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Climate Change Law in India: Legal Instruments and Policy Challenges

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Abstract

Climate change has emerged as one of the most pressing constitutional, economic, and developmental challenges of the twenty-first century. In India, the legal architecture governing climate action is embedded within a complex mosaic of constitutional mandates, environmental statutes, policy instruments, and judicial innovations. This research paper, titled “Climate Change Law in India: Legal Instruments and Policy Challenges,” examines how India’s constitutional ethos, particularly Articles 21, 48A, and 51A(g), provides a foundational framework for environmental and climate governance. It explores the legislative ecosystem spanning the Environment (Protection) Act, Air and Water Acts, Forest and Biodiversity laws, and the Energy Conservation framework and evaluates their relevance to mitigation and adaptation. Further, the paper critically analyzes policy instruments such as the National Action Plan on Climate Change (NAPCC), State Action Plans (SAPCCs), and India’s updated Nationally Determined Contributions (NDCs) under the Paris Agreement. Judicial contributions from landmark cases such as *M.C. Mehta, Vellore Citizens’ Welfare Forum*, and *M.K. Ranjitsinh v. Union of India (2024)* demonstrate how the judiciary has progressively articulated a constitutional “right against the adverse effects of climate change.” However, despite significant advancements, India’s climate governance remains fragmented due to the absence of a dedicated Climate Change Act, weak inter-ministerial coordination, and inadequate financing and monitoring mechanisms. The study also compares global approaches EU Climate Law, U.S. Clean Air Act and Inflation Reduction Act, and China’s carbon market to derive lessons for an integrated Indian framework. Concluding with policy recommendations, the paper calls for a comprehensive, constitutionally grounded Climate Change Act that aligns domestic governance with India’s developmental imperatives and international commitments, ensuring justice, equity, and sustainability.

Keywords: *Climate Change Law; Constitutional Governance; Environmental Justice; India; National Action Plan on Climate Change (NAPCC)*

1. Introduction

1.1 Background and global urgency of climate change

The accelerating pace of climate change, its cascading risks, and the narrowing window for effective response have transformed climate governance from a technical policy issue into a constitutional, economic, and developmental imperative. The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment (AR6) synthesizes robust evidence that anthropogenic greenhouse gas (GHG) emissions have already warmed the atmosphere, ocean, and land, driving intensifying extremes with disproportionate impacts on the most vulnerable. AR6 emphasizes that near-term mitigation and adaptation choices will strongly determine long-run risks and the feasibility of equitable, sustainable development pathways (IPCC, 2023).

1.2 India's vulnerability to climate impacts - geography, economy, population

India's risk exposure is multi-dimensional: a long coastline, densely populated deltas, monsoon dependence, Himalayan cryosphere sensitivity, and rapid urbanization all interact with high socio-economic vulnerability. The IPCC's Working Group II highlights South Asia's exposure to compound extremes heatwaves, heavy precipitation, droughts, cyclones, sea-level rise and notes the constraining effects of poverty and infrastructure gaps on adaptive capacity. India's national statistics and recent oversight reports further indicate rising mortality and disruption from extreme weather, underscoring the urgent need for systemic resilience (IPCC, 2022; MoSPI/EnvStats indicators as reported in 2025).

1.3 Objectives and scope of the research

This paper analyzes India's climate change law and governance architecture by (i) tracing constitutional foundations, (ii) mapping legislative and regulatory instruments, (iii) evaluating policy frameworks and institutional design, (iv) synthesizing judicial contributions to environmental and climate jurisprudence, (v) identifying implementation and financing challenges, (vi) comparing global climate law models, and (vii) proposing reforms for an integrated, just, and constitutionally anchored climate regime.

1.4 Research questions

How can India design and implement an integrated, constitutionally grounded climate governance framework synthesizing statutory instruments, national and state policies, institutional capacities, and judicial oversight, and informed by lessons from the EU, U.S., and China to deliver effective and equitable

mitigation and adaptation while aligning with its international commitments?

1.5 Methodology and sources of data (statutory, judicial, policy, and international instruments)

The analysis relies on primary sources: constitutional provisions, central environmental statutes (e.g., Environment (Protection) Act 1986; Air Act 1981; Water Act 1974; Forest (Conservation) Act 1980; Biological Diversity Act 2002 as amended 2023; Energy Conservation Act 2001 as amended 2022; National Green Tribunal Act 2010); Union government notifications and schemes (e.g., Carbon Credit Trading Scheme 2023); authoritative judicial decisions (Supreme Court and NGT); national policy documents (e.g., National Action Plan on Climate Change (NAPCC) 2008; updated NDC 2022; Long-Term Low-Emission Development Strategy 2022); and international/legal instruments (UNFCCC, Paris Agreement) with comparative law sources for the EU, U.S., and China. Secondary sources include reputable government press releases and independent assessments of implementation and climate finance.

1.6 Structure of the paper

The paper proceeds from constitutional foundations (Part 2) to legislative instruments (Part 3), national and sub-national policy frameworks (Part 4), judicial contributions (Part 5), institutional design (Part 6), implementation challenges (Part 7), comparative models (Part 8), and concluding with implications for India's developmental-climate nexus (Part 9).

2. Constitutional Foundations of Climate Governance in India

2.1 Environmental protection as a constitutional value

The Constitution of India, while not expressly articulating "climate change," embeds ecological stewardship and intergenerational equity through Directive Principles and Fundamental Duties. These provisions, and the Supreme Court's dynamic rights jurisprudence, supply a normative foundation for climate governance, enabling statutory innovation and rights-based enforcement.

2.2 Right to life and environment under Article 21

Article 21's guarantee of life and personal liberty has been judicially expanded to encompass environmental quality and public health. In *Subhash Kumar v. State of Bihar* (1991), the Supreme Court recognized the right to pollution-free water and air as integral to Article 21, laying a doctrinal basis for later climate-adjacent claims such as air quality, forest conservation, and ecological restoration (*Subhash Kumar*, 1991).

2.3 Directive Principles of State Policy - Article 48A

Article 48A directs the State to protect and improve the environment and to safeguard forests and wildlife, providing a constitutional policy mandate guiding legislation and executive schemes, including climate-relevant missions and forest conservation measures.

2.4 Fundamental Duties - Article 51A(g)

Article 51A(g) imposes a fundamental duty on citizens to protect and improve the natural environment. While non-justiciable, it shapes interpretive canons and policy design, reinforcing public participation and stewardship in climate action.

2.5 Federal distribution of powers (Seventh Schedule) and environmental regulation

India's quasi-federal structure allocates legislative competencies across Union, State, and Concurrent Lists. Environmental subjects straddle lists, with the 42nd Amendment transferring "forests" and "protection of wild animals and birds" to the Concurrent List. The Union has often legislated under Article 253 to implement international environmental commitments (e.g., EP Act 1986 post-Stockholm), while States retain critical implementation roles. This distribution creates both opportunities and coordination challenges in climate governance.

2.6 Constitutional interpretation and climate jurisprudence evolution

From the 1980s public interest litigation era to contemporary climate-rights discourse, the Supreme Court has animated constitutional text through environmental principles (e.g., absolute liability, precautionary and polluter-pays principles), enabling proactive remedies. In 2024, a Constitution Bench in *M.K. Ranjitsinh & Ors. v. Union of India* articulated a constitutional "right against the adverse effects of climate change," integrating Article 21 with Directive Principles and duties, and linking biodiversity protection to climate resilience (Supreme Court Observer; HHRJ commentary).

3. Legislative Instruments Addressing Climate Change

3.1 Overview of statutory framework and legislative evolution

India lacks a single comprehensive Climate Change Act. Instead, climate mitigation and adaptation are pursued through an "ecosystem" of environmental, energy, forests, biodiversity, and adjudicatory statutes, increasingly supplemented by carbon-market and sectoral policies. Coherence is mediated by inter-ministerial bodies and the judiciary's interpretive principles.

3.2 Environment (Protection) Act, 1986 - umbrella legislation and its relevance

Enacted under Article 253 after Stockholm, the EP Act confers broad rule-making power on the Union to regulate environmental quality, set standards, and issue directions. Subordinate legislation environmental impact assessment notifications, emission/effluent norms provides indirect climate leverage by managing pollution and land-use impacts relevant to adaptation and mitigation co-benefits.

3.3 Air (Prevention and Control of Pollution) Act, 1981 - indirect regulation of greenhouse gases

Although the Air Act targets conventional pollutants, its monitoring, enforcement, and ambient standards regimes underpin air quality governance, where many mitigation actions (e.g., clean fuels, process efficiency, transport electrification) reduce both air toxics and GHGs. CPCB's statutory functions (planning, coordination, standard-setting, OCEMS) and state boards' consent/inspection powers are central to enforcement.

3.4 Water (Prevention and Control of Pollution) Act, 1974 - adaptation through water resource management

Water quality regulation intersects with climate adaptation, given heightened hydrological variability and extreme events. State Boards' powers to inspect, sample, mandate treatment, and prosecute enable risk-reduction in flood-prone and drought-affected basins. However, capacity constraints and data gaps complicate adaptive water governance.

3.5 Energy Conservation Act, 2001 and Bureau of Energy Efficiency initiatives

The Energy Conservation Act established the Bureau of Energy Efficiency (BEE) to drive demand-side efficiency through standards, labeling, and market mechanisms like the Perform, Achieve and Trade (PAT) scheme critical for reducing emissions intensity. The Energy Conservation (Amendment) Act, 2022 introduced a legal basis for an Indian carbon market (Carbon Credit Trading Scheme, 2023), expanded the definition of "energy," and created new compliance levers for non-fossil energy shares among designated consumers (Ministry of Power; BEE).

3.6 Forest (Conservation) Act, 1980 and Biological Diversity Act, 2002 - carbon sequestration and biodiversity adaptation

Forests and biodiversity offer mitigation (carbon sinks) and adaptation (ecosystem services) co-benefits. The Forest (Conservation) Act restricts diversion of forest land and enables centralized scrutiny, while the Biological Diversity Act and its 2023 amendment strengthen benefit-sharing and regulatory oversight through the National Biodiversity Authority and State Boards. Climate policy increasingly recognizes forests' role in resilience, nature-based solutions, and community stewardship.

3.7 National Green Tribunal Act, 2010 - environmental adjudication and climate-linked cases

The NGT Act created a specialized tribunal to ensure effective, expeditious environmental adjudication and apply sustainable development, precautionary, and polluter-pays principles. While not a “climate court,” the NGT has influenced climate-relevant governance (e.g., air quality, forests, waste, hydropower siting) and catalyzed compliance. Its accessible procedure and technical benches fill important gaps, although effectiveness varies across benches and sectors.

3.8 Analysis of coherence and overlaps among these laws

The cumulative framework offers many levers but remains fragmented. Air, water, biodiversity, and energy statutes were not designed as climate instruments, leading to overlaps (e.g., ambient standards versus GHG metrics), uneven mandates across ministries, and implementation gaps at state and local levels. The 2022 energy amendments and 2023 carbon market notification begin to add an economy-wide signal, yet full climate accountability (e.g., national carbon budgets, transparent MRV across sectors) is still emergent.

4. Policy Framework on Climate Change

4.1 Evolution of national climate policy - pre- and post-NAPCC

Before 2008, climate policy was dispersed across sectoral programs and international negotiating positions (CBDR-RC). The 2008 NAPCC marked a coherent national framing that has since been extended through additional missions (e.g., health, coastal areas, wind), state action plans, and sectoral initiatives.

4.2 National Action Plan on Climate Change (NAPCC), 2008

4.2.1 Rationale and guiding principles

NAPCC anchored climate responses in co-benefits (energy security, adaptation, ecological sustainability) and developmental equity, reflecting India’s emphasis on climate justice and differentiated responsibilities.

4.2.2 Overview of the Eight National Missions

The eight missions Solar, Enhanced Energy Efficiency, Sustainable Habitat, Water, Sustaining the Himalayan Ecosystem, Green India, Sustainable Agriculture, and Strategic Knowledge span mitigation and adaptation. Subsequent initiatives (e.g., National Mission on Hydrogen, Health) have complemented this architecture.

4.2.3 Evaluation of NAPCC’s performance

Independent reviews find mixed outcomes: significant advances in renewables and energy efficiency, but uneven mission operationalization, weak monitoring and evaluation, and variable state-level integration. The reconstitution and limited convening of the Prime Minister’s Council on Climate Change have also affected strategic oversight.

4.3 State Action Plans on Climate Change (SAPCCs) - subnational climate planning

SAPCCs mainstream climate objectives into state sectors. Evidence suggests improved planning but persistent gaps in urban focus, financing, and real-time data integration. Studies highlight capacity constraints, limited MRV, and uneven community participation issues that are central to adaptation effectiveness.

4.4 Nationally Determined Contributions (NDCs) - India’s Paris commitments

India’s updated NDC (August 2022) commits to reduce emissions intensity of GDP by 45% from 2005 levels by 2030 and to achieve about 50% of cumulative electric power installed capacity from non-fossil fuel sources by 2030 coupled with a 2070 net-zero target announced at COP26. The NDC explicitly frames action in terms of climate justice and sustainable lifestyles. India submitted its Fourth Biennial Update Report in December 2024 with updated inventory and trends.

4.5 Renewable energy goals and transition to green energy

Policy momentum has driven rapid growth: India reported 220.10 GW of installed RE capacity as of 31 March 2025 and indicated that non-fossil sources constitute half of installed electricity capacity, aligning with the NDC electricity target. These trajectories are supported by competitive auctions, grid reforms, and emerging storage/pumped hydro plans.

4.6 Other sectoral initiatives - transport, industry, and agriculture

Transport: FAME-II incentivizes EVs and charging infrastructure. Industry: PAT cycles under BEE, and the 2022 amendments plus the 2023 Carbon Credit Trading Scheme lay the groundwork for a compliance carbon market. Agriculture/energy-water nexus: programs like PM-KUSUM support distributed solar pumps with mitigation/adaptation co-benefits; ethanol blending targets complement transport decarbonization.

4.7 Institutional actors - MoEFCC, BEE, CPCB, and inter-ministerial coordination

MoEFCC is the nodal ministry for climate policy and UNFCCC interface, while BEE implements energy efficiency/market instruments and CPCB/State Boards enforce air and water laws. The Apex Committee for

Implementation of the Paris Agreement (AIPA, 2020) coordinates NDC implementation across ministries. Despite such structures, coordination challenges persist given cross-sectoral mandates and fiscal federalism.

5. Judicial Contributions to Climate Change Jurisprudence

5.1 Role of Indian judiciary in environmental and climate governance

Judicial review and public interest litigation have been pivotal in India's environmental governance, generating enforceable principles and remedies where executive/legislative action lagged. Climate litigation is an emergent frontier within this broader environmental rights tradition.

5.2 Key precedents

- **MC Mehta v. Union of India** (Oleum Gas, 1987 onward): established *absolute liability* for hazardous industries and anchored proactive judicial oversight across multiple environmental domains.
- **Indian Council for Enviro-Legal Action v. Union of India** (1996): affirmed the *Polluter Pays Principle* with robust remedial orders.
- **Vellore Citizens' Welfare Forum v. Union of India** (1996): institutionalized the *Precautionary Principle* and sustainable development in Indian law.
- **T.N. Godavarman Thirumulpad v. Union of India** (1997 onward): the "forest bench" evolved continuous mandamus to protect forests and ecosystem services, with long-term climate relevance.

5.3 Judicial creativity in enforcing environmental rights

Courts have issued structural orders (e.g., on vehicular emissions, industrial siting, forest conservation), driving regulatory upgrading and ministerial coordination. The rights-principles matrix Article 21 read with Articles 48A and 51A(g) has underpinned remedies with climate co-benefits.

5.4 Limits of judicial activism in absence of codified climate law

Judicial directions cannot fully substitute for comprehensive legislation: fine-grained MRV of emissions, economy-wide carbon budgeting, and long-horizon infrastructure planning require statutory anchors and predictable policy signals. Dismissal of certain climate-specific pleas before the NGT also

reflects jurisdictional boundaries and deference to statutory frameworks.

5.5 Climate litigation trends and emerging jurisprudence

The Supreme Court's 2024 recognition of a constitutional right against adverse climate effects signals a jurisprudential shift. Observers also note a gradual rise in climate-framed petitions, often linked to air quality, adaptation failures (e.g., GLOFs), and sectoral non-compliance though the corpus remains small relative to broader environmental litigation.

6. Institutional and Administrative Framework

6.1 Ministry of Environment, Forest and Climate Change (MoEFCC) - nodal functions

MoEFCC leads UNFCCC engagement, NDC/LTS submissions, inter-ministerial coordination (AIPA), and integrates climate action with environmental clearance, biodiversity, and forest policy. Capacity constraints and multi-level governance complexity can dilute coherence across adaptation and mitigation portfolios.

6.2 Role of Central and State Pollution Control Boards

CPCB and State Boards implement air and water statutes monitoring, standards, consents, and enforcement. The Boards' functions are critical to climate co-benefits (e.g., cleaner fuels and processes), yet audits frequently flag workforce and data/monitoring gaps. Expanding OCEMS and direct data transmission are steps toward stronger compliance infrastructures.

6.3 Bureau of Energy Efficiency and renewable energy agencies

BEE operationalizes efficiency through PAT, standards, and now carbon market architecture with MoP. MNRE advances RE deployment through national targets and state facilitation. Institutional strength varies; embedding climate targets into sectoral regulatory commissions and state agencies remains vital.

6.4 National Green Tribunal's administrative effectiveness

NGT's specialized bench structure and flexible procedure expedite environmental justice, but caseload disparities, compliance follow-up, and coordination with line departments affect impact. Evidence from empirical studies underscores both the tribunal's importance and the need for systemic administrative support.

6.5 Coordination mechanisms among ministries and states

The AIPA (2020) aims to streamline Paris Agreement implementation. Earlier, the PM's Council on Climate Change provided strategic direction but met infrequently over long periods, creating long-cycle oversight gaps. Strengthening inter-state and center-state coordination especially for power, transport, and urban agendas is essential.

6.6 Data and monitoring challenges in implementation

CAG performance audits and independent platforms point to persistent data integrity and capacity issues in emissions and air-water monitoring, vehicle testing, and program evaluation. Civil-society initiatives (e.g., GHG Platform India) attempt to bridge inventory gaps and build subnational analytics, but institutionalizing MRV remains a priority.

7. Policy and Implementation Challenges

7.1 Absence of a dedicated Climate Change Act

The absence of a framework Climate Change Act limits economy-wide governance e.g., carbon budgets, independent oversight (climate commission), and binding sectoral pathways. Private member efforts and policy proposals exist, but no enacted law provides a singular climate governance backbone.

7.2 Fragmentation and overlap in institutional responsibilities

Multiple ministries (MoEFCC, MoP, MNRE, MoHUA, MoRTH, MoA&FW) share climate-relevant functions; unclear mandates, limited horizontal coordination, and capacity asymmetries (particularly at state boards and ULBs) cause policy drift and uneven enforcement.

7.3 Enforcement and compliance weaknesses

CAG audits highlight monitoring gaps and staffing deficits across air and water governance, implicating both compliance culture and resourcing. Strengthening OCEMS integration, third-party verification, and penalty/reward structures is crucial.

7.4 Balancing economic growth with emission reduction

India's developmental imperatives energy access, industrialization, jobs necessitate careful sequencing of climate policies. The updated NDC emphasizes emissions-intensity reductions and non-fossil capacity shares rather than absolute caps before 2030; this design reflects CBDR-RC and the equity discourse while enabling rapid RE scale-up.

7.5 Financing constraints and inadequate climate funds

Multiple assessments estimate large financing needs through 2030 for mitigation and adaptation; regulators

(RBI/SEBI) are stepping up disclosure frameworks and green finance taxonomy efforts. International flows (e.g., GCF) help but remain modest relative to needs. Strengthening domestic instruments and leveraging blended finance are priorities.

7.6 Public awareness, participation, and access to environmental information

Fundamental duties and EIA procedures envision public participation, yet implementation quality varies. Transparent disclosure (real-time monitoring, accessible datasets), environmental information literacy, and social audits (where applicable) can align with constitutional environmental citizenship.

7.7 Over-reliance on judiciary and weak executive enforcement

While courts have filled gaps, durable governance depends on statutory clarity, institutional capacity, and budgetary commitments. Excessive judicialization risks uncertainty; a legislated climate framework could reduce litigation dependence and enhance predictability.

7.8 Domestic versus international equity - CBDR and climate justice concerns

India consistently foregrounds climate justice, the right to development, per capita equity, and sustainable lifestyles. The updated NDC and LTS reflect these frames, urging scaled finance and technology flows while committing to intensity reductions and long-term net-zero.

8. Comparative Analysis: Global Climate Law Approaches

8.1 European Union - EU Climate Law and Emissions Trading System

The European Climate Law (Regulation (EU) 2021/1119) enshrines climate neutrality by 2050 and sets binding targets, complemented by a suite of instruments (Effort Sharing, LULUCF, ETS). The EU ETS revised in 2023 to align with the "Fit for 55" package and further expanded to maritime and a new ETS2 for buildings/road transport demonstrates carbon pricing's integration into a coherent legislative program and MRV architecture.

8.2 United States - Clean Air Act, Inflation Reduction Act, and executive actions

U.S. climate law remains a mosaic. *Massachusetts v. EPA* (2007) held GHGs are "air pollutants" under the Clean Air Act, enabling EPA mobile-source regulation. *West Virginia v. EPA* (2022) constrained EPA's generation-shifting authority under the "major questions" doctrine for power-sector CO₂. The Inflation Reduction Act (2022), however, represents the most substantial federal climate investment, using tax credits and incentives to drive clean energy,

manufacturing, and CCS, while EPA continues to regulate within statutory limits.

8.3 China - Climate governance through Five-Year Plans and carbon neutrality goals

China pledged carbon neutrality “before 2060” and launched the national ETS in 2021, initially covering the power sector and now slated for expansion to cement, steel, and aluminum; 14th FYP targets and sectoral plans drive intensity reductions and non-fossil shares. Implementation emphasizes MRV development and sectoral pilots under the Ministry of Ecology and Environment.

8.4 Lessons for India - integrated legislation, emissions accounting, and adaptive governance

Comparative insights suggest that (i) a framework climate law with binding targets and robust MRV builds predictability; (ii) carbon pricing works best when embedded in a broader policy mix (standards, sectoral mandates, just transition measures); (iii) independent oversight and transparent data systems enhance credibility; and (iv) policy designs must respect local development priorities and energy security.

9. Conclusion

India’s constitutional architecture Article 21 infused with Articles 48A and 51A(g) provides a normative foundation for climate governance that the Supreme Court has increasingly recognized, culminating in a climate-rights articulation in 2024. The statutory framework, while robust for environmental protection, remains fragmented for climate purposes. Policy innovations (NAPCC, missions, SAPCCs), the updated NDC (2022), and the emerging Indian carbon market (2023) indicate momentum but also reveal coordination, MRV, and financing gaps.

Balancing energy access, economic growth, and decarbonization while upholding climate justice is central to India’s approach. Rapid RE scale-up and intensity-based targets reflect pragmatic sequencing; however, accelerating adaptation for vulnerable communities and cities is equally vital.

A framework climate law anchoring carbon budgeting, robust MRV, independent oversight, and just transition planning can align constitutional principles with international commitments. Coupled with institutional strengthening, climate finance mobilization, and participatory governance, India can translate its “Panchamrit” commitments into durable, equitable outcomes.

Embedding climate governance within India’s constitutional ethos rights, duties, and Directive Principles offers legitimacy and durability. A coherent statute can convert judicially recognized climate rights into programmatic obligations, ensure accountability,

and catalyze investment, innovation, and resilience at scale.

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