

Title: India and Climate Change: Why It Matters Globally

Abstract

India, as the world's third-largest emitter of greenhouse gases yet highly vulnerable to climate impacts, occupies a pivotal role in global climate governance. This paper examines why India's climate challenges and policy responses matter globally, focusing on its vulnerability to extreme weather, its energy transition dilemmas, and its advocacy for climate justice within international relations. Drawing on constructivism and multi-level governance frameworks, the study analyses India's domestic and international climate strategies, highlighting tensions between economic development and environmental sustainability. Findings reveal that India's climate actions influence global emissions trajectories, food security, and geopolitical dynamics, particularly in the Global South. The paper argues that supporting India's climate efforts through finance and technology transfers are critical for global climate goals. Recommendations include enhanced international cooperation and equitable resource allocation to address India's unique challenges.

Keywords: Climate Change, Climate Justice, Energy Transition, Global South

1 Introduction

India, with its 1.4 billion population and status as the world's fifth-largest economy, stands at the forefront of the global climate crisis. As the third-largest emitter of greenhouse gases, contributing 2.6 billion metric tons of CO₂ in 2022 (6), India faces the dual challenge of mitigating emissions while addressing acute vulnerabilities to climate impacts. Heatwaves, floods, and rising sea levels threaten millions, while the country's coal-heavy energy sector complicates its net-zero ambitions by 2070. India's advocacy for climate justice, emphasizing

the historical responsibility of developed nations, underscores its geopolitical influence in shaping global climate policies. This paper explores why India's climate challenges demand global attention, addressing three key dimensions: its vulnerability to climate impacts, its role in global emissions, and its leadership in climate justice. By integrating constructivist and multi-level governance frameworks, the study examines how domestic policies and international engagements shape India's climate trajectory. The research question is: Why should the global community prioritize India's climate challenges, and how can international cooperation support its efforts? The paper argues that India's climate strategies are critical to global environmental stability, economic resilience, and equitable governance.

2 Literature Review

2.1 Climate Vulnerability and Adaptation

India's susceptibility to climate change is well-documented. (author?) (11) highlight that 60% of India's agriculture is rain-dependent, making it vulnerable to erratic monsoons. The 2022 heatwave, with temperatures reaching 49°C, reduced crop yields by 15% in northern India (7). Coastal cities like Mumbai face risks from sea-level rise, potentially displacing 7 million people by 2030 (20). Adaptation measures, such as flood-resistant infrastructure and drought-tolerant crops, are critical but underfunded (5).

2.2 Energy Transition and Emissions

India's energy sector, reliant on coal for 70% of electricity, drives its emissions growth (6). Yet, its per capita emissions (1.9 tons) remain below the global average (4.7 tons). (author?) (2) argues that India's renewable energy push, targeting 500 GW by 2030, is ambitious but constrained by economic priorities. The tension between development and decarbonization reflects broader Global South challenges (15).

2.3 Climate Justice and International Relations

Constructivist scholars emphasize India's role in shaping climate norms through advocacy for equity (16). India's leadership in the International Solar Alliance and its stance at COP summits highlight its influence (18). Multi-level governance frameworks reveal how India navigates domestic and international pressures, balancing local needs with global commitments (10).

3 Methodology

This study employs a qualitative approach, integrating secondary data from reports (e.g., IPCC, IEA), peer-reviewed journals, and policy documents. Constructivism and multilevel governance frameworks guide the analysis, focusing on India's climate policies, vulnerabilities, and international engagements. Data triangulation ensures reliability, while thematic analysis identifies key patterns in India's climate strategies.

4 Analysis and Discussion

4.1 Climate Vulnerability: A Human and Economic Crisis

India's exposure to climate impacts is staggering. The 2023 Assam floods displaced 1.5 million people, while Cyclone Amphan (2020) caused \$13 billion in damages (17). Himalayan glacier retreat threatens water security for 1.9 billion people across South Asia (19). These impacts disrupt food security, with wheat production projected to decline 20% by 2050 (3). Globally, India's agricultural disruptions affect commodity markets, as it is the second-largest producer of rice and wheat. Adaptation efforts, such as the National Action Plan on Climate Change (NAPCC), focus on resilient infrastructure and sustainable agriculture. However, funding gaps—India needs \$1 trillion by 2030—limit progress (14). International support is critical to scale these efforts, as India's vulnerabilities have transboundary implications.

4.2 Energy Transition: Balancing Growth and Sustainability

India's energy dilemma is central to global climate goals. Coal dominates, yet India has reduced solar tariffs to \$0.03/kWh, among the lowest globally (8). The 500 GW renewable target by 2030 requires \$500 billion in investments, but domestic financing covers only 20% (1). Coal phase-down, rather than phase-out, reflects economic realities, as 40 million jobs depend on fossil fuels (12). Globally, India's energy choices influence emissions trajectories. A delayed transition could add 1.5 billion tons of CO₂ annually by 2030, undermining the 1.5°C target (6). Technology transfers and green financing from developed nations are essential to accelerate India's renewable shift.

4.3 Climate Justice: India's Global Leadership

India's advocacy for climate justice, rooted in constructivist norms of equity, challenges the Global North's historical responsibility (25% of emissions from the US, 4% from India) (4). At COP26, India pushed for \$1 trillion in climate finance, yet only \$100 billion has been pledged globally (13). The International Solar Alliance, co-founded by India, promotes solar energy in 100+ countries, amplifying the Global South's voice (9). Multi-level governance highlights India's dual role: domestically, it implements state level climate plans; internationally, it negotiates for equitable frameworks. This leadership shapes climate policies across developing nations, representing 80% of the world's population.

4.4 Implications for Global Climate Governance

India's climate trajectory has global stakes. Its vulnerabilities affect migration and food security, its emissions shape warming limits, and its advocacy drives equity in international relations. Supporting India through finance, technology, and capacity-building is not charity but a necessity for global stability.

5 Conclusion and Recommendations

India's climate challenges are a microcosm of global tensions between development, equity, and sustainability. Its vulnerabilities, energy choices, and leadership in climate justice make it a linchpin in global climate governance. The global community must prioritize India's efforts through:

- Increased climate finance to meet India's \$1 trillion adaptation and mitigation needs by 2030.
- Technology transfers for renewable energy and resilient infrastructure.
- Strengthened multilateral frameworks to support India's leadership in the Global South.

Future research should explore India's state-level climate policies and their integration with international commitments. By addressing India's challenges, the world moves closer to achieving equitable and effective climate governance.

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