MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 36 Issue 1s, 2026, Pages: 337-343

# Comparative Legal Mechanisms for Enforcing NDCs under the Paris Agreement: Lessons for Strengthened Climate Governance

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Abstract:
The Paris Agreement (2015) relies on *Nationally Determined Contributions* (NDCs) as its cornerstone for global climate action, yet enforcement and accountability mechanisms remain underdeveloped. Although 94% of Parties have quantified mitigation targets, current NDCs collectively achieve only a 5.9% reduction in emissions by 2030 relative to 2019 levels insufficient to limit warming to 1.5 °C (UNFCCC, 2024). Concurrently, climate litigation has matured into a prominent compliance tool: 226 new strategic cases were filed in 2024 alone, bringing the global tally to 2,967 across 59 jurisdictions (Setzer & Higham, 2025). This paper presents a comparative legal analysis of NDC enforcement frameworks in the European Union, India, and Brazil. By using doctrinal review and the study of individual cases, it criticizes statutory schemes of penalties, administrative penalties and judicial-review measures. The results indicate that jurisdictions reporting high rates of compliance are those with well-defined schedules of sanctions, strong standing rules, and high-quality litigation mechanisms with strong public interest. The research suggests the enforcement of models with such provisions as fines and mandatory transparency to improve domestic accountability and strengthen transnational trust in transnational NDC processes. These recommendations are supposed to address SDG 13 (Climate Action) and SDG 16 (Peace, Justice and Strong Institutions) by providing solutions to policymakers and jurists on designing laws to improve climate management in the global arena.

**Keywords:** Cross-jurisdictional environmental law; International environmental law comparison; Environmental litigation trends; Courts and climate governance; UNFCCC Paris Framework; Paris Climate Accord.

## 1. INTRODUCTION

The struggle to address the issue of climate change in the world has been one of the most diverse and the most important issues of governance in the twenty first century. It is possible to trace it to the rise of the global environmental consciousness which culminated in the United Nations Conference on Environment and Development (Rio de Janeiro 1992) in which the United Nations Framework Convention on Climate Change (UNFCCC) was signed. The treaty also created a new platform of international cooperation because treaty is the first in history to have set this precedence. All parties, the developed and the developing countries included, under the Convention became bound to stabilize the level of greenhouse gases (GHG) such that the dangerous anthropogenic interference with the climate system would be avoided and to ensure that the level of anthropogenic greenhouse gas is stabilized taking into consideration the historical responsibilities of the states and the varying capacities. Early phases of the UNFCCC process, which can be seen in the development of yearly gatherings of the Parties (COPs), were dominated by the controversial contention on equity, liability, and functionality. The first legally binding protocol as agreed upon during COP3 in Kyoto in 1997 only brings about reduction measures to countries that are part of Annex I (developed). This was a novel way of doing things, the so-called targets and timetables saying about carbon markets and flexibility mechanisms. This was however soon proven to be flawed by the Kyoto Protocol. Any serious players such as the US and China were either excluded or withdrawn, no binding cuts were imposed on a majority of the developing countries and the enforcement mechanism although theoretically, in practice were highly political and diplomatically held back so that they could not be implemented particularly when major countries failed to meet their targets as well as maintain their targets.

The shortcomings of Kyoto combined with increasing scientific alarms and rising emissions across the world made the environment ripe to move to the next stage; the Paris Agreement. The negotiations leading to the realization of COP21 in the year 2015 were negotiated under the umbrella of public disillusionments that included but not limited to the failure of consensus at COP15 Copenhagen (2009) and the growing demands of the civil society to have a fair, ambitious and inclusive climate regime. In a course of four years, parties engaged individuals in complicated arguments concerning differentiation, finance, loss and damage and transparency, which eventually saw the creation of a consensus on a hybrid architecture that would guarantee universal participation but not enforced, but promoted, increased ambition.

The Paris Agreement, ratified in December 2015 and now with 198 parties, was historic in several ways. It marked the first time that all nations regardless of development status pledged to concrete, transparent climate action via Nationally Determined Contributions (NDCs). Each Party was required to set forth its own mitigation, adaptation, and support goals, to review them every five years, and to “ratchet up” ambition progressively. The Paris framework signaled a critical shift from the top-down, prescriptive method of Kyoto to a bottom-up, voluntarist, and iterative system, blending flexibility for national sovereignty with collective global purpose.

Yet, this shift has not been without controversy or critique. Many legal scholars and policy analysts have pointed to the soft-law nature of the Paris mechanism. Unlike Kyoto or other hard-treaty regimes, the Paris Agreement does not contain direct punitive sanctions for non-compliance. Articles 13 to 15 emphasize transparency frameworks, technical expert review, a global stock take, and a facilitative (rather than punitive) implementation and compliance committee. While intended to maximize inclusivity and dynamism, these design choices generated fears that, without harder enforcement teeth, climate ambition could become mired in lowest-common-denominator politics. The “naming and shaming” approach reliant on transparency, public pressure, and diplomatic accountability has proved effective in some contexts but weaker in others, especially where domestic politics are volatile or fossil interest groups hold sway.

The NDCs themselves have revolutionized climate governance, but also magnified the diversity and unevenness of national commitments. The initial batch of Intended NDCs (INDCs), submitted in the run-up to Paris, varied widely in ambition, specificity, baselines, metrics, and conditionality. Developed countries, such as those in the European Union, generally set quantified, economy-wide reduction targets, adopting detailed MRV (measurement, reporting, verification) systems A lot of developing nations pegged their obligations to external funding, transfer of technology, and capacity-building, and others even filed adaptation-focused or conditional targets. As the 2020 and 2025 submission rounds followed, which is the next NDC cycle, the level of international examination and the requirements of the reporting has also increased.

The post-Paris scenery has been unstable geo-politically. With its exit out of the Paris Agreement in 2017 (and entry in 2021), significant controversies over market mechanisms (Article 6), the fight over the so-called "Rulebook" at subsequent COPs, the regime has remained weak and politicized. However, even inside the European Union, which has been on the forefront of climate negotiations, there is a disparity in commitment and capacity among the leaders in Western Europe and Eastern European member states. The biggest emitter in the world today, China, has become ambitious very fast at some times, but has development and energy security demands that have global ramifications. The development finance, adaptation, and low-carbon transitions have in the Global South experienced competing demands that have prompted NDCs to be closely linked to the promise of international funding a connection that has sometimes brought ambition to a halt and made compliance

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assessment difficult. Parallel to political negotiations, the implementation of Paris has been marked by major legal, administrative, and technical milestones. The "Rulebook", finalized between COP24 (Katowice, 2018) and COP26 (Glasgow, 2021), has filled important procedural gaps by specifying detailed guidelines for NDC content, accounting, and MRV systems. The establishment of the Global Stocktake, periodic technical expert review, and new modalities for loss and damage have further expanded the architecture of implementation, even though challenges persist in enforcement and legal recourse.

Further complicating matters, the rise of climate change litigation has shifted the legal environment, empowering national and regional courts sometimes armed with Paris Agreement references and human rights frameworks to compel governments and corporations to increase ambition, fill regulatory gaps, or address local compliance failures. Prominent cases such as the Urgenda v. Netherlands decision and the German Constitutional Court's ruling on intergenerational justice have set precedents for treating NDCs and Paris-aligned targets as justiciable standards, pushing the boundaries of the legal enforceability of climate commitments.

Despite these dynamic developments, significant early implementation challenges have persisted. The causative factors that have led to fragmented reporting and non-completeness in compliance are variations in national capacities, bad administrative system, inequality of MRV, as well as, incompetence in sectoral interest, particularly agriculture, forest, and land-use. The issue of harmonization of NDC strategies with the domestic law has been a challenge in certain countries where it brings ambiguity in the law and varying application of the law. The COVID-19 crisis and the energy market turmoil that followed created more headwinds and slowed down the progress in most jurisdictions simultaneously indicated the risks of the breakdown of the coordination on the international level.

Today, the global climate regime is thus in an arduous situation, in which the mechanism of NDCs in the Paris Agreement is the breakthrough in both the level of overall ambition and a new cycle of tests to influence effectual governance and law. The facts as explained in its historical evolution, through Rio Convention, to Kyoto Protocol, to Paris and its framework of implementation are not (only) a change of legal text, but rather a rebalancing of international collaboration of which it is now up to both scholars and policy makers to see to it, that it has the critical end and the means relation, which it now entreaties. It is in this intricate background that it is in this background that the present study will practise a comparative treatise analysis of the enforcement of legal in a view of uncovering an insight that will strengthen the climate governance measures within the decades to come.

## LITERATURE REVIEW

The concept of nationally determined contributions (NDCs) applied in the Paris arrangement is an extremely complex global control framework, which has attracted numerous scholarly interests encompassing international regulation and governance theory, the environment, political science, and socio-legal space. The purpose of this review is to provide a synthesis of the points with the aim of discussing the obstacles and opportunities of the new solutions in the creation of climate enforcement in the present day.

### Legal Pluralism in Climate Governance

The traditional legal scholarship that is largely state-based fails to sufficiently capture the new reality of climate control and could only be comprehended in the light of legal pluralism, pluralism of legal systems and normative orders. Climate law can be practiced and actualized both at the formal state processes, and at the informal well-established law, soft international law, non-state actor norms, and community-based rules and regulations (Brassett et al., 2017; Farran, 2020). The land use and the management of natural resources in the climate-prone regions, particularly, in the tropical forest and arid-land, are regulated by conventional legal frameworks, which influence the mobility of the climate adaptation and mitigation (Brink, 2025). This stratified normative context confounds the traditional enforcement practices and requires multisourced and context sensitive enforcement solutions, which is comprised of state power and normative pluralism. The importance of the institutional recognition of indigenous rights in relation to enhancing the collaborative enforcement of the law and establishing a broader legitimacy within the society is referenced (Brassett et al., 2017; Massey and Luna, 2018).

### The Proliferation and Ambivalence of Soft Law

The emergence of such notion of the soft law as the alternative form of governance in international climate regulation has become one of the central aspects of global climate regulation as well as global governance. The examples of soft law tools include non-binding resolutions, voluntary standards, procedural guidelines, and recommendations, which adopt an adaptive, flexible approach to addressing international standards that supplement and complement formal treaties (Dupuy et al. 2020; Ionescu, 2023). The Paris Agreement is actually a compound of structures, and the mechanisms such as the facilitative compliance committees, Global Stocktake and transparency structures serve as systems of soft law whilst the presence of structures of legal binding procedural standards is present yet with no direct sanctions being attached to the existence of substantive non-compliances. Its design renders it more accommodating to differentiated national contexts and flexible but still maintains it with the major long-term challenges of not having the coercive power to make people obey. Critics also warn of excessive use of soft law because it could wear out or cause deficiency in accountability, making the international system of governance less legit (Dupuy et al., 2020; Rajamani, 2012).

### Evolving Compliance Theories and Models

Climate enforcement joins wider argumentation in international law concerning the efficacy of compliance mechanisms, which has long been a continuum on the managerial systems, or systems founded on cooperative models on the one hand and the other on the enforcing systems that incline towards the application of sanctions and dispute resolution (Chayes and Chayes, 1993; Bodansky, 2016). The Kyoto Protocol introduced more enforcement prone aspects to the fray such as binding level of emissions and market-related sanctions that will adequately meet the requirements of compliance, despite the flaws of the Protocol becoming apparent. By focusing on greater transparency, peer review, and facilitated compliance, the Paris Agreement reverses itself with a fusion of revision cycles to trigger ambition generation as time goes on (Pickering, 2019; Tnnessen-Krkan & Underdal, 2019). Having a new model of governance (this adaptive compliance model) presents new theory but requires empirical questions especially in the translation of facilitating mechanisms to a state behavior change.

### Sector-Specific Enforcement Challenges

Agriculture, forestry, and land-use change (AFOLU) provide about 20-25% of global greenhouse gases, but their enforcement continues to present an intricate challenge due to the inability to measure emissions because of their diffuse and decentralized sources of emission, the complexity of the technical methods used to measure the emissions, and socio-political challenges linked to land tenure and livelihood (Frey et al., 2021; IPCC AR6 WGIII, 2022). Moreover, transport and energy sectors are often subjected to complex multi-level regulatory regimes where jurisdictional overlaps and infrastructure constraints complicate MRV and sanction enforcement (IEA, 2023). Several studies expose persistent gaps in data quality and monitoring capacity, not only impeding enforcement but also complicating the accurate tracking of national progress toward NDCs (Carter & Regan, 2022). Advances in remote sensing and digital technologies show promise but remain unevenly adopted, especially in low-capacity regions (Interpol, 2024).

### Empirical Trends in Judicial Enforcement and Litigation

Judicial enforcement has become a powerful and increasingly widespread tool in climate governance. Recent years have witnessed a surge in climate-related litigation globally, with over 3,600 documented cases by 2024 spanning more than 40 countries and involving governments as well as private actors (Setzer & Higham, 2024; Grantham Institute, 2024). Courts have adjudicated claims invoking constitutional rights (such as rights to health and life), environmental protection laws, and international obligations, pressing governments to adhere to or enhance their climate

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commitments. India's National Green Tribunal has been particularly active, securing an 82% compliance rate on climate-related orders, demonstrating the practical potency of judicial activism in a federal common-law context (National Green Tribunal, 2024). Nonetheless, literature simultaneously recognizes limitations related to judiciary reliance: enforcement is ultimately contingent on the political will and administrative capacity of executives, and litigations are often protracted and resource-intensive (Hall, 2022; Peel & Osofsky, 2018).

**Quantitative Meta-Studies and Transnational Networks**

Meta-analyses contribute critical quantitative insights into enforcement efficacy across nations and regimes. For example, the LSE Grantham Institute's 2024 synthesis highlights that countries with well-resourced legal frameworks and open public participation mechanisms achieve up to 35% higher compliance levels relative to peers (LSE Grantham Institute, 2024). Transnational climate governance networks including NGOs, intergovernmental organizations, and regional coalitions augment capacity building, norm diffusion, and enforcement peer-review, proving especially vital for resource-constrained countries in the Global South (Vogler & Jordan, 2016; UNDP, 2022). However, uneven capacities persist, with many developing countries lacking robust MRV systems or institutional independence, impeding their enforcement capabilities (Dubash et al., 2018).

**Addressing Capacity Gaps in the Global South**

The literature consistently documents capacity constraints prevailing in Global South contexts, encompassing technical, institutional, and financial domains. Weaknesses in MRV infrastructures, shortage of climate law specialists, limited legal access for marginalized communities, and broader socio-economic vulnerabilities collectively undermine enforcement potential (UNDP, 2022; IPCC AR6, 2022). Notably, the burden of climate impacts also disproportionately affects many of these countries, making effective enforcement not only a matter of global climate goals but also one of justice and equity. The success of NDC implementation depends heavily on international cooperation through funding mechanisms, technological assistance, and institutional strengthening; however, operational challenges and bureaucratic inefficiencies often impede these collaborative efforts (Dubash et al., 2018; UNDP, 2025)

**Best Practices in Stakeholder Engagement**

The literature increasingly recognizes stakeholder inclusion as fundamental to effective climate policy enforcement. Collaborative processes that bring together governmental, corporate, civil society, indigenous, and vulnerable community representatives create institutional accountability and democratic legitimacy, which research indicates are essential preconditions for securing broad-based compliance and ensuring durable implementation outcomes (Echeverri-Gent & Lahera, 2023). MRV participatory systems, open data and community monitoring systems are fast becoming an overall standard practice capable of simultaneously encouraging accountability and institutionalizing enforcement in local contexts. The processes also generate social capital other than providing essential feedbacks between the policy maker and the affected population as a result of climate-related decision making.

**Field Critiques and Debates**

On the one hand, much has been done, yet its problems and unsolved issues can be found on the literature. The people complain about the possibility of no coercion intrinsic to the soft law quality of the Paris governance sprinkled with little or no enforcement assemblies, as not being an effective means to bring about the deep decarbonization or accountability of Parties (Dupuy et al., 2020).Other people point out the advantages of flexible and changeable regimes in terms of sustaining the large numbers of participants and provision of responses that adjust to various situations (Falkner, 2016). The discussion continues in the political sociology of climate enforcement to discuss how compliance regimes are shaped by innovations in governance, asymmetries of power, and oppositional movements (Sabin & Cutts, 2021). Next, interdisciplinary approaches integrating law, political science, economics, and data analytics are increasingly advocated to bring together all aspects of the enforcement problem.

**RESEARCH GAPS**

While recent scholarship has advanced considerably, critical methodological limitations constrain current understanding of climate enforcement dynamics. First, the field lacks robust longitudinal studies tracking enforcement outcomes over time, particularly within sectors characterized by regulatory complexity such as agricultural and transport systems. Second, comparative research examining how different enforcement approaches affect social equity remains underdeveloped, with minimal attention to distributional consequences across vulnerable populations. Third, academic inquiry into digital governance innovations and their integration with conventional legal institutions requires substantial development.

This systematic review addresses these lacunae by providing a theoretical foundation that supports both the comparative analysis of enforcement regimes and the policy recommendations developed in subsequent sections.

**METHODOLOGY**

The study employs a multi-method research design that integrates both qualitative and quantitative approaches to examine how Nationally Determined Contributions (NDCs) under the Paris Agreement are enforced across diverse governance regimes. First, a doctrinal legal analysis maps the formal rules and institutional mandates underpinning NDC implementation, drawing on systematic review and coding of international treaties, national legislation, administrative instruments, and landmark court rulings. This exercise identifies and categorizes key compliance obligations, sanction provisions, procedural pathways, and oversight mechanisms. Second, a comparative institutional analysis situates these doctrinal findings within three jurisdictions (EU, India, Brazil), enabling evaluation of how statutory frameworks and enforcement architectures differ in practice. Third, targeted case studies—spanning infringement actions, tribunal orders, and constitutional petitions—provide in-depth insights into enforcement outcomes, timing, and stakeholder roles Lastly, quantitative information about the case counts, the time taken to resolve a case and the rates of compliance is synthesized to demonstrate the bigger picture and provide policy suggestions. The combination of these approaches will result in a strict, empirical based evaluation of global climate enforcement measures.. The doctrinal analysis added the normative background through which the reality of transnational institutions can be critically evaluated by means of the standards of international obligations and even the national legal traditions (Kothari and Jayaram, 2020).

The paper takes a comparative institutional approach to obtain more insight into the efficacy of enforcement mechanisms in actual sense and strategic in the selection of three jurisdictions in few suggested separate paradigms of governance and legal cultures, i.e., European Union, India and Brazil. EU is an example of supranational legal regime with the hierarchical enforcement regime, India has stronger system of judicially-empowered federal system, which is saturated with civil society presence and Brazil is an example of centralized administrative enforcement system based on environmental permitting. This purposive sampling allows one to compare the configurations of governance, resource distribution, procedural inclusion, and compliance dynamics on the ground in diverse sociopolitical settings (Slaughter & Zimmerman, 2019).

The research relies extensively on primary source data collection, encompassing legislative provisions, environmental policies, administrative records, and judicial decisions from official databases, government publications, and international monitoring platforms such as the UNFCCC repository. Notably, the study compiles enforcement actions' data spanning 2015 to 2024 including numbers of infringement cases, administrative sanctions, judicial orders, timelines, and recovery rates thereby enabling longitudinal analysis of trends and institutional performance. To circumvent limitations posed by data inconsistency, especially in middle-income and emerging economies, multiple data triangulation techniques were adopted, cross-referencing official reports with academic and NGO analyses, media coverage, and, where feasible, expert interviews (Oxford Climate Programme, 2021).

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Analytically, the study employs a tripartite evaluation framework structured around: (1) the legal design of sanctioning mechanisms, including penalty typologies, escalation processes, and threshold criteria; (2) procedural parameters, such as standing rules, accessibility of enforcement venues, and expeditiousness of processes; and (3) institutional capacity factors encompassing staffing levels, budget allocations, technical expertise, and governance autonomy. Each dimension is operationalized through a coding schema that captures nuances in legal stringency, administrative practices, and procedural fairness, thereby enabling systematic cross-jurisdictional comparisons and identification of exemplary practices and persistent bottlenecks.

Complementing the doctrinal and institutional analysis, the study incorporates a case-study methodology exploring six high-impact enforcement proceedings (two per jurisdiction). Cases were selected for representativeness and data availability, offering rich context on the interaction between legal norms, institutional actors, compliance behaviour, and enforcement outcomes. In-depth document analyses drew upon court rulings, regulatory filings, and press materials, supplemented with semi-structured expert interviews conducted under informed consent to glean insights into procedural challenges, political dynamics, and institutional incentives. The case studies not only illustrate practical applications but also provide grounding for refining policy recommendations (Yin, 2018).

In its quantitative component, the research constructs and analyzes a database of enforcement metrics, including the volume and nature of sanctions imposed annually, average case durations, compliance rates, and efficacy of sanctions through recovery statistics. The statistical analysis methods were used to create temporal trends, correlations with the institutional factors and outliers that needed to be analysed qualitatively. Adding an empirical component lends considerable weight to our findings and informs decision-making with concrete data. We adhered to strict ethical protocols: we relied on publicly available documents unless supplementary interview consents were granted; all informants were treated anonymously; and our analysis followed transparent, peer-reviewed coding guidelines. We also note key constraints: data inconsistency across jurisdictions, the influence of political contexts beyond legal factors, and the current focus on enforcement rather than sector-level outcomes. Through the combined rigor of legal analysis and empirical inquiry, this study delivers an integrated perspective on NDC enforcement mechanisms and provides actionable insights for policymakers seeking to fortify the legal and institutional infrastructure that underpins effective climate action.

## JURISDICTIONAL ANALYSES

This section provides a comprehensive examination of how NDC enforcement operates within three distinct legal systems—the European Union's supranational framework, India's constitutional-judicial hybrid, and Brazil's constitutional-administrative model. Through detailed doctrinal review, case studies, and institutional analysis, it unpacks the statutory texts, enforcement procedures, and practical performance of administrative and judicial bodies. By highlighting the interplay between legal provisions, institutional capacities, and governance practices, the study reveals critical nuances in how each jurisdiction pursues compliance with Paris Agreement commitments

### European Union: Supra-national Lawmaking Structures and Breach Procedures

EU has a very organized and well enshrined system of enforcement based on its own supranational legal order, which is governed by the Treaty on the Functioning of the European Union (TFEU) through which the Member States are legally bound by the regulations and directives, which are directly applicable and, which are in tandem with the objectives of Paris Agreement. European Commission (2021) described the Governance Regulation (EU) 2018/1999 to require annual national greenhouse gas inventories, NDC implementation and monitoring of adherence and the European Climate Law (Regulation (EU) 2021/1119) codifies climate neutrality by 2050 with binding 2030 targets.

From 2008 through 2023, the European Commission initiated approximately 9,700 Pilot infringement dialogues to investigate potential breaches of EU environmental obligations. Approximately 2,150 of these centered on climate-related legislation, representing 22% of total Pilot cases (European Parliament, 2024). The Pilot phase is intended to foster early resolution through bilateral engagement with Member States, reducing the necessity for formal proceedings.Where dialogue fails, formal infringement proceedings commence. In 2023 alone, 511 environmental infringement proceedings were initiated, involving 357 letters of formal notice and 89 reasoned opinions, culminating in 49 referrals to the Court of Justice of the European Union (CJEU) (European Commission, 2024). The CJEU has actively adjudicated climate cases, consistently affirming the EU's robust climate targets and sanctioning Member States for persistent non-compliance. For example, in the landmark *Commission v. France* (C-395/22), the Court imposed a €10 million lump-sum penalty and a daily fine of €200,000 for failure to adhere to emission limits (European Court of Justice, 2023).Procedural challenges remain. Although the average Pilot resolution period has decreased from over 14 months in 2015 to approximately 8 months in 2023, infringement procedures post-referral can extend beyond two years, potentially delaying compliance enforcement (European Commission, 2024). Moreover, the legislation restricts initiation of proceedings to EU institutions and Member States; third-party actors including NGOs and civil society have no locus standi in infringement cases, limiting participatory enforcement and raising concerns about democratic legitimacy (ClientEarth, 2025).

### India: Judicial Oversight within a Federal Climate Governance Framework

India's enforcement apparatus marries administrative climate missions under the National Action Plan on Climate Change (NAPCC) with an active and expanding judicial role. The NAPCC, launched in 2008 and codified through executive mandates and the Environment (Protection) Act 1986, outlines eight sectoral missions aimed at reducing carbon intensity and promoting renewable energy (Ministry of Environment, Forest and Climate Change, 2008).

The National Green Tribunal (NGT), established in 2010, has emerged as the central adjudicatory body for environmental disputes, featuring specialist benches with jurisdiction over climate-related cases. As of 2024, the NGT had issued approximately 1,120 climate-specific orders, enjoining state governments and private entities to implement or accelerate State Action Plans and emission-reduction measures (National Green Tribunal, 2024). The compliance rate with NGT directives exceeded 82%, signaling effective judicial influence notwithstanding rising case volumes.India's Supreme Court has also played a seminal role in broadening access to justice through expansive standing rules. In *Gaurav Bansal v. Union of India* (2015), the Court notably relaxed locus standi requirements, enabling NGOs and citizens to initiate climate litigation without demonstrating individual harm, thereby democratizing environmental enforcement (Setzer & Higham, 2025). In 2024, 145 new climate-related writ petitions were filed, covering emissions regulation, public health, and renewable infrastructure enforcement.

Despite adjudicatory vigor, challenges persist. The average time from filing to resolution in NGT climate cases extends to 14 months, constraining responsiveness; resource and staffing shortages hamper timely compliance monitoring (National Green Tribunal, 2024). Furthermore, the sanction regime lacks national uniformity: fines can reach up to INR 5 million, but absence of a standardized penalty scale leads to geographic inconsistency and uncertainty for regulated parties.

### Brazil: Administrative Licensing and Enforcement under Political Flux

Brazil's enforcement of NDCs is principally channeled through its environmental licensing system under the National Environmental Policy Law (6,938/1981) and the newly enacted General Environmental Licensing Bill (2,159/2021), designed to streamline and centralize permit processes while embedding NDC-aligned emission limits (Ministry of Environment, Brazil, 2023).

In 2023, Brazil issued 7,450 environmental licenses incorporating mandatory emission thresholds. Approximately 900 licenses (12%) underwent post-issuance compliance audits, triggered by emissions surpassing thresholds or community complaints (Brazilian Environmental Agency, 2024).

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The administrative agencies issued 2,350 fines related to NDC non-compliance, with average sanctions of BRL 150,000 per violation and a reported 68% fine collection rate within 90 days (Brazilian Environmental Agency Annual Report, 2024).

While Brazil's administrative sanctions represent substantial enforcement activity, legal uncertainty and political instability pose risks. The UN Office of the High Commissioner for Human Rights (UN OHCHR) intervened in 2025 to suspend legislative amendments diluting licensing standards, citing risks to indigenous communities and ecosystems (UN OHCHR, 2025). Efforts to develop the economy and apply environmental stewardship are in constant conflict as demonstrated by court battles and citizen campaigns. Provisions on participation of the public necessitate consultation of the stakeholders in the licensing procedure but court action on challenges to the licensing process is limited. This restricts possibilities of contesting enforcement by the civil society compared to the approach of open access that is practiced in India.

As these three jurisdictions allow us to observe, the implementation of NDCs occurs on the level of several legal venues and relies on various institutional resources. The infringement procedure of the EU provides a very organized and ruleful framework which establishes a procedural standard. A vibrant judiciary in India is increasing the number of people involved and involved in increasing accountability by taking up a proactive public-interest litigation. The administrative system in Brazil stresses on strong sanctioning authority, although there is political rivalry. Collectively, the above examples offer deep empirical and philosophical lessons on the basis of which a coordinated enforcement framework can be built one that reduces the implementation gap and strengthens the validity of climate regulation at the global level in the Paris Agreement.

**COMPARATIVE DISCUSSION**

Regardless of any difference in the jurisdiction of implementing Paris-Agreement NDCs despite it, the successful regimes have three structural pillars in place that include clear sanctions provisions, easy accountability procedures, and institutional framework. Exemplarily, in the EU, the infringement process is enforced progressively through a clear tiered system of infringement: an initial letter of formal notice followed by detailed reasoned opinion with further referral to CJEU. Such an organized increase will enable the authorities to tune the responses to the seriousness and duration of the violations, as well as provide the stakeholders with prior information about possible legal ramifications. High-profile rulings such as the CJEU's imposition of multi-million euro fines and daily penalties reinforce a strong deterrent effect and underscore the EU's capacity to secure compliance through legally certain and proportionate sanctions (European Commission, 2024). In contrast, India's National Green Tribunal (NGT) dispenses a mix of monetary fines capped at INR 5 million and remediation orders based on tribunal discretion. The absence of a uniform or codified penalty scale has led to variability in enforcement impact and has, at times, compromised the predictability, consistency, and deterrence value of monetary sanctions (National Green Tribunal, 2024). Brazil's approach centers around administrative enforcement: environmental regulators conduct over 900 audits annually, levying fines that average BRL 150,000 per violation for excessive emissions or licensing breaches. However, the flat penalty regime lacks gradual escalation for repeated or aggravated offenses, potentially diminishing its efficacy as a sustained deterrent. Moreover, enforcement reliability can be compromised by political volatility, as seen in 2025 when the United Nations Office of the High Commissioner for Human Rights intervened to halt legislative rollbacks that threatened to weaken Brazil's environmental licensing standards (UN OHCHR, 2025).

Procedural access represents a second, equally crucial dimension. It shapes who is empowered to initiate enforcement action and, indirectly, the transparency and responsiveness of the entire system. In the EU, procedural standing for infringement actions is restricted to the Commission and Member States, effectively excluding NGOs, affected citizens, and other civil society actors despite the Union's commitments under the Aarhus Convention (ClientEarth, 2025). This top-down model fosters intergovernmental diplomacy but limits grassroots accountability and external pressure for rigorous enforcement. India, following the Supreme Court's determination in *Gaurav Bansal v. Union of India* (2015), supports expansive locus standi, granting broad rights for individuals, NGOs, and public-interest groups to initiate environmental litigation. This accessible framework has contributed to a vibrant climate litigation culture, sharply increasing the number of cases and supporting compliance, but it has also stressed institutional resources, resulting in growing backlogs and average NGT case resolution times of over 14 months (Setzer & Higham, 2025). In Brazil, public participation is institutionalized at the permitting stage but is much more limited when compliance breaks down post-licensing; judicial review is generally confined to constitutional challenges, narrowing continuous oversight and redress for community and NGO actors (Ministry of Environment, Brazil, 2023).

Institutional capacity constitutes the final pillar, underpinning the operational effectiveness of enforcement. The European Commission's Environmental Directorate General is noted for its legal sophistication, focusing on high-impact or systemic breaches and referring 49 CJEU climate cases in 2023 balancing moderate case volumes with a rigorous approach (European Commission, 2024). India's NGT, although a global exemplar of specialist environmental adjudication with jurisdiction over climate matters, is increasingly challenged by a surge in public-interest filings and resource limitations, which risk undermining the efficiency and ultimately the legitimacy of environmental justice. Brazil's environmental enforcement bodies exhibit notable operational vigor, issuing thousands of licenses and fines per year and conducting regular audits; nonetheless, their ability to maintain robust enforcement over the long term is threatened by fluctuating budget allocations and sudden shifts in political will (Brazilian Environmental Agency, 2024).

Crucially, these three pillars are neither static nor isolated. The model embraced by India to the extent that it is judiciary driven and favors active participation of civil society and minimal procedural obstacles is dependent on the paradigm, and encourages further procedural and capacity-building improvements. The procedural and legal requirements of the EU are consistent and transparent and do not move too slowly to address local-level compliance violations that are not challenged by a narrow set of standing due to their standing. The administrative mechanism in Brazil is effective in providing scale-based enforcement but short-comings along the political uncertainty, and therefore, there must be constitutional and budgetary safeguard against the regress of the enforcement efforts in climate.

Based on this, the experience of every jurisdiction shows that prioritization of any of the pillars cannot shield the shortcomings of others. Holistic remedies are necessary to achieve NDC enforcement, and this means combining clarity and proportionality in multi-tiered sanctions commensuration to the frequency and magnitude of infraction, open and widespread access to procedure by integrating the role of the civil society and potential victims, and the ability of institutions to act consistently and independently of shifts in government and funding.

The policy implications of this comparative work are the foundations of the policy recommendations in the subsequent section, which believe in the clear and legally binding standards; and mechanisms that ensure access, participation and transparency by the populace; and institutional restructuring that encourages continuity and flexibility of implementation. A combination of these proposals provides a realistic way forward in bridging the gap between policies on the paper and putting the rule of law into effect in global climate change, as well as providing a way to achieve tangible improvement toward the goals of the Paris Agreement and Sustainable Development Goal 13 and 16.

**POLICY RECOMMENDATIONS**

Based on the comparative analysis of the regime of implementation of the European Union, India, and Brazil, the list of the combined policy proposals can be compiled to make the effectiveness, credibility, and equity of the implementation of the Nationally Determined Contributions (NDCs) enforcement under the Paris Agreement better.Across the board, a core suggestion is that NDCs should be codified as extensive, skeletal climatic laws. These pieces of legislation should commit national mitigation and adaptation promises with clear enforcement mechanisms to turn the aspirational international agreements into domestic law. By 2024, legislation on such framework has been enacted in more than 40 countries

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
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that include multisectoral targets, measuring and reporting guidelines, and monitoring of compliance (Grantham Institute, 2024). As empirical evidence has shown, jurisdictions that have taken binding climate laws will have emission trajectories that are 30 percent closer to NDC targets than those jurisdictions that have operated under the premise of soft policy instruments alone (LSE Grantham Institute, 2024). Enshrinement of NDCs into national law therefore plants a legal background highly imperative to subsequent enforcement at downstream and in the juristical appraisal.

An essential part of enforcement is the availability of transparent graduated systems of sanctions that should have predictability and proportion. The EU regime of infringements as a model represents the first step of enforcement being formal notice of compliance followed by reasoned order and finally a financial penalty depending on the magnitude and intransigence of non-compliance. The CJEU decision in 2023 was an illustration with fines of more than 10 million euros, and the addition of periodic penalty payments to be made until a remedial response (European Commission, 2024). The National Green Tribunal of India imposes fines of up to 5 million INR and remediation, but due to the lack of a standardized fine plan across the country, differences are created to disrupt the effectiveness of CD and justice (National Green Tribunal, 2024). The wide range of large administrative fines in Brazil, with an average of BRL 150,000 per offence, demonstrates a regulatory aggressiveness but the structure of the fines is flat without increasing the fines in case of repeat offences thus decreasing the long-run behaviour incentives. Laws that impose penalties that are proportional to actual measured shortfalls compared to quantified emissions targets (e.g. the equivalent percentage of turnover per excess tonne CO 2e) and to the economic ability of the violators, including appropriate independent review, will maximize the effectiveness of land.

To promote a healthy procedural accountability, it will be critical to expand access of the procedure to non-traditional government participants. One of the more enlightening legal regimes is that India has had NGOs, citizens, and groups of communities able to ascend in prosecution of climatic litigation in contributing to a culture of climate litigation that peaked in 2024 with 145 new petitions (Setzer & Higham, 2025). Research has shown that through citizens being allowed to bring public-interest suits, enforcement obedience has the potential to rise by up to 35 percent (UNDP, 2025). By comparison, the EU limits infringement proceedings to the Commission and Member States, despite its obligations under the Aarhus Convention to facilitate civil-society access. Introducing reforms to grant NGOs and affected individuals standing, and to publish both enforcement measures and hearing decisions, would strengthen procedural transparency, public confidence, and participatory legitimacy. Institutional capacity underpins enforcement outcomes. Best practices recommend that environmental agencies establish dedicated Climate Compliance Units, staffed at recommended ratios typically one climate law enforcement specialist per 40–50 regulated entities and supported by adequate legal, technical, and financial resources (OECD, 2023). Moreover, agencies should allocate at least 2 to 3 percent of annual budgets specifically for enforcement activities, including measurement, reporting, verification (MRV), compliance audits, and legal defenses. For context, in India, less than 1 percent of the Ministry of Environment, Forest and Climate Change's pollution control fund was expended on enforcement in 2024 despite escalating caseloads, indicating critical under-resourcing (Indian Express, 2025). Formal institutional capacity audits and performance metrics such as resolving 80 percent of compliance petitions within statutory deadlines and achieving 60 percent fine recovery within 12 months should be legislated, with findings publicly reported to bolster accountability.

To safeguard established enforcement frameworks from political reversals, legal systems should incorporate no-regression clauses mandating enhanced parliamentary scrutiny and transparent public notification prior to any weakening of climate enforcement laws or agency budgets. Such clauses echo recent international interventions; for example, the United Nations Office of the High Commissioner for Human Rights intervened in Brazil in 2025 to suspend legislative attempts to dilute environmental licensing regulations, preserving critical enforcement protections (UN OHCHR, 2025Organizing such institutional processes can greatly decrease administrative slack that can jeopardize the climate benefits. Symbiotic reinforcements: International and regional peer reviews, capacity building alliances, and harmonization of the law can be used to reinforce enforcement. Similar periodic evaluations of peers and joint structures across organizations such as the EU, SAARC and Mercosur can harmonize fundamental levels of enforcement and exchange best practices (UNDP, 2025). In addition to harmonisation of laws, cross-border accountability enjoys coordinated monitoring and digital systems of transparency that enhance credibility in the implementation of global NDCs. More importantly, the enforcement should be climate-just: mitigation and adaptation initiatives among frontline and vulnerable populations most impacted by climate change should be financed by the sanction revenues and penalties. The implementation of SDG 16 (Peace, Justice, and Strong Institutions) is achieved through systematic equity assessments, the reports, and consultations of its stakeholders, which guarantee socially inclusive transitions. Conclusively, a multidimensional enforcement paradigm, that is, the combination of binding climate laws, targeted sanctions, inclusive processes, empowered institutions, legislative protection, global cooperation, and a focus on justice is the most prospective way forward in turning national climate commitments into a credible, verifiable action and creating momentum towards the Paris Agreement and SDG 13.

**CONCLUSION AND FUTURE RESEARCH**

This paper provides a detailed comparative analysis of NDC implementation in the European Union, India, and Brazil that shows that successful implementation requires three pillars that are mutually supportive; well-tuned sanction systems, extensive access to procedures, and strong institutions. When these aspects are harmonized in the governance systems that are responsive to political and social environment of the jurisdictions, they may seal existing implementation loopholes. It is empirically demonstrated that jurisdictions that incorporate binding NDC commitments into the law can have a quantifiable advancement on the reduction of emissions. The EU approach of graduated infringement which provides a formal notice, then reasons opinion and finally, CJEU proceedings, show specificity and proportionality yet preservation of due process. The National Green Tribunal in India is a great example of judicial empowerment by open standing rules which promotes active involvement and increased accountability. In Brazil, permits are associated with high levels of institutional power as demonstrated by high level of penalties associated with continuation of enforcement by the administration despite changes in politics.Nevertheless, there are still some weaknesses: the excessive growth of sanctions may undermine deterrence; a lack of access to processes weakens the control of the society; and the lack of resources may make a regular implementation ineffective. Enforcement stability is also threatened by political meddling and regulatory reversal most especially in recent Brazilian policy reversals. To test and revise the given framework of enforcement and enhance it, future studies should consider piloting the proposed model on a broader set of locations, with quantitative (compliance rates, recovered sanctions, adjudication times) and qualitative (procedural justice, stakeholder engagement, and transparency) measurements thereof. A further expansion of the inquiry to sector-specific domains forestry, agriculture, transport would add to the applicability of designs along with enforcement and clarify domain-related issues.Furthermore, the concept of integrating climate justice into enforcement systems should also be explored separately. Research into the way sanction regimes and revenues of enforcement can correct socio-economic imbalances and empower the vulnerable groups will enhance the moral basis of climate governance. Ongoing international cooperation, including peer-review mechanisms and knowledge exchange platforms, remains vital to disseminate best practices and calibrate enforcement standards across the diverse legal landscapes of Parties. Adoption of digital compliance monitoring technologies and open-access reporting dashboards can further enhance transparency and public trust.

In synthesis, this study contributes a robust, interdisciplinary foundation for refining the legal architecture of NDC enforcement. Its recommendations advocate for transforming aspirational climate commitments into enforceable, equitable, and resilient legal obligations an imperative for achieving the emission trajectories necessary to fulfill the Paris Agreement's temperature goals and advance the Sustainable Development Goals in a just and sustainable manner.

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## REFERENCES

1. Averchenkova, A., & Bassi, S. (2016). Beyond the Targets: Assessing Risks to the Implementation of NDCs. Grantham Institute Policy Brief.
2. Brunner, S., et al. (2012). How do targets and instruments influence the effectiveness of climate policy? Policy Studies, 33(3), 121-143.
3. Carter, C., & Regan, J. (2022). Data Gaps and Capacity Constraints in MRV Systems for NDC Implementation. International Environmental Agreements, 22(4), 459-478.
4. Chayes, A., & Chayes, A.H. (1993). On Compliance. International Organization, 47(2), 175–205.
5. Dupuy, P.M., Morgera, E., & Vinuales, J.E. (2020). International Environmental Law and Soft Law Mechanisms. Cambridge University Press.
6. Echeverri-Gent, J., & Lahera, E. (2023). Participatory Governance in Climate Law: A Global Comparison. Environmental Policy and Governance, 33(1), 67-89.
7. European Environment Agency (2023). State and Outlook of Climate Compliance and Enforcement in Europe. EEA Report No. 20/2023.
8. Falkner, R. (2016). The Paris Agreement and the new logic of international climate politics. International Affairs, 92(5), 1107–1127.
9. Frey, U., Kleinschmit, D., & Arts, B. (2021). Enforcement Gaps in AFOLU Sectors: The Case of REDD+ in Brazil and Indonesia. Forest Policy and Economics, 125, 102373.
10. Hall, J. (2022). Administrative Capacity and the Politics of Climate Enforcement. Regulation & Governance, 16(2), 234-251.
11. Hudson, B., Hunter, D., & Peckham, S. (2019). Policy Failure and the Implementation of NDCs. Public Policy and Administration, 34(2), 123-137.
12. IEA (2023). Global Energy and Climate Policy Review 2023. International Energy Agency.
13. Ionescu, M. (2023). The Rise and Risks of Climate Soft Law. European Journal of Risk Regulation, 14(1), 81-96.
14. IPCC (2022). AR6 Synthesis Report: Climate Change 2022. Intergovernmental Panel on Climate Change.
15. Massey, E., & Luna, M. (2018). Indigenous Rights and Climate Policy Implementation: The Role of Legal Pluralism. Law & Society Review, 52(4), 879-910.
16. Peel, J., & Osofsky, H.M. (2018). Climate Change Litigation and Regulatory Enforcement. Law and Policy, 40(1), 21-48.
17. Sabin, P., & Cutts, M. (2021). Political Sociology of Climate Enforcement: Protests, Legitimacy, and Power. Environmental Politics, 30(5), 825-847.
18. Setzer, J., Higham, C., & Scherrer, W. (2024). Global Trends in Climate Change Litigation: 2025 Snapshot. Grantham Research Institute on Climate Change and the Environment.
19. Tønnessen-Krokan, B., & Underdal, A. (2019). Iterative Compliance, Learning, and International Environmental Agreements. Global Environmental Politics, 19(4), 102-121.
20. UNDP (2022). Strengthening Institutional Capacity for NDC Implementation in the Global South. United Nations Development Programme.
21. UNODC (2024). Global Law Enforcement in the Harm Landscapes of Climate Change. United Nations Office on Drugs and Crime.
22. UNODC (2024). Abu Dhabi Call for Action: Law Enforcement and Climate Crimes at COP28. United Nations Office on Drugs and Crime.
23. Vogler, J., & Jordan, A. (2016). The Transnational Climate Change Governance Complex. Journal of Environmental Policy & Planning, 18(3), 371-389.
24. Watts, N., Amann, M., Arnell, N., et al. (2023). The 2023 Report of the The Lancet Countdown on Health and Climate Change: Policy in a time of crisis. The Lancet, 402(10397), 1836–1901.
25. Ackerman, F. (2002). Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection. University of Pennsylvania Law Review, 150(5), 1553–1584.
26. Averchenkova, A., & Bassi, S. (2016). Beyond the Targets: Assessing Risks to the Implementation of NDCs. Grantham Institute Policy Brief.
27. Averchenkova, A., Fankhauser, S., & Finnegan, J. J. (2021). Climate governance functions: towards context-specific climate laws. Grantham Research Institute on Climate Change and the Environment, LSE.
28. Bergh, S. I., & Matczak, A. (2023). A review of the (potential) implications of climate change for policing practice worldwide. Policing: A Journal of Policy and Practice.
29. Brunner, S., et al. (2012). How do targets and instruments influence the effectiveness of climate policy? Policy Studies, 33(3), 121-143.
30. Carter, C., & Regan, J. (2022). Data Gaps and Capacity Constraints in MRV Systems for NDC Implementation. International Environmental Agreements, 22(4), 459-478.
31. Chayes, A., & Chayes, A.H. (1993). On Compliance. International Organization, 47(2), 175–205.
32. Coplan, K. S. (2018). The Missing Element of Environmental Cost-Benefit Analysis: Compensation for the Loss of Regulatory Benefits. Georgetown Environmental Law Review, 30, 281–315.
33. Echeverri-Gent, J., & Lahera, E. (2023). Participatory Governance in Climate Law: A Global Comparison. Environmental Policy and Governance, 33(1), 67-89.
34. Elzen, M.G.J., et al. (2023). Risks to implementation of NDCs and the feasibility of achieving global mitigation goals. Environmental Research Letters, 18(4), 045009.
35. European Environment Agency (2023). State and Outlook of Climate Compliance and Enforcement in Europe. EEA Report No. 20/2023.
36. Finnegan, J. J. (2022). Review of policy evaluation and NDC implementation. Policy & Society, 41(2), 200-219.
37. Frey, U., Kleinschmit, D., & Arts, B. (2021). Enforcement Gaps in AFOLU Sectors: The Case of REDD+ in Brazil and Indonesia. Forest Policy and Economics, 125, 102373.
38. Hall, J. (2022). Administrative Capacity and the Politics of Climate Enforcement. Regulation & Governance, 16(2), 234-251.
39. Hudson, B., Hunter, D., & Peckham, S. (2019). Policy Failure and the Implementation of NDCs. Public Policy and Administration, 34(2), 123-137.
40. INOGOV Network (2022). Innovations in Climate Governance. Earth System Governance Project.
41. Ionescu, M. (2023). The Rise and Risks of Climate Soft Law. European Journal of Risk Regulation, 14(1), 81-96.
42. IPCC (2022). AR6 Synthesis Report: Climate Change 2022. Intergovernmental Panel on Climate Change.
43. Koehl, A., & Higham, C. (2022). National climate laws: Function, form, and innovation. Earth System Governance, 13, 100118.
44. Levi, M. & Stoker, L. (2000). Political trust and trustworthiness. Annual Review of Political Science, 3, 475–507.
45. Massey, E., & Luna, M. (2018). Indigenous Rights and Climate Policy Implementation: The Role of Legal Pluralism. Law & Society Review, 52(4), 879-910.
46. Mcilhennon, C., & Brennan, G. (2023). Policy resilience and climate law in Europe: An evolving paradigm. Climate Policy, 23(1), 89–106.
47. Peel, J., & Osofsky, H.M. (2018). Climate Change Litigation and Regulatory Enforcement. Law and Policy, 40(1), 21-48.
48. Sabin, P., & Cutts, M. (2021). Political Sociology of Climate Enforcement: Protests, Legitimacy, and Power. Environmental Politics, 30(5), 825-847.
49. Scotford, E., & Minas, S.J. (2019). Climate change legislation and national climate change frameworks. In R. Faulkner (Ed.), The Oxford Handbook of International Climate Change Law.
50. Setzer, J., Silbert, N., & Vanhala, L. (2024). The Effectiveness of Climate Change Litigation. In F. Sindico et al. (Eds.), Research Handbook on Climate Change Litigation. Edward Elgar.
51. Setzer, J., Higham, C., & Scherrer, W. (2024). Global Trends in Climate Change Litigation: 2025 Snapshot. Grantham Research Institute, LSE.
52. Tønnessen-Krokan, B., & Underdal, A. (2019). Iterative Compliance, Learning, and International Environmental Agreements. Global Environmental Politics, 19(4), 102-121.
53. UNDP (2022). Strengthening Institutional Capacity for NDC Implementation in the Global South. United Nations Development Programme.
54. UNODC (2024). Global Law Enforcement in the Harm Landscapes of Climate Change. United Nations Office on Drugs and Crime.
55. UNODC (2024). Abu Dhabi Call for Action: Law Enforcement and Climate Crimes at COP28. United Nations Office on Drugs and Crime.
56. Vogler, J., & Jordan, A. (2016). The Transnational Climate Change Governance Complex. Journal of Environmental Policy & Planning, 18(3), 371-389.
57. Watts, N., Amann, M., Arnell, N., et al. (2023). The 2023 Report of the Lancet Countdown on Health and Climate Change. The Lancet, 402(10397), 1836–1901.
58. Zwar, S., Higham, C., Dubash, N.K., & Averchenkova, A. (2024). Climate Legislation and Policy Implementation: Lessons from NDC Support Programmes. Policy & Society, 43(2), 250–272.