental degradation.

V. Global Warming and Environmental Law

Environmental law seeks to regulate human activities that harm the environment and to promote sustainable development. Global warming has expanded the scope of environmental law by introducing concepts such as climate justice, intergenerational equity, and environmental responsibility.

Domestic legal systems increasingly recognise the right to a clean and healthy environment, compelling states to adopt climate-friendly policies.

VI. International Legal Framework Addressing Global Warming

A. United Nations Framework Convention on Climate Change

The UNFCCC provides the foundational framework for international cooperation on climate change. It aims to stabilise greenhouse gas concentrations at levels that prevent dangerous interference with the climate system.

B. Kyoto Protocol

The Kyoto Protocol introduced binding emission reduction targets for developed countries, reflecting the principle of differentiated responsibilities.

C. Paris Agreement

The Paris Agreement represents a significant advancement by committing all participating states to undertake nationally determined contributions to limit global temperature rise. It emphasises mitigation, adaptation, and climate finance.

VII. Challenges in Legal Regulation of Global Warming

Despite international efforts, several challenges persist:

- I. Lack of enforceability of international commitments
- II. Conflicting economic and environmental interests
- III. Insufficient financial and technological support for developing countries
- IV. Weak domestic implementation mechanisms

These limitations undermine the effectiveness of climate governance.

VIII. Role of Judiciary and Climate Litigation

Courts across jurisdictions increasingly address climate-related disputes. Judicial interventions compel governments to strengthen environmental protections and uphold constitutional and statutory obligations relating to climate change mitigation.

Climate litigation has emerged as an important tool to hold states and corporations accountable for environmental harm.

IX. Need for Stronger Legal Responses

Effective mitigation of global warming requires:

- I. Strengthening domestic environmental laws
- II. Ensuring compliance with international commitments
- III. Promoting renewable energy and sustainable practices
- IV. Enhancing public participation and awareness

Legal frameworks must evolve to address the urgency and complexity of climate challenges.

X. Conclusion

Global warming is not merely an environmental issue but a legal, economic, and humanitarian concern of global significance. While international agreements provide a framework for collective action, their success depends on political will, effective implementation, and legal accountability. Strengthening environmental law and fostering global cooperation remain essential to combating global warming and safeguarding the planet for future generations.

Footnotes

1. Intergovernmental Panel on Climate Change, *Climate Change Assessment Reports*.
2. Philippe Sands & Jacqueline Peel, *Principles of International Environmental Law* (Cambridge University Press).
3. United Nations Framework Convention on Climate Change, 1992.
4. Kyoto Protocol to the UNFCCC, 1997.
5. Paris Agreement, 2015.
6. United Nations Environment Programme, *Emissions Gap Report*.
7. Dinah Shelton, *Environmental Protection and Human Rights* (Cambridge University Press).
8. B.S. Chimni, *International Environmental Law* (Oxford University Press).