

INTERNATIONAL JOURNAL OF SCIENTIFIC INFORMATION

Research | ISSN: 2583-8512

Global Climate Governance and International Institutions: Effectiveness, Implementation and Emerging Challenges

Anjli

Department of Political Science, JVVU, Jaipur

Email: anjlichouhan37414@gmail.com

Abstract

Climate change is a transboundary governance problem in which scientific knowledge, international rule-making, finance, technology and national implementation are closely interdependent. This paper evaluates how international institutions shape global climate governance, how effectively the Paris architecture is translating collective goals into national action, and where institutional weaknesses continue to constrain implementation. The study adopts a qualitative documentary and comparative case-study design derived from the original synopsis, focusing on the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC), the World Bank and climate-finance mechanisms. The analysis combines official agreements, IPCC assessments, UNFCCC nationally determined contribution (NDC) synthesis reports, OECD climate-finance data, and recent institutional reports. Results show that international institutions perform four indispensable functions: agenda setting and negotiation; scientific assessment; transparency and accountability; and mobilisation of finance and technical support. The Paris Agreement has achieved near-universal participation and has progressively strengthened the procedural architecture for national commitments, transparency and global stocktaking. New NDCs submitted in 2024–2025 show improved governance quality, with high shares of Parties reporting economy-wide targets, legal or policy frameworks and explicit links to the first Global Stocktake. Yet aggregate ambition and implementation remain inadequate for a 1.5°C-consistent pathway. Current policies still imply substantially higher 2030 emissions than both unconditional and conditional NDC pathways, while climate finance, despite surpassing the earlier USD 100 billion benchmark since 2022, remains far below the scale required for mitigation, adaptation, loss and damage and technology deployment. The paper concludes that the principal institutional problem is no longer absence of global rules, but the gap between negotiated commitments and domestic execution. Strengthening climate governance therefore requires more credible implementation mechanisms, predictable finance, transparent tracking, institutional coordination and equity-sensitive support for developing countries.

Keywords: Global governance; climate change; international institutions; UNFCCC; IPCC; Paris Agreement; Nationally Determined Contributions; climate finance; climate justice; technology transfer; transparency; Global Stocktake

Address for Correspondence

Anjli

Research Scholar

Department of Political Science, JVVU, Jaipur

Email: anjlichouhan37414@gmail.com



Article Received on: 18.09.26

Revised on: 24.08.26

Approved for publication: 27.09.26

How to Cite this Article: Anjli. *Global Climate Governance and International Institutions: Effectiveness, Implementation and Emerging Challenges* Int., J. Sci. Info. 2026; 4 (6): 14-29

1. Introduction

Climate change is a defining collective-action problem because its causes and consequences cross territorial, economic and political boundaries. Greenhouse gases accumulate globally, while climate impacts are experienced unevenly across regions and social groups. The IPCC concludes that human activities have unequivocally caused global warming and that global surface temperature in 2011–2020 was approximately 1.1°C above the 1850–1900 average (IPCC, 2023). This scientific conclusion has profound governance implications: no single government can stabilise the climate system independently, and actions taken within one jurisdiction may create benefits or costs far beyond its borders. Climate governance therefore depends on institutions capable of producing shared knowledge, coordinating expectations, mobilising resources and sustaining cooperation among states with different capabilities, interests and historical responsibilities.

The contemporary climate regime has developed through successive layers of international institution-building. The 1992 United Nations Framework Convention on Climate Change (UNFCCC) established the objective of preventing dangerous anthropogenic interference with the climate system and embedded the principle of common but differentiated responsibilities and respective capabilities. The Kyoto Protocol subsequently introduced binding emission targets for a subset of industrialised countries. The Paris Agreement transformed this model by combining a common long-term temperature goal with nationally determined contributions (NDCs), five-year cycles of progression, enhanced transparency and periodic global stocktakes (UNFCCC, 2015). Falkner (2016) describes this shift as a new logic of climate politics: participation was widened by allowing nationally differentiated commitments, but the trade-off was weaker direct legal compulsion over the substantive level of national mitigation ambition.

International institutions are central to this architecture, but they do not all perform the same function. The UNFCCC provides the negotiating arena, treaty procedures, reporting system and institutional machinery through which Parties formulate and review collective climate action. The IPCC does not negotiate policy; rather, it assesses the scientific literature and translates complex evidence into agreed assessments of physical science, impacts, adaptation and mitigation. Multilateral development banks, including the World Bank, provide finance, project support, policy advice and technical assistance. Dedicated mechanisms such as the Green Climate Fund and Global Environment Facility are intended to channel resources to developing countries and strengthen access to mitigation and adaptation finance. Together, these bodies constitute a fragmented but interdependent governance system rather than a single hierarchical authority.

The institutional architecture has produced significant achievements. Nearly universal participation in the Paris Agreement has created a common framework within which national targets are periodically updated. Transparency arrangements are improving the availability and comparability of national information. The first Global Stocktake, completed at COP28, created a formal process for assessing collective progress and feeding that assessment back into subsequent NDCs. UNFCCC's 2025 synthesis of 64 new NDCs found that 89% of those Parties communicated economy-wide targets, 88% reported that their NDCs were informed by the first Global Stocktake, and 97% described legal or policy frameworks supporting implementation (UNFCCC, 2025a). These indicators suggest that global governance is increasingly influencing domestic climate-planning processes rather than operating only at the diplomatic level.

At the same time, procedural development has not eliminated the implementation gap. UNEP's Emissions Gap Report 2024 estimated global emissions under current policies at about 57 GtCO₂e in 2030, approximately 2 GtCO₂e above the level implied by unconditional NDCs and about 5 GtCO₂e above conditional NDCs (UNEP, 2024). The gap between these trajectories and pathways consistent with 1.5°C remains much larger. The central governance question is therefore not simply whether institutions can generate agreements, but whether they can create sufficient incentives, support, transparency and political momentum for states to implement and progressively strengthen those agreements.

Finance and equity intensify this challenge. Developing countries frequently face high capital costs, constrained fiscal space, technology gaps and immediate development priorities, even though many are highly exposed to climate impacts and have contributed relatively little to cumulative emissions. The earlier commitment by developed countries to mobilise USD 100 billion annually became a symbol of trust in the regime. OECD data show that the benchmark was first exceeded in 2022 at USD 115.9 billion and rose to USD 132.8 billion in 2023 and USD 136.7 billion in 2024 (OECD, 2026). COP29 subsequently established a new collective quantified goal of at least USD 300 billion per year by 2035 for developing countries and called for scaling finance from all public and private sources to at least USD 1.3 trillion annually by 2035 (UNFCCC, 2024). These developments demonstrate institutional evolution, but also reveal the much larger scale of the financing challenge.

This paper builds directly on the uploaded synopsis, which identifies four objectives: analysing the role of international institutions in shaping policy and action; assessing the effectiveness of international climate agreements; examining governance challenges; and exploring climate finance and technology transfer. The study addresses these objectives through updated documentary evidence

rather than presenting hypothetical interview results. This distinction is important because the synopsis proposed interviews but did not provide completed interview transcripts or empirical findings. Accordingly, the paper reports a transparent secondary-data and case-study synthesis and treats stakeholder interviewing as a future extension rather than an accomplished component of the present analysis.

The paper contributes by integrating institutional performance, NDC progression, emissions outcomes and climate-finance trends into one governance assessment. Its central argument is that international institutions have become more effective at structuring participation, reporting, norm formation and resource mobilisation, but remain constrained in converting procedural compliance into emissions reductions at the scale and speed required. The effectiveness of global climate governance therefore depends increasingly on implementation capacity, credibility of national policies, distribution of finance and technology, and the ability of institutions to sustain reciprocity and trust across unequal states.

2. Materials and Methods

The study used a qualitative documentary research design with comparative case-study analysis. This approach follows the methodological logic set out in the uploaded synopsis, which proposed document analysis, case studies and thematic analysis for examining global climate governance. Because no completed interview dataset accompanied the synopsis, the present paper limits empirical claims to documentary and secondary quantitative evidence. This protects the validity of the results and avoids attributing findings to stakeholders who were not actually interviewed.

The documentary corpus was purposively selected to represent the principal institutional functions identified in the research objectives. Primary international sources included the Paris Agreement and recent UNFCCC NDC synthesis and transparency reports; IPCC Sixth Assessment Synthesis Report findings; UNFCCC outcomes from COP28 and COP29; OECD reports tracking climate finance provided and mobilised by developed countries; and World Bank climate-finance reporting. A peer-reviewed institutional analysis by Falkner (2016) was used to contextualise the shift from the Kyoto model to the nationally determined architecture of the Paris Agreement. Sources were selected according to institutional authority, relevance to the research questions, methodological transparency and recency where trend interpretation was required.

Data analysis proceeded in three stages. First, documents were coded deductively against four themes corresponding to the study objectives: institutional functions; effectiveness of agreements and NDC

implementation; governance constraints; and finance/technology support. Second, a comparative matrix was constructed for the UNFCCC, IPCC, World Bank and climate-finance mechanisms, evaluating mandate, instruments, strengths and limitations. Third, selected quantitative indicators were extracted to support the qualitative findings, including shares of Parties reporting governance features in new NDCs, 2030 emissions projections under alternative policy scenarios, and annual climate-finance totals. Quantitative indicators were used descriptively rather than for causal inference.

Triangulation was achieved by comparing institutional sources that address different parts of the governance chain: science (IPCC), treaty implementation and transparency (UNFCCC), emissions-gap assessment (UNEP), finance (OECD and World Bank), and peer-reviewed institutional interpretation. The principal limitation is that official reports may reflect different accounting conventions and time periods; therefore, figures are presented with their source context and are not combined into synthetic indices. The study also does not infer that institutional actions alone caused observed national outcomes. Instead, it assesses institutional contribution, procedural effectiveness and persistent implementation gaps.

To improve reproducibility, extraction focused on explicitly reported institutional indicators rather than impressionistic judgments. Where a source reported percentages, finance values or emissions projections, the published units and scope were retained. No missing values were imputed and no statistical significance testing was attempted because the datasets were produced for different institutional purposes. The analysis therefore treats numerical evidence as descriptive support for qualitative institutional interpretation.

3. Results

3.1 Institutional roles in global climate governance

The documentary analysis shows that international climate institutions are most effective when understood as a functional system rather than as substitutes for world government. Four recurring functions emerge: (1) rule-making and negotiation; (2) production and validation of scientific knowledge; (3) transparency, monitoring and iterative review; and (4) mobilisation of finance, capacity and technology. The UNFCCC is strongest in the first and third functions, the IPCC in the second, and development-finance institutions in the fourth. Their collective effectiveness therefore depends on coordination across institutional boundaries.

Table 1. Comparative institutional roles in climate governance

Institution	Primary governance role	Key instruments	Main strength	Persistent limitation
UNFCCC	Negotiation, rule-setting, transparency and stocktaking	Paris Agreement, NDC cycle, Enhanced Transparency Framework, COP/CMA decisions	Near-universal political participation and iterative review	Limited direct coercive enforcement over national ambition and implementation
IPCC	Scientific assessment and policy-relevant knowledge synthesis	Assessment reports, special reports, methodological guidance	Authoritative consensus assessment linking science to risk	No mandate to prescribe or enforce national policy
World Bank / MDBs	Finance, project implementation, policy support and technical assistance	Loans, grants, guarantees, climate-development diagnostics	Ability to mobilise capital and integrate climate into development operations	Scale, debt implications, access conditions and allocation choices
GCF / climate funds	Concessional climate finance and capacity support	Mitigation/adaptation funding, readiness support, accredited entities	Dedicated support to developing-country climate priorities	Access complexity, project preparation capacity and finance gap
UNEP / assessment bodies	Tracking the ambition and implementation gap	Emissions Gap Reports and policy assessments	Independent synthesis of policy-emissions mismatch	Depends on national implementation and data quality

The comparative evidence indicates that institutional effectiveness is multidimensional. The UNFCCC can create obligations to submit, explain and update NDCs, but it cannot centrally determine each Party's emissions target. The IPCC can narrow scientific uncertainty and identify mitigation pathways, but it cannot force political choices. Financial institutions can lower investment barriers, yet their influence depends on recipient-country institutions, project pipelines and broader macroeconomic conditions. This functional division explains why institutional success in one domain—such as reporting—can coexist with insufficient aggregate mitigation outcomes.

3.2 Progression of the Paris Agreement governance architecture

The Paris Agreement's principal institutional innovation is its iterative cycle of nationally determined action, transparency and collective review. Evidence from the 2025 NDC synthesis suggests that this architecture is influencing how Parties formulate climate policy. Among 64 new NDCs recorded between January 2024 and September 2025, 89% communicated economy-wide targets, 88% indicated that the first Global Stocktake informed the new NDC, 73% included an adaptation component, 91% provided information needed for clarity and transparency, and 97% described legal or policy frameworks facilitating implementation (UNFCCC, 2025a). These results support the view that international institutions shape national governance by standardising expectations and creating recurring moments for policy revision.

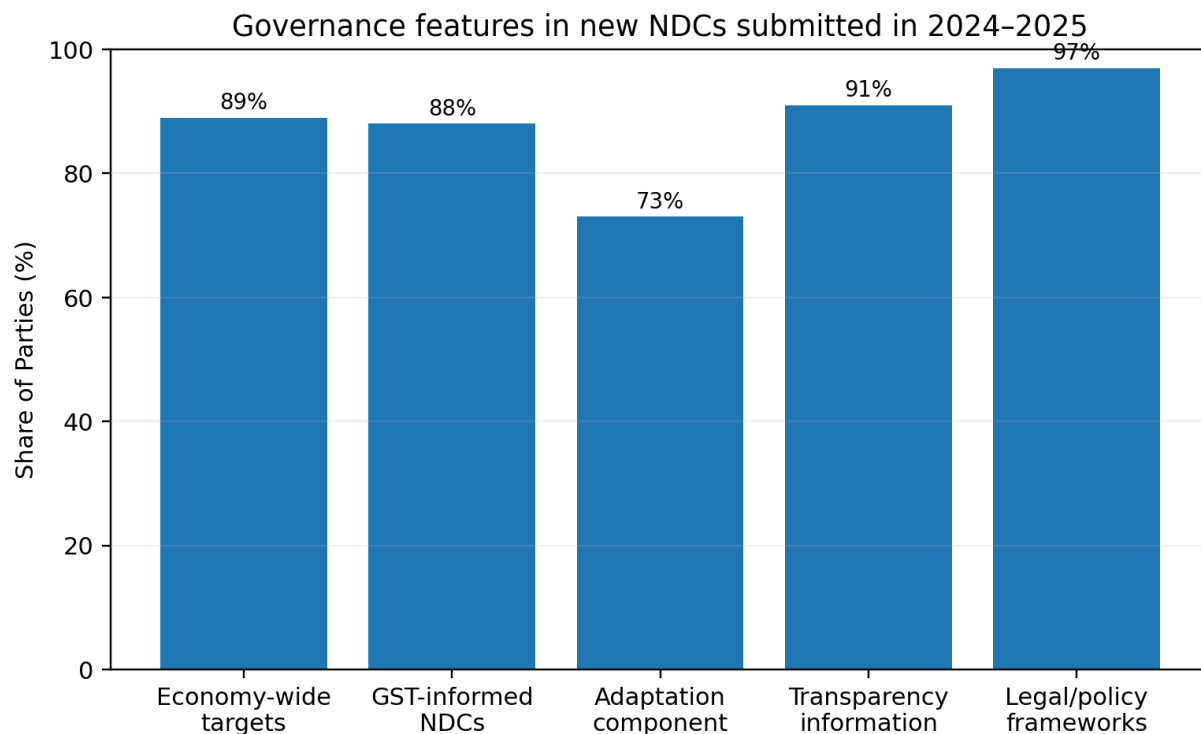


Figure 1. Governance features in new NDCs submitted in 2024–2025. Source: UNFCCC (2025a).

The governance significance of these indicators is greater than simple document compliance. Economy-wide targets widen sectoral coverage, legal and policy frameworks connect international pledges to domestic institutions, and explicit use of Global Stocktake findings demonstrates feedback from collective assessment into national planning. The UNFCCC's first synthesis of Biennial Transparency Reports also covered submissions representing roughly three quarters of global greenhouse-gas emissions in 2020, illustrating the growing reach of the Paris transparency system (UNFCCC, 2025b). Transparency can improve trust and comparability, but it does not automatically guarantee implementation; its value lies in making progress, shortfalls and support needs more visible.

3.3 Agreement effectiveness: ambition and implementation remain misaligned

The results reveal a clear distinction between procedural effectiveness and environmental sufficiency. Procedurally, the Paris regime has broadened participation and improved iterative reporting. Environmentally, global emissions trajectories remain inconsistent with the temperature goals at the required pace. UNEP (2024) estimated 2030 global emissions of around 57 GtCO_{2e} under current policies, about 55 GtCO_{2e} under unconditional NDCs and about 52 GtCO_{2e} if conditional NDC elements are fully implemented. This means that even implementation of stated commitments would require further strengthening to align with a 1.5°C pathway, while existing policies remain weaker than the pledges themselves.

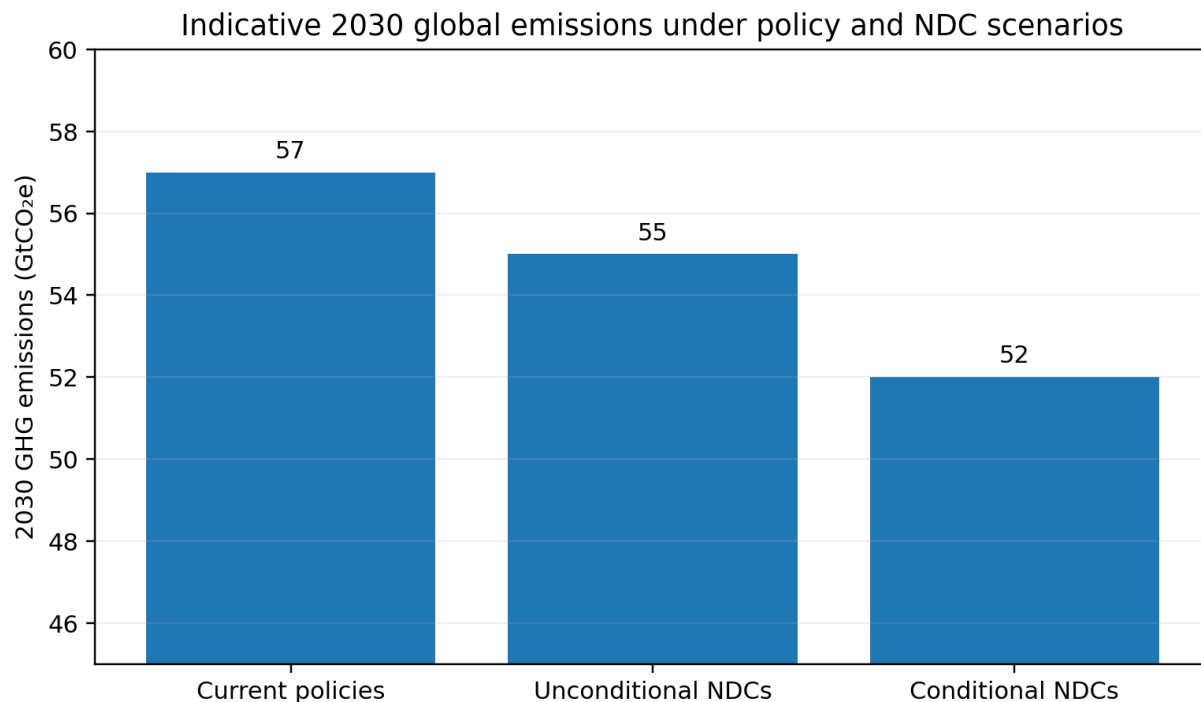


Figure 2. Indicative 2030 global emissions under current-policy and NDC scenarios. Source: UNEP (2024).

Table 2. Evidence on the effectiveness of the Paris governance cycle

Dimension	Observed evidence	Interpretation	Governance implication
Participation	Near-universal Paris framework and repeated NDC submissions	High legitimacy and broad inclusion	Participation is a major institutional achievement
Progression	New NDCs increasingly use economy-wide targets and GST findings	Procedural learning and policy updating are occurring	Five-year cycles can ratchet ambition, but not automatically
Transparency	Growing BTR coverage and clearer NDC information	Improved visibility of implementation and support gaps	Accountability is increasingly informational and reputational
Implementation	Current policies imply higher 2030 emissions than NDC pathways	National policy delivery lags international pledges	Domestic execution is now the critical bottleneck
Temperature alignment	NDC trajectories remain above 1.5°C-consistent pathways	Collective ambition remains insufficient	Future NDCs require deeper emissions cuts and faster implementation

This implementation gap clarifies the limited meaning of describing the Paris Agreement as either a success or failure in binary terms. It has been successful in constructing a durable, inclusive and increasingly data-rich cooperation framework. It has been insufficient in generating aggregate emissions reductions consistent with the agreed temperature objective. The institutional challenge is therefore to convert soft but recurring mechanisms—transparency, peer comparison, stocktaking, finance and diplomatic pressure—into stronger national policy packages. This reflects Falkner's (2016) argument that Paris relies more on iterative political mobilisation and domestic ownership than on top-down allocation of legally binding national emissions quotas.

3.4 Climate finance: growth in flows but a persistent scale problem

Climate finance is the clearest material test of equity and reciprocity in the climate regime. OECD tracking shows that developed countries provided and mobilised USD 115.9 billion for developing countries in 2022, USD 132.8 billion in 2023 and USD 136.7 billion in 2024 (OECD, 2026). The earlier USD 100 billion benchmark was therefore exceeded for three consecutive years from 2022 to 2024, although it was achieved later than the original 2020 target. This progression is significant for institutional credibility because finance commitments are closely linked to developing-country willingness and capacity to implement conditional NDC measures.

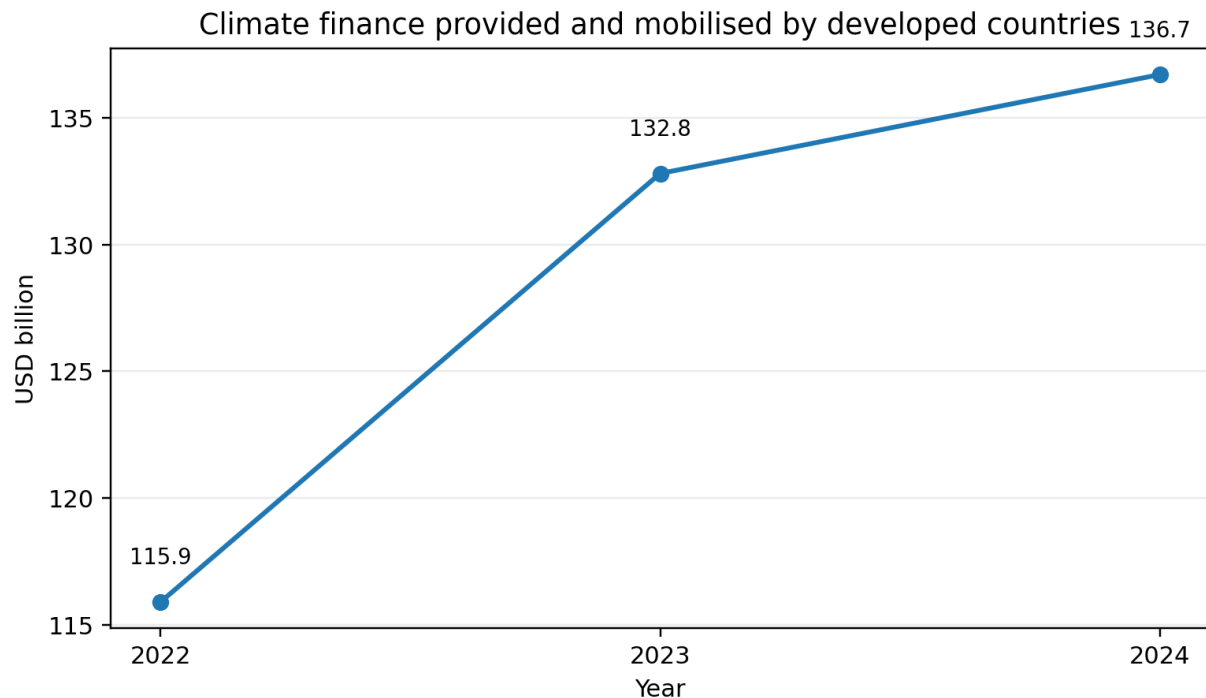


Figure 3. Climate finance provided and mobilised by developed countries, 2022–2024. Source: OECD (2026).

The scale challenge nevertheless remains substantial. COP29 replaced the earlier benchmark with a new collective quantified goal under which developed countries are to take the lead in mobilising at least USD 300 billion per year by 2035 for developing countries, while all actors are called upon to enable scaling from public and private sources to at least USD 1.3 trillion per year by 2035 (UNFCCC, 2024). The difference between recent achieved flows and the new financing scale illustrates that institutional effectiveness must be judged not only by whether finance grows, but also by whether it is adequate, predictable, accessible and appropriately balanced between mitigation and adaptation.

The World Bank Group reported USD 42.6 billion in climate finance in fiscal year 2024, a 10% increase over the previous year, and committed to devote 45% of annual financing to climate action by 2025 (World Bank, 2024). Such multilateral flows can leverage larger pools of capital and

mainstream climate considerations into development lending. However, public and multilateral finance also raises governance questions regarding grant versus loan composition, debt sustainability, project additionality and access for low-capacity countries. From a climate-justice perspective, the effectiveness of finance institutions depends on whether resources reach highly vulnerable countries and support locally appropriate adaptation, not simply on aggregate disbursement totals.

3.5 Governance challenges: sovereignty, equity, fragmentation and capacity

Four cross-cutting constraints were consistently identified across the documentary evidence. First, national sovereignty remains structurally embedded in the Paris model. NDCs are nationally determined, so international institutions cannot impose uniform substantive targets. This design protects participation but makes global ambition dependent on domestic political economy. Fossil-fuel interests, energy-security concerns, electoral cycles and development priorities can all weaken implementation even where governments have accepted international goals.

Second, equity affects both legitimacy and capacity. The climate regime recognises differentiated responsibilities and capabilities, yet disagreements persist over historical responsibility, the distribution of mitigation burdens, adaptation finance, loss and damage, and the terms of technology access. Finance therefore functions not only as an economic input but also as a political trust mechanism. Delayed or difficult-to-access support can weaken confidence in collective bargains and reduce the feasibility of conditional commitments in developing countries.

Third, institutional fragmentation produces both flexibility and coordination costs. Climate governance involves the UNFCCC, IPCC, multilateral development banks, specialised funds, UN agencies, regional bodies, national governments, cities, firms and civil-society organisations. Polycentric governance allows experimentation and multiple entry points, but overlapping mandates can create duplicated reporting, inconsistent metrics and competition for limited administrative capacity. Better interoperability of data, finance standards and implementation support is therefore a practical governance priority.

Fourth, capacity remains uneven. The 2025 NDC synthesis reports significant improvement in legal and policy frameworks, but high-quality planning does not ensure execution where institutions lack technical expertise, project preparation capacity, grid infrastructure, fiscal space or access to affordable capital. Technology transfer is similarly shaped by intellectual property, investment conditions, local skills, supply chains and absorptive capacity. International institutions can lower these barriers through concessional finance, readiness support, standards, knowledge sharing and risk guarantees, but their impact depends on sustained country-level institutions.

3.6 Synthesis against the research objectives

Table 3. Summary of findings by research objective

Research objective	Key finding	Evidence base	Assessment
Role of international institutions	Institutions structure negotiation, science, transparency, finance and technical cooperation.	UNFCCC, IPCC, World Bank, OECD documents	Strong role in enabling and coordinating action; weak direct coercion
Effectiveness of climate agreements	Paris architecture improves participation, reporting and iterative ambition, but aggregate mitigation remains insufficient.	UNFCCC NDC/BTR syntheses; UNEP emissions-gap evidence	Procedurally effective; environmentally insufficient at current ambition and implementation
Governance challenges	Sovereignty, equity disputes, fragmented institutions and uneven capacity impede delivery.	Cross-document thematic synthesis	Challenges are political and distributive, not merely technical
Finance and technology transfer	Finance has increased and governance goals have expanded, but scale, access and adequacy remain major constraints.	OECD, UNFCCC COP29, World Bank	Positive trend, but support gap remains large

Overall, the results indicate a governance system that is stronger in coordination, information and norm-setting than in enforcement. International institutions have successfully created a common language of targets, reporting and finance, while national governments retain decisive authority over domestic implementation. The performance gap is therefore best understood as an institutional

interdependence problem: global institutions can organise cooperation and support, but national institutions must translate that cooperation into energy, transport, land-use, industrial and adaptation policies capable of changing real-world emissions and vulnerability outcomes.

A further result concerns institutional sequencing. Scientific assessment, political negotiation, national planning, transparency review and finance mobilisation operate on different cycles, creating timing mismatches. For example, new scientific findings may precede domestic legislative change, while finance commitments may be negotiated before project pipelines are ready. These lags help explain why stronger international signals do not immediately appear as lower global emissions. The governance problem is consequently temporal as well as political: institutions must maintain pressure and support across multiple policy cycles long enough for investment stocks, infrastructure and regulatory systems to change.

4. Discussion

The findings support a differentiated evaluation of global climate governance. International institutions have not solved the collective-action problem, but they have altered the strategic environment in which states act. The Paris system creates repeated obligations to formulate NDCs, explain progress, report emissions and participate in collective assessment. This recursive structure can generate reputational pressure, policy learning and domestic institutionalisation even without a supranational enforcement authority. The high share of new NDCs linked to the Global Stocktake is particularly important because it demonstrates that the feedback mechanism designed into Paris is functioning at the procedural level.

However, the emissions evidence confirms that procedural compliance is not equivalent to climate effectiveness. The continuing difference between current-policy trajectories and NDC trajectories indicates an implementation deficit, while the broader gap to 1.5°C pathways indicates an ambition deficit. These are analytically distinct problems. Implementation requires credible domestic policies, investment and administrative capacity; ambition requires governments to adopt stronger targets. International institutions can influence both through transparency, finance and diplomatic processes, but neither can be guaranteed by treaty procedure alone.

The results also reinforce the centrality of climate justice. The legitimacy of global governance depends on whether differentiated capabilities and vulnerabilities are reflected in financial and technological support. The increase in climate finance since 2022 is therefore meaningful, yet the new COP29 finance goals reveal how far demand has outgrown the earlier USD 100 billion benchmark.

Effective finance must also be assessed qualitatively: debt-creating flows, complex access procedures or mitigation-heavy portfolios may not adequately serve vulnerable states facing urgent adaptation and loss-and-damage needs. This implies that institutional reform should focus on access, concessionality, predictability and country ownership alongside aggregate volume.

A further implication is that fragmentation should be managed rather than assumed to be wholly negative. Multiple institutions can provide specialisation and experimentation, but coordination is essential to reduce transaction costs. Greater alignment among UNFCCC reporting, multilateral development-bank diagnostics, climate-fund project pipelines and national planning systems could make governance more implementation-oriented. Likewise, the role of non-state actors should be integrated into formal review processes without weakening state accountability, because cities, firms, investors and civil society increasingly control resources and implementation capabilities relevant to climate outcomes.

Finally, the study highlights a methodological point. The uploaded synopsis proposed interviews with institutional, government, NGO and finance stakeholders, but no interview dataset was supplied. The present paper therefore does not claim interview-based findings. A subsequent empirical phase could test the documentary conclusions through purposive interviews, particularly on why finance access remains difficult, how Global Stocktake outcomes affect domestic policy decisions, and where institutional mandates create duplication. Such field evidence would strengthen causal interpretation beyond the documentary synthesis presented here.

These findings are consistent with the broader literature on international cooperation, which expects institutions to reduce information problems, lower negotiation costs and create repeated interactions, while recognising that states retain substantial control over implementation. In climate governance, this means that transparency and review can expose performance gaps, but domestic political coalitions and investment choices ultimately determine whether targets are achieved. The strongest institutional reforms are therefore likely to be those that connect international review to concrete domestic incentives, financing conditions and implementation assistance rather than relying on formal commitments alone.

5. Conclusion

International institutions are essential to climate governance because they provide common rules, scientific assessment, transparency, finance and coordination. The UNFCCC and Paris Agreement have strengthened cooperation through recurring NDCs, reporting requirements and the Global

Stocktake, while recent NDCs show broader coverage and stronger policy frameworks. However, the main challenge is no longer agreement-making but implementation. Current policies remain insufficient to meet pledged pathways, and existing pledges are still inadequate for a 1.5°C trajectory. Institutions must therefore focus on stronger domestic delivery, comparable transparency, faster policy responses to stocktake findings and greater accountability for persistent underperformance.

Climate finance is equally critical. Although developed-country finance exceeded USD 100 billion annually from 2022 to 2024, future effectiveness will depend on scaling support, improving access and concessionality, strengthening adaptation and technology deployment, and building capacity in developing countries. Ultimately, climate governance should be judged by measurable, equitable real-economy transformation, supported by credible national plans, sectoral policies and finance that reaches implementation quickly.

Conflict of Interest

The author declares that there are no conflicts of interest associated with this research. The author has no financial, personal, or professional relationships that could have influenced the design, analysis, interpretation, or reporting of the findings presented in this manuscript.

Author Contributions

Conceptualization, methodology development, data analysis, and machine learning framework design was performed by the the author. Manuscript preparation, visualization, and interpretation of results was carried out by the Anjli. Author reviewed, revised, and approved the final version of the manuscript.

References

- Falkner, R. (2016). The Paris Agreement and the new logic of international climate politics. *International Affairs*, 92(5), 1107–1125. <https://doi.org/10.1111/1468-2346.12708>
- Intergovernmental Panel on Climate Change. (2023). *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. IPCC. <https://doi.org/10.59327/IPCC/AR6-9789291691647>
- Organisation for Economic Co-operation and Development. (2024). *Climate finance provided and mobilised by developed countries in 2013–2022*. OECD Publishing. <https://doi.org/10.1787/19150727-en>

- Organisation for Economic Co-operation and Development. (2026). Climate finance provided and mobilised by developed countries in 2013–2024. OECD Publishing. <https://doi.org/10.1787/ab5eb9ad-en>
- United Nations Environment Programme. (2024). Emissions Gap Report 2024: UNEP.
- United Nations Framework Convention on Climate Change. (1992). United Nations Framework Convention on Climate Change. United Nations.
- United Nations Framework Convention on Climate Change. (2015). Paris Agreement. United Nations.
- United Nations Framework Convention on Climate Change. (2023). Outcome of the first global stocktake (Decision 1/CMA.5). United Nations.
- United Nations Framework Convention on Climate Change. (2024). COP29 outcomes: New collective quantified goal on climate finance. United Nations.
- United Nations Framework Convention on Climate Change. (2025a). Nationally determined contributions under the Paris Agreement: 2025 synthesis report (FCCC/PA/CMA/2025/8). United Nations.
- United Nations Framework Convention on Climate Change. (2025b). 2025 synthesis report of biennial transparency reports. United Nations.
- World Bank. (2024). Annual Report 2024: Financial summary and climate finance. World Bank Group.