



Evaluating the Effectiveness of the Paris Agreement and Challenges to International Climate Cooperation: A Political, Economic, and Justice-Based Analysis

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Abstract

The Paris Agreement (2015) marked a significant change in international climate regulation, as it does not have binding targets and instead contains a flexible, bottom-up system of nationally determined contributions (NDCs). Although this construction ensured almost universal participation, its use of voluntary commitments and lax implementation schemes has constrained its capacity to achieve the profound, fair cuts in emissions to curb warming to 1.5C. This study critically analyzes the effectiveness of the Agreement, its institutional structure, the dynamics of ambition, transparency framework, Article 6 market mechanism and finance. Basing his analysis on the prominent scholarly works, global climatic evaluation, and documentation undertaken by the UN, the analysis recognizes political self-interest, economic inequalities, unresolved differentiation, and finance gaps as key obstacles to real international collaboration. These structural vices are more impactful in developing countries. By examining Uzbekistan, a climate-vulnerable, and lower-middle-income Central Asian nation engaged in Article 6, this paper shows how the global challenges are being reflected at national levels, such as conditional NDCs, MRV capacity limitations, and reliance on outside assistance. The results highlight that in the absence of enhanced accountability, scaled and predictable climate finance, operationalized equity under CDBRRRC, and hybrid governance, the Paris framework may stay aspirational, as opposed to transformative. The policy recommendations aim to achieve convergence in Article 6, improve domestic surveillance, and apply the principles of just transition to bridge the ambition and equity gap.

Keywords: Paris Agreement; Nationally Determined Contributions; Economic inequalities; Uzbekistan case study; Hybrid governance

1. Introduction

Climate change is one of the major challenges of the 21 st century in the world, and it requires concerted efforts on a global level. The increasing global temperatures, recurring extreme weather conditions, and continuous environmental degradation are an indication of the need to collaborate internationally. The Paris Agreement, which was formed in 2015, is a historic initiative against climate change with an international framework for action. Even though it has had great goals, there is still controversy on its effectiveness and the capacity of countries to collaborate effectively. This research assesses the Paris Agreement's effectiveness and explores obstacles to international cooperation. It claims that, despite the fact the Agreement has been instrumental in enhancing unity among nations, it has a weak effect due to political conflicts, economic interests, and climate justice challenges.

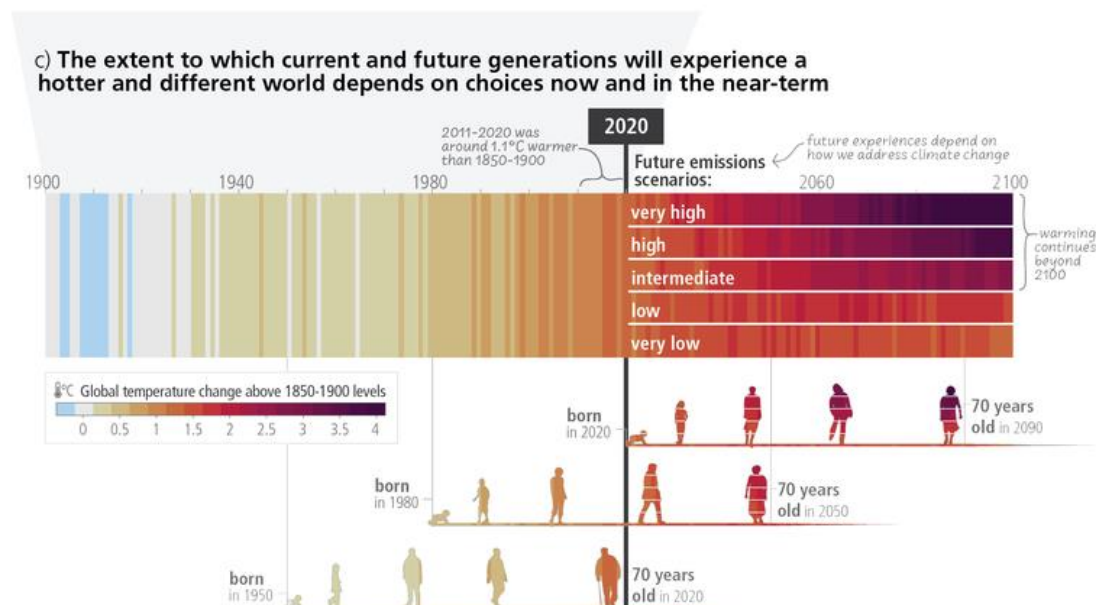


Figure 1. IPCC AR6 Synthesis Report SPM.1 - Observed and projected global temperature changes, the lived experience of the various generations under different emission scenarios (IPPC, 2023).

Source: images.axios.com

According to Figure 1, it is already evident that since 1850, warming has been observed and future projections show that the current youth will have their own existence in radically different climatic conditions based on the decisions they make soon. The policies of NDCs are currently monitoring intermediate-to-high scenarios; well above the 1.5°C target of the Paris Agreement. These visual highlights the sense of urgency and the boundaries of voluntary cooperation: unless more ambitious and more enforceable measures are taken, perilous warming will become entrenched in the vulnerable countries.

A multilateral response was a breakthrough in the 2015 Paris Agreement. In contrast to the Kyoto Protocol with its strict targets-and-timetable framework, Paris has a loose, bottom-up structure whereby the focus is on nationally determined contributions (NDCs). This design option facilitated virtually universal participation - nearly all countries made a first NDC - and incorporated dynamic features such as five-year ambition cycles, a global stocktake, and a stronger framework of transparency. Ideally, the Agreement is a pragmatic concession between sovereignty and collective action that is founded on the concept of common yet differentiated responsibilities and respective capacities (CBDRRC) on account of different national conditions.

However, almost ten years into the adoption, the effectiveness of the Agreement in developing profound cooperation among the countries and providing transformative emission cuts is a controversial issue. Self-interest in politics frequently overrides long-term common interests; deep-rooted economic and developmental inequalities create a sense of a lack of responsibility between developed and developing countries; and the absence of solutions to differentiation, transparency, finance and enforcement keep undermining the trust. The renowned flexibility that allowed widespread support now threatens to allow free-riding and lack of ambition in the face of unbelievably shrinking 1.5°C-compromising paths.

The key research question is how effective is the Paris Agreement, and what are the challenges to limiting international action on climate change? It offers a conceptually well-developed, analytically strong analysis of the institutional design of the Agreement, ambition mechanisms, transparency and market provisions (especially Article 6) and finance architecture. CBDRRC is concerned with differentiation and equity in particular. The paper combines findings from the 2016 Harvard Project on Climate Agreements with current data in terms of IPCC AR 6, UNEP Emissions Gap Reports, and UNFCCC documentation. An intensive case study of Uzbekistan, a landlocked, climate-prone, developing nation in Central Asia, demonstrates how world systemic barriers reveals themselves on the national scale. The changing NDC trend and participation of Article 6 mechanisms in Uzbekistan can provide solid insights into the practical constraints and possibilities of the Paris regime.

1.2 Objectives

To evaluate the institutional effectiveness and the ability of the Paris Agreement to increase collective ambition critically.

To find and discuss the main political, economic, and equity related obstacles to closer international collaboration.

To explore the ways these global issues are being manifested in a developing-country setting with Uzbekistan as an example.

To make conceptually based, policy relevant suggestions on how the regime can be fortified to be more effective and equitable.

2. Literature Review

The literature shows that there is a conflict between the diplomatic scope of the Paris Agreement and its small effectiveness. According to Victor (2016), the flexibility of nationally determined contributions (NDCs) is in need of better quality that would capture real capacities, otherwise bottom-up cooperation will be merely superficial. Rajamani (2016) points out the lack of differentiation, where there are unclear definitions of developed and developing status and conditional NDCs, which jeopardize long-term legitimacy. According to Bodansky (2016), the transparency and Article 6 rules of the CMA are more of a non-binding nature, which makes them focus on sovereignty, which is a danger to their inconsistency in application. Researchers like Zou (2016) and Harstad (2016) determine the drivers of ambition and denounce the five-year update cycle and demand longer-term pathways and conditional commitments. Transparency systems are divided into the narrow and broad dimensions (Conte Grand 2016) and are based on domestic policy monitoring to create trust (Aldy 2016). Stavins (2016) and Marcu (2016) define the two tracks of article 6 as complementary, yet with strict integrity and fungibility are necessary. Barrett (2016) and Gallagher & Paterson (2016) suggest mini-multilateral and network-based approaches to accelerate action. Finance and adaptation gaps are underscored by Thompson (2016), Heal & Lee (2016), and Murray (2016). IPCC AR6 (2022) estimates that well-regulated Article 6 may reduce mitigation expenses by up to 50% and the UNEP Emissions Gap Report (2024) cautions that the present NDCs leave a big gap to the 1.5 C target. The case of Uzbekistan exemplifies the following difficulties: conditional NDCs, an Article 6-based cooperation requirement, and a mitigation and adaptation financing requirement of 33.7 bn and 15.7 bn, respectively, by 2030.

3. Main Analysis

3.1 Institutional Design and Ambition Dynamics

The bottom-up design of the Paris Agreement was an effective diplomatic invention. It succeeded in breaking the political gridlock, which plagued Kyoto, by giving countries sovereignty over their NDCs. This conceptually represents a movement of command-and-control objectives to iterative pledge and review. Nevertheless, with flexibility lacking robust accountability mechanisms, as Victor (2016) and Harstad (2016) suggest, the chances of continuing low ambition and free-riding are high. The IPCC AR6 WGIII (2022), affirms that the present policies and NDCs forecast a warming of 2.52.9C by 2100 which is much above the safe levels. The dynamic five-year cycles are not always sufficient to have plausible long-term plans on capital intensive sectors.

3.2 The concept of differentiation and Equity under CDBRRRC

Rajamani (2016) identifies differentiation as the most disputed basis of the Agreement. The shift towards a more subtle CDBRRRC model was a political necessity but did not include any operational specifics, including how to treat conditional NDCs and equity in the global stocktake. This generates chronic tensions between North and South: developing countries see finance and technology transfer as either differentiating or non-negotiable corollaries, and developed countries stress on universal action. According to IPCC (2023), a fair distribution of burden is a key to long-term collaboration.

3.3 Transparency and Domestic Surveillance

The basis of the pledge-and-review system is Transparency and Domestic Surveillance Transparency. As Conte Grand (2016) and Aldy (2016) point out, absence of domestic policy surveillance and clear metrics results in the distrust and learning due to asymmetric information. According to the IPCC AR6, to be credible, effective MRV is essential, but most developing nations have limited capacity in their data gathering and institutional coordination (IPCC, 2022b).

3.4 Article 6 Mechanisms: Opportunities, Governance Challenges, and Implications for Cooperation

Article 6 Mechanisms: Opportunities, Governance Challenges, and Implications to Cooperation Article 6 is conceptually aimed at increasing ambition in terms of cost-effective international cooperation and directing finance and technology to developing countries. It includes two tracks, one of decentralized cooperative approaches to Articles 6.26.3 (ITMOs) and the other one is a more centralized mechanism to Articles 6.46.7. Stavins (2016) views Article 6.2 as allowing heterogeneous non-harmonized bottom-up linkage of systems. Marcu (2016), emphasizes that quality metrics and fungibility need to meet in the two tracks to ensure a sustainable environment and liquidity in the market.

The IPCC AR6 WGIII (2022, Chapter 14) estimates that properly managed Article 6 mechanisms have the potential to cut mitigation costs in the world by as much as 50 per cent and enable more ambition especially with standardized methodologies and international controls in the 6.4 track. Nevertheless, the IPCC cautions the dangers as well: the weak additionality regulation, inadequate baseline establishment, and the lack of the corresponding adjustments may result in the creation of the so-called hot air credits, postponing the process of domestic decarbonization and undermining trust (IPCC, 2022a). This is also reflected in the UNEP Emissions Gap Report 2024 which states that Article 6 has a potential to mobilize finance to developing countries but the current implementation is inadequate to guard against low-quality credits and greenwashing (UNEP, 2024).

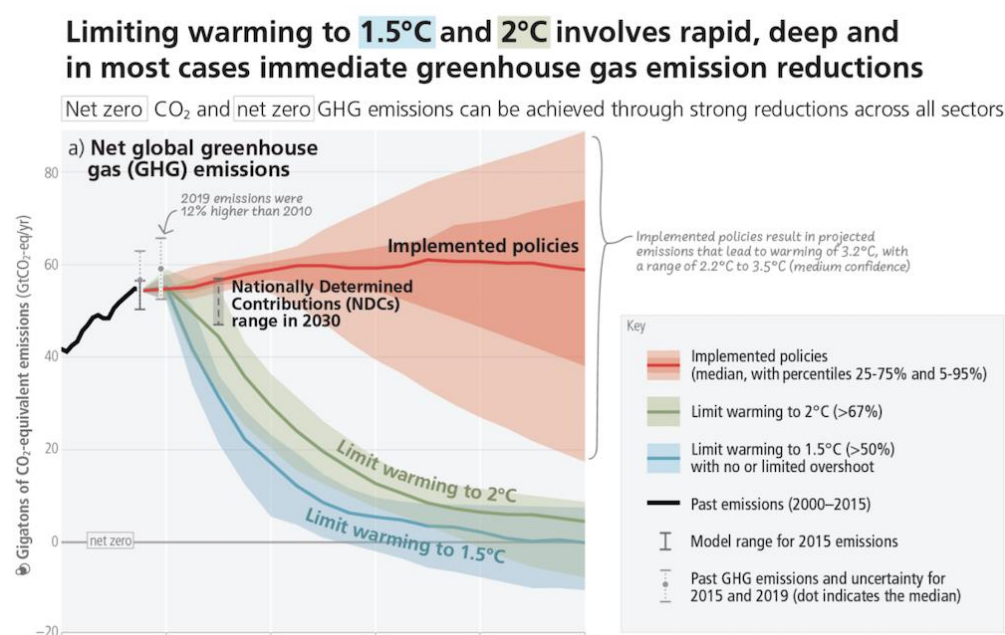


Figure 2. IPCC AR6 WGIII Global GHG emissions pathways with the current policies and NDCs and 1.5 C/2 C pathways (IPCC, 2022a).

Source: carbonbrief.org

The even conditional NDCs fail to satisfy the deep cuts that are needed in 2030 as shown in Figure 2. It is this gap in ambition that has led to this situation where voluntary pledges have not brought about adequate progress. The potential interim is offered by article 6 with the assistance of ITMOs and the centralized mechanism, which can be possible provided the integrity and convergence is ensured (Marcu, 2016; Stavins, 2016).

3.5 Finance and Adaptation Gaps

The deficit in Adaptation Gaps Finance remains dramatic. The fact that the adaptation requirement in developing countries is much greater than the existing flows is documented by UNEP (2024) and IPCC (2022a).

3.6 Case Study: Uzbekistan – Global Systemic Challenges Manifesting at the National Level

The example of Uzbekistan is typical and educative in terms of demonstrating the dynamics of the Paris Agreement in the context of the developing country. Being a landlocked, lower-middle-income country in a climate hot-spot (Central Asia), it has acute vulnerabilities: acute water shortage, desertification, degradation of the Aral Sea, and overreliance on climate-sensitive agriculture. According to the Uzbekistan Country Climate and Development Report (2023), by 2050, the unmitigated climate change would decrease GDP up to 10 percent, and

catastrophes already cost about 5 percent of the GDP each year and disproportionately impact vulnerable populations (World Bank, 2023).

The NDC trajectory of Uzbekistan shows that the Agreement has the potential of being iterative in its ambitions but shows its limitations. The first NDC (2018) was to cut down the severity of GHG emission by 10 percent unitary to GDP by 2030 (see the year 2010). This has been raised up to 35% in the 2021 update. Uzbekistan has submitted its third NDC (NDC 3.0) in November 2025, with an aim of a 50% reduction in intensity of GHG emissions per unit of GDP between 2010 and 2035, with a net-zero target in 2055 (UNFCCC, 2025a; UNDP, 2024). The NDC has been developed in an interdepartmental inclusive process, facilitated by UNDP, demonstrating the significance of domestic ownership and the benefits of ratcheting (UNFCCC, 2025a).

Uzbekistan proactively applies Article 6.2 with bilateral cooperative approaches with Japan (Joint Crediting Mechanism) and the Republic of Korea, and prioritizes the renewable energy, energy efficiency and methane capture efforts. The goals of these efforts are to bring in investment, create ITMOs in favor of the NDC, and transfer technology (UNFCCC, 2025b). The country submitted the first Biennial Transparency Report (BTR1) in late 2024, and it is developing an integrated national MRV system (RISQ platform) which is a pointer that the country is on track in regards to its transparency commitments (UNFCCC, 2024; UNFCCC, 2025b).

However, there is a systemic impediment that comes out during implementation. The NDC of Uzbekistan is still conditional to a large extent, which relies on the international assistance, indicating the equity concerns of Rajamani (2016) and the gap in differentiation. The financial demands are tremendous: approximately 33.7 billion of money is needed to mitigate and 15.7 billion of money is needed to adapt by 2030 (UNDP, 2024). Unless there is scaled and predictable climate finance and technology transfer, conditional elements are at risk of failure. The problem of setting of the base line capacity is also evident and the subsequent adjustments and the institutional coordination is also a challenge which is explicitly noted in the UNFCCC reporting of Uzbekistan as well as in agreement with the general developing country experience as seen in the IPCC reports (2022b) and UNEP (2024).

Every tonne of CO₂ emissions adds to global warming

Global surface temperature increase since 1850–1900 (°C) as a function of cumulative CO₂ emissions (GtCO₂)

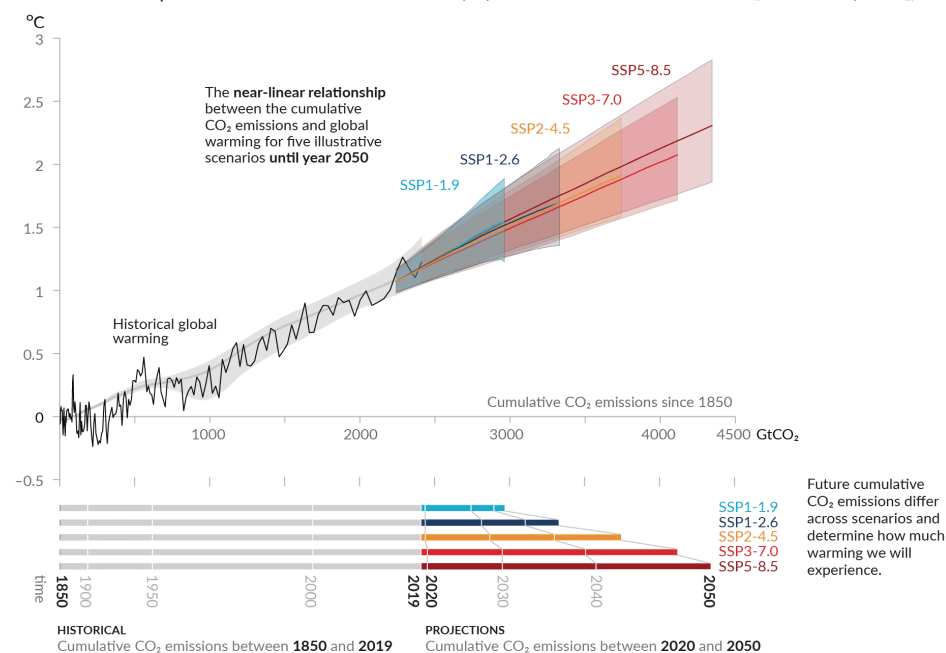


Figure 3. UNEP Emissions Gap Report 2024 - Global emissions pathways and warming projections (UNEP, 2024).

Source: <https://www.unep.org/resources/emissions-gap-report-2024>

Uzbekistan, as illustrated in Figure 3, has its conditional NDC 3.0 in the category of the conditional NDCs but must rely on the international assistance. Increased global warming increases the risks faced by Uzbekistan in the

region (water shortage, farm losses), which demonstrates the equity and finance gap described by Rajamani (2016), and the IPCC (2023).

Uzbekistan encourages mini-multilateral collaboration in the water-energy-food nexus and joint adaptation, which Gallagher (2016), however, advocates as mini-multilateralism. However, success remains to be dependent on the global mechanisms that provide fair results within CBDRRC.

The Uzbekistan experience sums up the two-sided reality of the Paris Agreement: voluntary NDCs have made possible the possibility to participate and engage in progressive ratcheting of ambitions even in resource-constrained environments, but systemic failures in enforceable accountability, sufficient finance, operationalized equity, and effective MRV remain the limiting factors to deeper and more transformative cooperation. To vulnerable countries, such as Uzbekistan, Article 6 provides a possible way to close the finance and technology divide, although only when the global rules provide additionally, integrity, and sustainable development co-benefits.

The households in the top 10% of per-capita emissions are responsible for 34%-45% of all global emissions

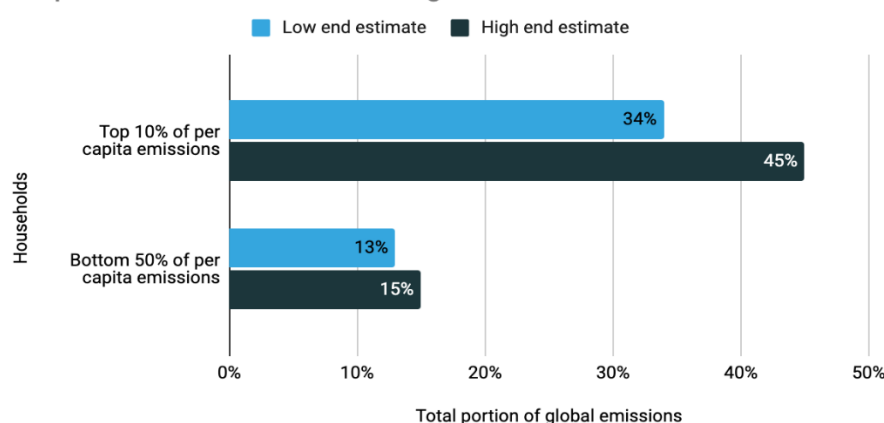


Figure 3. UNEP Emissions Gap Report 2024 - Global emissions pathways and warming projections (UNEP, 2024).

Source: <https://climatepromise.undp.org/>

Figure 4 indicates that risks spiral up once it is over 1.5-2o C. In the case of Uzbekistan, an increase in warming would result in greater water shortage and harvests, so its conditional NDC and Article 6 participation is both essential but inadequate without a scaled financing. These loopholes have not been sealed fast enough by the voluntary aspect of the Paris Agreement (UNEP, 2024).

4. Discussion

The Agreement has had a positive effect of standardizing discourse, and institutionalizing ambition cycles of iteration, but its efficacy is inherently limited by design decisions favoring national sovereignty over shared enforceability. In theory, the move to pledging and reviewing enabled wide involvement at the expense of the incentive base to make deep cuts. In most cases, there is the over-rule of long-term global benefits by political self-interest and immediate economic calculations. The issue of economic imbalance also creates a loophole in responsibilities, and lack of resolution to various differentiation problems under CBDRRC also creates a lack of trust.

The case of Uzbekistan is one of the concrete evidences of such dynamics. Political will has been shown in the country through ratcheting of its NDC to an intensity reduction target of 50% but implementation has been very reliant on foreign finance and technology. This is reflective of more general trends reported by the IPCC (2022a) and UNEP (2024): most developing countries are increasing ambition on paper but are weak on conditional aspects, because of a lack of finance and capacity. The opportunity to invest and transfer technology is possible through article 6 engagement, but without agreement on the integrity standards, it can only be a disjointed instrument instead of a well-known pump of cooperation.

There are possibilities of empowering the regime. Hybrid governance, i.e. multilateral rules with climate clubs, bilateral deals and mini-multilateral initiatives may help to speed up action where the universal processes fail (Gallagher, 2016; Carraro, 2016). Pure voluntarism may not be very practical, as extrinsic reciprocity, which connects climate commitments to trade or security or other policy areas, can be more practical. Much trust can be gained and good faith can be shown through innovative finance instruments (debt-for-climate swaps, Article 6 revenues, green bonds) and more robust domestic surveillance.

Nevertheless, these avenues need political goodwill which is yet to be adequate. Long-term climate overshoot leads to a higher chance of exceeding dangerous tipping points, and disproportionately affects vulnerable countries such as Uzbekistan. The lessons of the Montreal Protocol (as compared to plain pledge-and-review) demonstrate that effective coordination, robust incentives and compliance can be effective where pure pledge and review fails (Barrett, 2016). The ultimate test of the Paris Agreement will be whether it can turn into a platform of universal engagement to a regime that will be able to provide fair, binding, and transformative cooperation.

5. Conclusion & Recommendations.

The Paris Agreement is a major diplomatic milestone that has brought climate action into a universal act and incorporated the dynamic ambition cycles. However, its voluntary character, lax implementation, and lack of equity considerations has constrained its ability to achieve the quick, profound, and equitable changes needed to curtail warming to 1.5 C. The history of Uzbekistan, with its incremental NDC ratcheting to its active Article 6 engagement, shows both the potential and structural limitations of the regime in developing-country settings.

6. Recommendations

1. Enhance the global stock take to be independently reviewed.
2. Bring CBDRRC more to life in Article 6 and fund it.
3. Make sure that Article 6 meets with strict integrity (IPCC, a).
4. A predictable climate finance using new instruments.
5. Promote hybrid governance.
6. Codify just transition principles.

It is only by being bolder in its accountability, sharing the burden equally, finding new finance and being a true collaborator that the Paris Agreement can deliver on its promise to reduce harmful climate change and promote sustainable development across all countries. The stakes were never greater- to Uzbekistan, to the Global South and to the planet.

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