Future Earth
A Student Journal on Sustainability and Environment

PERSPECTIVES ON THE ECONOMICS OF CLIMATE CHANGE

Online ISSN: 2819-7046 SPECIAL ISSUE: ECONOMICS OF CLIMATE CHANGE 2026

COMMENTARY

Why International Climate Agreements Are Hard to Enforce

LILY RICLE CARRERA & KATHERINE FLORES
THOMPSON RIVERS UNIVERSITY

International climate agreements aim to coordinate global action on climate change, yet most have struggled to deliver meaningful emissions reductions. Treaties such as the Kyoto Protocol and the Paris Agreement seek to limit carbon emissions, but enforcement remains weak due to unequal economic incentives, limited penalties, and national self-interest. These challenges are intensified by financial disparities, leading many countries, especially major emitters, to prioritize short-term growth over long-term climate goals. Our research examines how these factors undermine coordination and produce inefficient outcomes, and it identifies economic and political mechanisms needed to ensure broad, enforceable participation in global emissions reduction.

https://doi.org/10.29173/bcelnfe774

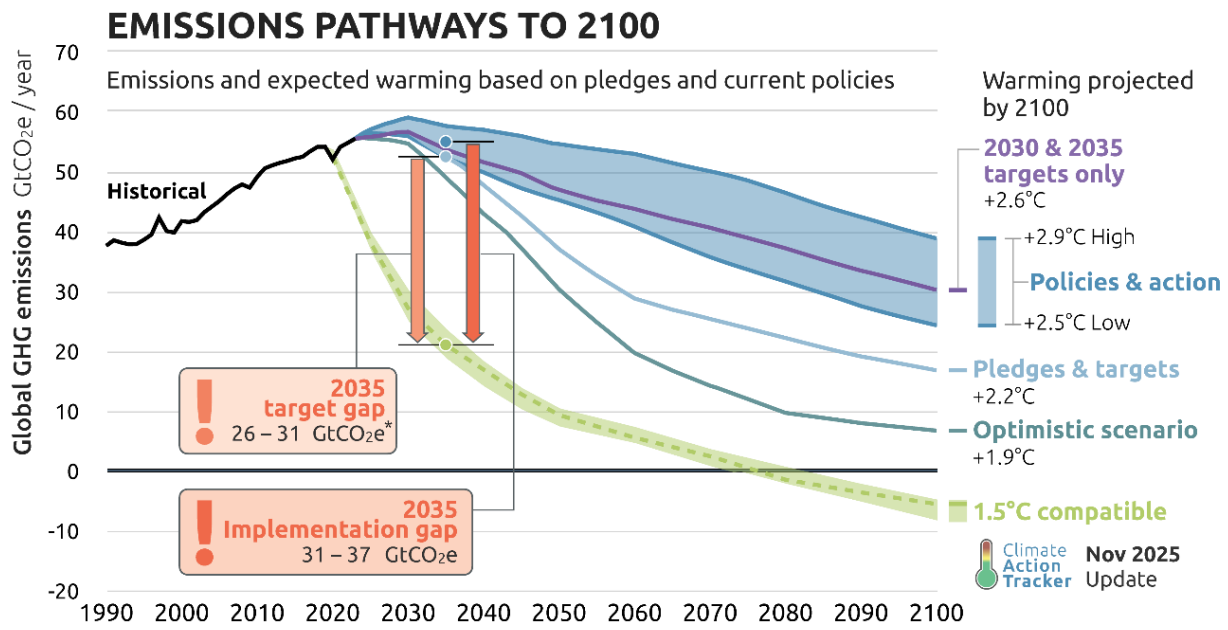

Figure 1: *Emissions Pathways to 2100*
Source: Climate Action Tracker (2025) © 2009–2026 Climate Analytics and NewClimate Institute. Used with permission; non-commercial academic use only.
Long Description

When it comes to climate change, it is easy for nations to set ambitious goals, but even easier for them to avoid taking real action. Figure 1 illustrates different emissions pathways and the corresponding temperature outcomes the world is heading toward. Each pathway demonstrates the type of future we could face depending on the level of commitment from nations. With current policies in place, the world is projected to reach 2.6°C of warming, far above the 1.5°C goal set in the Paris Agreement. Even with the promises made by nations to reduce emissions by 2030/2035, projected warming remains largely unchanged, showing that near-term commitments are insufficient to alter our trajectory.

Looking at long-term commitments, even if countries fulfilled all their stated national targets, warming would still reach about 2.2°C. Only under an optimistic scenario, in which every nation achieves its net-zero goals and significantly strengthens implementation, would warming fall to around 1.9°C. This makes it clear that the world is still far from the 1.5°C pathway.

Table 1 demonstrates that no nation has a strong incentive to collaborate or show genuine political will. Climate agreements rely heavily on voluntary participation, which encourages free-riding. As Gupta and van Deursen (2025) note, the Paris Agreement was

explicitly designed around nationally determined contributions (NDCs) rather than binding requirements, leaving transparency as the primary accountability mechanism. In the absence of sanctions, major emitters can postpone decisive action without facing tangible consequences.

Table 1: *Key Barriers to Enforcement in International Climate Agreements*

Problem	What It Means	Why It Undermines Agreements
Free-riding & No Penalties	Participation and targets are voluntary, no enforcement for noncompliance. Gupta and van Deursen (2025).	Major emitters can delay action without consequences, creating classic collective-action failure.
Weak Political Institutions & Accountability	Effectiveness of transparency and "naming and shaming" depends on domestic institutions. Dannenberg et al. (2023)	Only countries with strong courts, media, and democratic accountability respond, weak-governance states ignore reputational pressure.
Capacity & Implementation Gap	Countries adopt ambitious NDCs but lack bureaucratic, technical, or financial capacity to execute them. (Peterson & van Asselt, 2025).	Even supportive governments fail to implement policies, causing persistent gaps between commitments and real mitigation.
Inequality Between Countries	Developing states face high costs and limited resources; developed states have historic responsibility but uneven leadership. (Mracvocá, 2025)	Many developing countries cannot meet NDCs without external support, reducing incentives and trust in the system.
Ambition–Compliance Tension	Diplomatic pressure pushes states to announce ambitious pledges they cannot realistically meet. (Stanković et al., 2023)	Unrealistic NDCs lead to weak implementation, backsliding, and declining credibility of the entire agreement.

Compliance also depends significantly on national political institutions. As Dannenberg et al. (2023) explain, naming and shaming can only be effective where courts, the media, and democratic accountability are strong. In addition, many institutions have brought nations to court for climate change inaction. Both the Urgenda v. Netherlands decision (Environmental Law Alliance Worldwide, 2025), and the KlimaSeniorinnen v. Switzerland case (European Court of Human Rights, 2024) illustrate how national and regional courts can compel governments to strengthen their climate actions, treating inadequate climate policies as potential human rights violations.

Institutional capacity is one of the most persistent structural limitations according to Peterson & van Asselt (2025). Many countries struggle with the implementation of climate policies; consequently, ambitious NDCs, or even well-designed climate policies, cannot deliver major results, especially in countries with insufficient resources or political constraints. This reinforces the idea that weak institutional capacity is a fundamental reason why international climate agreements remain difficult to implement.

The imbalance in the commitments of developed and developing countries has marked climate agreements, according to Mravcová (2025). Developed countries, which typically have greater financial capacity, are historically among the largest emitters yet often fail in mitigation leadership.

Meanwhile, many developing countries remain behind in meeting their climate goals due to gaps in capacities and unequal responsibilities.

At the same time, flexibility within international agreements can undermine credibility. According to Stanković et al. (2023), Chad's hasty and unrealistic pledge in 2015 and Brazil's weakening of its NDC illustrate how pressure to increase ambition can lead to politically or economically unfeasible commitments. These dynamics lead to a lack of actual compliance and thus to the failure of international climate agreements by turning them ineffective and unrealistic.

Structural economic incentives, weak political institutions, and global disparities make international climate agreements difficult to enforce. While transparency and diplomatic pressure help, they cannot replace national capacity and binding mechanisms. Without stronger institutions, fairer responsibility frameworks, and real commitment beyond voluntary pledges, global coordination on climate action will remain ineffective. Otherwise, today's promises risk becoming tomorrow's regrets.

Future generations will be the ones who pay the price, reflecting a lack of empathy toward future societies. At this point, the real question is whether global leaders are willing to turn their promises into meaningful action. Without stronger cooperation and enforceable commitments, the world will continue drifting away from the goals it agreed to. Our future depends on whether nations choose meaningful action over political rhetoric.

What is missing is a global governing body capable of providing global public goods (e.g., climate stability, pandemic prevention, biodiversity protection, and deep ocean/space governance). Table 2 summarizes five foundational aims of such a body: legitimacy, mandate clarity, effectiveness, accountability, and equity, alongside the institutional conditions that would

make each aim operational in practice. Together, these conditions outline the minimal architecture for a global body that is both normatively justified and functionally capable of addressing problems that no nation can solve alone.

Table 2: *Aims and Required Conditions of a Global Institution for Global Public Goods.*

Aim	Required Condition
1. Ensure legitimacy for global decisions	One-person–one-vote global elections; universal, non-discriminatory voter access; protections against state interference.
2. Prevent jurisdictional overreach and maintain state sovereignty	Authority restricted to true global public goods (climate, pandemics, space, oceans, and deep seas, global commons) guided by issues that require collective global action.
3. Deliver global public goods effectively and avoid free-riding	Ability to raise stable revenue (e.g., carbon levies on global sectors) and impose proportional sanctions for non-compliance.
4. Maintain trust, fairness, and institutional integrity	Open deliberation, documented voting, independent auditing, conflict-of-interest rules, and judicial review mechanisms.
5. Achieve fair burden-sharing across countries and generations	Contribution formulas acknowledging historical responsibility and capacity; guaranteed support for vulnerable and low-income regions; inclusive representation structures.

Until this occurs, global public goods will be underprovided!

Acknowledgements

We are deeply grateful to Professor Tsigaris for his guidance, contributions, encouragement, and thoughtful feedback throughout the development of this commentary; his support greatly strengthened our work. We also acknowledge the use of AI assistance (ChatGPT) for editing and improving the clarity of the text. All remaining errors are our own.

References

Climate Action Tracker. (2025, November 13). Emissions pathways to 2100 [Web page and figure]. Climate Analytics & NewClimate Institute. https://climateactiontracker.org/global/emissions-pathways/

Dannenberg, A., Lumkowsky, M., Carlton, E. K., & Victor, D. G. (2023). Naming and shaming as a strategy for enforcing the Paris Agreement: The role of political institutions and public concern. *Proceedings of the National Academy of Sciences, 120*(40), e2305075120. https://doi.org/10.1073/pnas.2305075120

Environmental Law Alliance Worldwide (ELAW). (2019). *Urgenda Foundation v. The State of the Netherlands.* https://elaw.org/resource/urgenda-foundation-v-the-state-of-the-netherlands

European Court of Human Rights. (2024). *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (Application No. 53600/20). Council of Europe. https://hudoc.echr.coe.int/eng/#{%22itemid%22:[%22002-14304%22]}

Gupta, A., & van Deursen, M. (2025). Making transparent the accountability deficit in the global climate regime. *NPJ Climate Action, 4*, Article 60. https://doi.org/10.1038/s44168-025-00264-z

Mravcová, A. (2025). Assessing the effectiveness of international climate agreements in mitigating global warming. *Studia Ecologiae et Bioethicae, 23*. https://doi.org/10.21697/seb.5835

Nordhaus, W. D. (2015). Climate clubs: Overcoming free-riding in international climate policy. *American Economic Review, 105*(4), 1339–1370. https://doi.org/10.1257/aer.15000001

Peterson, L., & van Asselt, H. (2025). Assessing risks to the implementation of NDCs under the Paris Agreement. *Climate Policy.* https://doi.org/10.1080/14693062.2025.2513023

Stanković, T., Hovi, J., & Skodvin, T. (2023). The Paris Agreement's inherent tension between ambition and compliance. *Humanities and Social Sciences Communications, 10*(550). https://doi.org/10.1057/s41599-023-02054-6

Long Description

Figure 1: Line graph illustrating projected global greenhouse gas (GHG) emissions pathways to the year 2100 and the warming outcomes associated with different climate policy scenarios. The vertical axis shows global emissions in gigatonnes of CO_2 equivalent per year ($GtCO_2e$/year), while the horizontal axis spans from 1990 to 2100.

A black line represents historical emissions, which rise steadily from roughly 38 $GtCO_2e$ in 1990 to around 55 $GtCO_2e$ by 2020.

Beyond 2020, several projected pathways are shown:

- Policies and action scenario (blue shaded band) represents emissions expected under current policies. Emissions decline slowly and remain relatively high, corresponding to projected warming of approximately 2.5–2.9°C by 2100.
- Pledges and targets scenario (light blue line) reflects emissions reductions if countries meet their stated climate pledges, leading to projected warming of about 2.2°C.
- Optimistic scenario (teal line) shows stronger mitigation efforts that reduce emissions more rapidly, corresponding to approximately 1.9°C of warming.
- 1.5°C-compatible pathway (green shaded line) illustrates the steep reductions needed to limit warming to 1.5°C, requiring rapid emissions declines beginning immediately and reaching near-zero later in the century.

The figure highlights two key gaps in 2035:

- A “target gap” of roughly 26–31 $GtCO_2e$, representing the difference between emissions under current targets and the level consistent with the 1.5°C pathway; and
- An “implementation gap” of about 31–37 $GtCO_2e$, representing the difference between current policies and the emissions reductions required to meet the 1.5°C goal.

Overall, the graphic emphasizes that existing policies and pledges fall well short of the emissions reductions needed to limit global warming to 1.5°C.

Back to Figure 1

Authors

Lily Ricle Carrera is an Ecuadorian undergraduate student pursuing a Bachelor of Arts in Economics and Political Science at Thompson Rivers University in Kamloops, British Columbia, Canada. She is completing a minor in Environmental Economics and Sustainable Development, with academic interests focused on international economics, climate policy, and the institutional challenges of global environmental cooperation. Her research explores how economic incentives, political institutions, and international agreements shape collective responses to climate change.

Alongside her academic work, Lily is actively involved in leadership and public communication initiatives. She serves as Media and Communications Lead at CFBX 92.5 campus radio, where she researches and presents discussions on economic and policy issues for public audiences. She has also participated in the Bank of Canada Governor's Challenge, collaborating with a student team to analyze macroeconomic conditions and develop monetary policy recommendations.

Through her academic studies and community engagement, Lily aims to contribute to policy discussions that connect economic theory with practical solutions for sustainable development and international cooperation.

Katherine Flores de Sanchez is an international student from El Salvador pursuing a Post-Baccalaureate Diploma in Economics at Thompson Rivers University in British Columbia, Canada. She previously earned a Bachelor's degree in International Relations from the University of El Salvador. Her academic focus in Economic studies is deeply influenced by a perspective of environmental issues, sustainable and future-oriented development, natural resource management, and public policy.

Her research examines the barriers that countries face in implementing and complying with international climate agreements. In particular, she explores how structural economic incentives, institutional limitations, and global inequalities can undermine coordination and enforcement, helping to explain why many climate commitments fall short of their intended goals.

She is particularly interested in how environmental policies and international agreements are designed and implemented, as well as the economic and political dynamics that shape countries' attitudes toward environmental commitments. She looks to contribute to the critical discussion around public policies, future design and implementation of international climate agreements and countries' responses to the climate change crisis.