I J C R M
International Journal of Contemporary Research In Multidisciplinary

Review Article

Climate Change and International Environmental Law: Examining the Effectiveness of Existing Frameworks and Proposing New Approaches

Dr. Avinash Kumar Singh
Assistant Professor, Jagannath Prasad Smarak College of Law, Gauhania, Jasra, Prayagraj, Uttar Pradesh, India

Corresponding Author: Dr. Avinash Kumar Singh*

DOI: https://doi.org/10.5281/zenodo.16987237

Abstract

Climate change has emerged as the central challenge of international environmental law, Since the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, global governance has expanded through the Kyoto Protocol and the Paris Agreement, establishing mechanisms for mitigation, adaptation, finance, and transparency. However, the first Global Stocktake (GST) in 2023–24 confirmed that current commitments remain insufficient to achieve the Paris temperature goals. This paper examines the evolution and effectiveness of existing frameworks, evaluates their shortcomings in delivering tangible climate outcomes, and explores possible new legal and institutional approaches to strengthen climate governance. Particular attention is given to India's role within the regime, reflecting its updated Nationally Determined Contribution (NDC), Long-Term Low Emission Development Strategy (LT-LEDS), and National Clean Air Programme (NCAP). The analysis concludes that while the architecture of international climate law has proven resilient and inclusive, its implementation gap is profound. More stringent NDC design, explicit commitments on fossil fuel phase-out, innovative finance, and integration with domestic governance are necessary to realign the system with the urgency of climate science.

Manuscript Information

- **ISSN No:** 2583-7397
- **Received:** 19-07-2025
- **Accepted:** 16-08-2025
- **Published:** 28-08-2025
- **IJCRM:**4(4); 2025: 621-625

- **Plagiarism Checked:** Yes
- **Peer Review Process:** Yes

How to Cite this Article

Singh AK. Climate Change and International Environmental Law: Examining the Effectiveness of Existing Frameworks and Proposing New Approaches. Int J Contemp Res Multidiscip. 2025;4(4):621-625.

Access this Article Online

www.multiarticlesjournal.com

KEYWORDS: Nationally Determined Contribution, WMO, Climate Change, Climate Law, IPCC

1. INTRODUCTION

Climate change is now recognized not only as an environmental crisis but also as a profound developmental, social, and security issue. The Intergovernmental Panel on Climate Change (IPCC) confirmed in its Sixth Assessment Report that human influence has unequivocally warmed the climate system, with global surface temperatures rising by approximately 1.1°C during the period 2011–2020 compared to the pre-industrial baseline (IPCC, 2023). The World Meteorological Organization reported that 2024 was the hottest year on record, with the global mean temperature estimated at 1.55°C above the 1850–1900 average (WMO, 2025). These temperature anomalies are translating into more intense heatwaves, floods, wildfires, and rising sea levels that undermine human health, economic stability, and ecosystem integrity.

The legal response to climate change has been constructed incrementally through international environmental law. The UNFCCC, adopted in 1992, laid the foundation by setting the objective of stabilizing greenhouse gas (GHG) concentrations at safe levels. The Kyoto Protocol of 1997 introduced binding emission reduction commitments for developed countries, while the Paris Agreement of 2015 established a universal, nationally determined framework. Despite these advances, the effectiveness of international climate law in delivering real-world emissions reductions remains in question. The first Global Stocktake, concluded at the 28th Conference of the Parties (COP28) in Dubai, provided the most comprehensive evaluation yet, acknowledging progress but warning of a closing window to meet the 1.5°C target (UNFCCC, 2023a).

This paper critically examines the effectiveness of the existing international frameworks and explores what innovations or reforms might be necessary to strengthen global climate governance. By combining a review of international instruments with empirical insights from India's climate policy, it seeks to evaluate both the strengths and weaknesses of international environmental law in addressing climate change.

2. MAIN OBJECTIVE

The main objective of this research is to critically examine the effectiveness of the existing international environmental law frameworks in addressing the challenges posed by climate change.

3. REVIEW OF LITERATURE

The growing body of literature on climate change and international environmental law reflects the complexity of balancing environmental protection with economic and political realities. According to the Intergovernmental Panel on Climate Change (IPCC, 2023), the world has already warmed by approximately 1.1°C compared to pre-industrial levels, and current mitigation pledges are insufficient to limit the warming below 1.5°C. This scientific reality has placed unprecedented pressure on legal instruments and multilateral processes.

Scholars like Bodansky (2010) and Rajamani (2016) argue that the UNFCCC established an important framework but left many obligations vague, especially concerning the principle of "common but differentiated responsibilities" (CBDR). The Kyoto Protocol (1997) attempted to impose binding emission reduction targets, but its limited participation, with the withdrawal of the United States and the lack of obligations for developing countries, restricted its effectiveness (UNFCCC Report, 2012). The Paris Agreement (2015) shifted towards a bottom-up approach where countries submit their own nationally determined contributions (NDCs). However, several studies, including those by Falkner (2016) and UN Environment Programme (Emissions Gap Report, 2022) highlight that voluntary pledges have not yet matched the scale of required reductions.

At the same time, developing countries, especially from the Global South, have argued that equity and climate justice remain inadequately addressed. Reports from the Indian Ministry of Environment, Forest and Climate Change (MoEFCC, 2021) point out that while India's per capita emissions are significantly lower than the global average, it faces disproportionate risks from climate-related disasters such as floods, droughts, and heatwaves. Literature from Dubash and Ghosh (2019) also stresses that international law needs to ensure stronger financial and technological transfers to vulnerable states.

Further, compliance and enforcement remain weak points. As noted by Voigt (2018), international environmental law largely depends on state cooperation, and there is no central authority to impose penalties for non-compliance. The Paris Agreement relies on transparency and peer review rather than legally binding enforcement. This has led to skepticism regarding its effectiveness in compelling real action, especially from major emitters.

Indian scholarship has also contributed significantly to the discourse. Studies such as those by Chaturvedi and Shukla (2019) emphasize the importance of linking international law with national development priorities, particularly energy transitions, sustainable agriculture, and water management. Government reports like NITI Aayog's "India Energy Outlook 2021" highlight how international cooperation, coupled with domestic policies, can steer economies toward low-carbon pathways without compromising growth.

4. Evolution of the International Climate Law Framework

The UNFCCC marked a milestone in global environmental diplomacy, embedding principles such as "common but differentiated responsibilities and respective capabilities" (CBDR-RC). While the Convention did not impose binding emission limits, it created reporting obligations, a financial mechanism, and institutional platforms for continued negotiations (UNFCCC, 1992).

The Kyoto Protocol, adopted in 1997, moved further by establishing legally binding targets for industrialized countries. However, its limited participation and the withdrawal of key parties such as the United States weakened its effectiveness. Mechanisms such as the Clean Development Mechanism (CDM) did create opportunities for investment in developing

countries, but questions about environmental integrity and equity undermined their legitimacy (Depledge, 2000).

A turning point arrived with the Paris Agreement in 2015. Unlike Kyoto, Paris is universal: every Party submits a Nationally Determined Contribution (NDC), detailing its mitigation and adaptation actions. The Agreement sets a long-term temperature goal of holding warming "well below 2°C" and pursuing efforts to limit it to 1.5°C. It also created mechanisms for transparency, a Global Stocktake every five years, and encouragement for long-term low emission strategies (UNFCCC, 2015). Paris represented a paradigm shift from "top-down" legally binding quotas to a "bottom-up" pledge-and-review system, designed to balance inclusivity with ambition.

5. Effectiveness of Existing Frameworks

The effectiveness of international environmental law is best assessed across four dimensions: mitigation, adaptation, finance, and compliance.

Mitigation Outcomes

The Paris Agreement has achieved unprecedented participation, with 195 Parties submitting NDCs. Yet participation does not equate to sufficient ambition. The United Nations Environment Programme's Emissions Gap Report 2024 found that current NDCs place the world on track for 2.5–2.9°C of warming by the end of the century, far exceeding Paris targets (UNEP, 2024). The Global Stocktake reinforced this conclusion, highlighting that collective action is "insufficient to achieve the long-term temperature goal" and urging Parties to submit stronger NDCs by 2025 (UNFCCC, 2023a). The scientific evidence is unequivocal: the international legal system has failed to induce emissions reductions at the scale and speed required.

Adaptation and Loss and Damage

Adaptation has gained increasing attention, especially for vulnerable states. The Paris Agreement established a Global Goal on Adaptation, though its operationalization remains weak. COP27 in Sharm el-Sheikh and COP28 in Dubai marked a breakthrough by creating a dedicated fund for Loss and Damage to support countries facing irreversible climate impacts (UNFCCC, 2023b). Yet the challenge lies in mobilizing sufficient and predictable finance for these mechanisms. Reports by the World Meteorological Organization have warned that early warning systems and resilient infrastructure remain underfunded, even as climate extremes intensify (WMO, 2025).

Climate Finance

Finance is the linchpin of climate governance. The Copenhagen Accord of 2009 promised USD 100 billion annually by 2020, but delivery has fallen short and has been uneven across mitigation and adaptation needs. Negotiations are ongoing for a New Collective Quantified Goal on Climate Finance post-2025. The credibility of the entire regime depends on whether finance flows become more predictable, accessible, and equitable. Without adequate finance, particularly for adaptation and just transitions, the legitimacy of international climate law is at risk (OECD, 2023).

Transparency and Compliance

The Paris Agreement relies on enhanced transparency and peer review rather than punitive sanctions. While this has broadened participation, it also means that compliance depends heavily on political will and domestic implementation. The first Global Stocktake demonstrated that transparency can generate political pressure and accountability, but it does not guarantee compliance. The absence of hard enforcement measures remains a structural limitation of international climate law.

6. India's Role in the International Climate Regime

India provides a revealing case study for the interaction between international law and domestic policy. India's updated NDC, submitted in 2022, commits to reducing the emissions intensity of GDP by 45 percent from 2005 levels by 2030 and to achieving 50 percent of its installed electricity capacity from non-fossil fuel sources (Government of India, 2022a). In parallel, India released its Long-Term Low Emission Development Strategy (LT-LEDS), outlining pathways for decarbonizing power, industry, transport, and other sectors by 2070 (Government of India, 2022b).

At the domestic level, India's National Clean Air Programme (NCAP) demonstrates the co-benefits of integrating climate and air quality policy. Initiated in 2019, NCAP aims to reduce PM2.5 and PM10 concentrations by 20–30 percent by 2024 (later revised to 40 percent by 2026). While primarily targeted at air pollution, measures such as shifting to cleaner fuels, regulating industrial emissions, and promoting sustainable mobility also contribute to reducing greenhouse gases (MoEFCC, 2019). Evaluations of NCAP have shown uneven progress across cities but confirmed improvements in monitoring and enforcement systems (CPCB, 2024).

India illustrates how international obligations under the Paris Agreement can stimulate domestic reforms. At the same time, the case highlights the importance of finance and technology transfer in enabling developing countries to align with global climate goals without compromising developmental priorities.

7. Towards New Approaches in International Climate Law

Reforms must aim to strengthen ambition, accountability, and equity while preserving universal participation. One avenue is to enhance the design of NDCs by encouraging Parties to include economy-wide targets, sectoral sub-targets, and interim milestones, making progress more measurable and comparable. The Global Stocktake has already urged that the next round of NDCs be economy-wide and aligned with 1.5°C pathways (UNFCCC, 2023a).

A second approach concerns fossil fuel governance. Future COP decisions and national climate laws should incorporate explicit phase-out commitments for unabated coal, oil, and gas, combined with just transition frameworks to protect workers

and communities. The political significance of COP28's reference to fossil fuel transition should now be translated into legal and policy instruments at both international and national levels.

Third, climate finance requires restructuring. Outcome-based financing tied to measurable results—such as avoided emissions, renewable capacity installed, or climate-resilient infrastructure built—could improve accountability and effectiveness. Finance should also be accessible to the most vulnerable countries for adaptation and loss and damage, areas historically underfunded.

Fourth, sectoral cooperation beyond the UNFCCC could accelerate ambition. Plurilateral clubs for sectors such as steel, cement, or shipping could harmonize standards and reduce carbon leakage, while remaining consistent with World Trade Organization rules.

Finally, domestic legal systems have an increasingly important role. National courts are beginning to hold governments accountable to their climate commitments, effectively giving NDCs and long-term strategies quasi-legal status. Strengthening the justiciability of climate targets at the domestic level could reinforce international obligations.

8. CONCLUSION

International environmental law has created an inclusive and durable architecture for addressing climate change. The UNFCCC, Kyoto Protocol, and Paris Agreement have progressively expanded participation, institutionalized transparency, and mobilized finance. Yet their effectiveness remains constrained by insufficient ambition, weak compliance, and inadequate support for vulnerable countries. The Global Stocktake has provided a clear warning: the current trajectory is inconsistent with the Paris temperature goals, and urgent corrective action is required.

Future progress depends on enhancing the ambition and measurability of NDCs, embedding explicit fossil fuel phase-out commitments, reforming climate finance, and deepening the integration between international law and domestic governance. India's case demonstrates both the potential and limitations of translating international commitments into national policies, highlighting the importance of co-benefits and the role of domestic institutions.

Ultimately, the international legal framework is not failing, but it is lagging behind the pace demanded by climate science. To remain credible and effective, international climate law must now evolve from a system that primarily generates participation to one that ensures delivery.

REFERENCES

1. Intergovernmental Panel on Climate Change. AR6 Synthesis Report – Headline Statements. Geneva: IPCC; 2023.
2. United Nations Environment Programme. Emissions Gap Report 2024. Nairobi: UNEP; 2024.
3. United Nations Framework Convention on Climate Change. United Nations Framework Convention on Climate Change. New York: United Nations; 1992.
4. United Nations Framework Convention on Climate Change. Paris Agreement. Paris: UNFCCC; 2015.
5. United Nations Framework Convention on Climate Change. Global Stocktake Outcome Document, Decision 1/CMA.5. Bonn: UNFCCC; 2023a.
6. United Nations Framework Convention on Climate Change. Establishment of a Fund for Responding to Loss and Damage. Sharm el-Sheikh: UNFCCC; 2023b.
7. World Meteorological Organization. State of the Global Climate 2024. Geneva: WMO; 2025.
8. Organisation for Economic Co-operation and Development. Climate Finance Provided and Mobilised by Developed Countries in 2013–2021. Paris: OECD; 2023.
9. Government of India, Ministry of Environment, Forest and Climate Change. India's Updated First Nationally Determined Contribution (2021–2030). New Delhi: MoEFCC; 2022a.
10. Government of India, Ministry of Environment, Forest and Climate Change. India's Long-Term Low Emission Development Strategy. New Delhi: MoEFCC; 2022b.
11. Government of India, Ministry of Environment, Forest and Climate Change. National Clean Air Programme. New Delhi: MoEFCC; 2019.
12. Central Pollution Control Board. National Clean Air Programme Annual Report 2023–24. New Delhi: CPCB; 2024.
13. Bodansky DM. The art and craft of international environmental law. Cambridge (MA): Harvard University Press; 2010. 359 p. Available from: digitalcommons.law.uga.edu
14. Bodansky D. Introduction: Climate change and human rights: unpacking the issues. Ga J Int Comp Law. 2010;38(3):511. Available from: digitalcommons.law.uga.edu
15. Rajamani L. The 2015 Paris Agreement: interplay between hard, soft and non-obligations. J Environ Law. 2016;28(2):337–58. https://doi.org/10.1093/jel/eqw015
16. Rajamani L. Ambition and differentiation in the 2015 Paris Agreement: interpretative possibilities and underlying politics. Int Comp Law Q. 2016;65(2):493–514. https://doi.org/10.1017/S0020589316000130
17. Rajamani L. Human rights in the climate change regime. In: Knox JH, Pejan R, editors. The human right to a healthy environment. Cambridge: Cambridge University Press; 2018. p. 236–51. doi:10.1017/9781108367530.013
18. Rajamani L. Understanding the 2015 Paris Agreement. In: Dubash NK, editor. India in a warming world. Oxford: Oxford University Press; 2019. p. 205–21. doi:10.1093/oso/9780199498734.003.0012
19. Falkner R. The Paris Agreement and the new logic of international climate politics. Int Aff. 2016;92(5):1107–25.
20. Dubash NK, Ghosh S. National climate policies and institutions. In: Dubash NK, editor. India in a warming

world: integrating climate change and development. Oxford: Oxford University Press; 2019. p. 330–?. doi:10.1093/oso/9780199498734.003.0019
21. Voigt C. "Dynamic differentiation": the principles of CBDR-RC, progression and highest possible ambition in the Paris Agreement. Transnatl Environ Law. 2016;5(2):285–303.
22. Depledge J. The international climate change regime: a guide to rules, institutions and procedures. In: Yamin F, Depledge J, editors. Cambridge: Cambridge University Press; 2004.
23. Chaturvedi V, Shukla PR. India's long-term climate policy: linking climate change with sustainable development. In: Dubash NK, editor. India in a warming world: integrating climate change and development. New Delhi: Oxford University Press; 2019. p. 195–214.