Institutionalising Article 6: Bureaucracy, Technology, and the Future of Global Carbon Markets

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As the UNFCCC mid-term process drew to a close in Bonn, Germany, the overall picture was difficult to ignore. Major areas of negotiation, including the Global Goal on Adaptation and the Mitigation Work Programme, ended without agreement under Rule 16, leaving critical questions unresolved. [1] Longstanding tensions over climate finance persisted, with developing countries once again calling for scaled-up support while developed countries resisted concrete commitments.

Discussions on Just Transition revealed familiar divisions regarding whether climate action should be accompanied by meaningful finance, technology transfer, and implementation support, or remain largely a platform for dialogue and knowledge exchange. Across multiple agenda items, Parties returned to the same focus: how to mobilise resources, adapt to worsening climate impacts, and address a rapidly changing world. Despite the multiple negotiating rooms and tangible progress on many of these issues, SB64 ended with more questions than answers.

At the same time, another process continued to move steadily forward. While negotiations on finance, adaptation, and mitigation struggled to find consensus, the institutional foundations of Article 6 continued to expand. Registries are being developed, accounting methodologies refined, capacity-building programmes launched, and new systems of reporting and 'safeguards' constructed.

Discussions on Article 6.2, Article 6.4, and Article 6.8 revealed technical debates over implementation, but more importantly, the continued building of the broader bureaucratic framework of carbon governance. The greatest danger facing Article 6 is that it succeeds in becoming deeply institutionalised and mired with bureaucracy before the international community can honestly reckon with how carbon markets are deeply embedded in the other processes in the UNFCCC, and how path dependency in carbon market institutions will fail to deliver the transformations and emissions reductions required by the climate crisis.

Geoengineering remains a crucial part of the Article 6 implementation agenda. Under the Paris Agreement Crediting Mechanism (PACM), Article 6.4 will hold the methodological frameworks through which carbon dioxide removal (CDR) activities will generate tradable carbon credits. This includes both engineered approaches, such as carbon capture and storage (CCS), carbon capture, utilisation and storage (CCUS), direct air capture (DAC), and bioenergy with carbon capture and storage (BECCS), and biochar, as well as nature-based and hybrid approaches, including afforestation, ecosystem restoration, and marine carbon dioxide removal (mCDR). While the overarching standards for 'removals' have now been adopted, many activity-specific methodologies remain under development, making this a critical moment to examine how the next generation of carbon markets may expand into the valuation, accounting, and financialisation of CDR across terrestrial and marine ecosystems.

As financial infrastructures, bureaucratic systems, so-called experts, and governance institutions become increasingly embedded in the new emerging carbon market systems, the question confronting future negotiations

is how negotiations taking place today are about far more than the minutiae of carbon accounting rules and market procedures. Rather, the worry is how these emerging carbon markets and their financial streams will shape the political and institutional foundations of climate governance for decades to come.

Article 6.2: Expanding Carbon Governance through the Ambition Dialogue

The Article 6.2 Ambition Dialogue stated intention is to create a space for Parties, institutions and observers to share experiences on the development of Article 6.2 trading registries and other elements under the Paris Agreement that are being developed. Across two sessions totaling roughly five hours, delegates discussed the growing number of bilateral agreements, initial reports, inconsistencies in reporting, and the slow review processes. As of June 2026, 23 countries have submitted initial reports covering 47 cooperative approaches, while 57 host countries, primarily located in Asia and Latin America, are participating in Article 6 activities.

Participation remains highly uneven with Japan, Singapore, and Switzerland reportedly accounting for approximately 74 percent of buyer agreements, illustrating a striking concentration of purchasing power among a small group of wealthy states. [2] This imbalance raises a fundamental political question related to who is shaping the rules and institutions of Article 6.

While host countries provide the mitigation projects, the architecture itself is increasingly driven by actors with the greatest financial negotiating capacity. In this sense it is important to note that bureaucracy is never merely administrative, it is also a source of authority. The implementation phase demonstrates a governance system whose rules may become increasingly difficult to challenge once they are embedded in a multitude of UN, international, multilateral and geopolitical structures.

One notable theme throughout the dialogue was the growing emphasis on digital infrastructure, particularly registries, tracking systems, blockchain technologies, AI, and enhanced accounting mechanisms. These tools are frequently presented as solutions to concerns over double-counting and market integrity. Blockchain, in particular, is being promoted as a way to create records of carbon transactions and allow credits to be tracked across jurisdictions.

Both Zimbabwe and Bhutan presented during the Ambition Dialogue and spoke about their blockchain registries used to track Internationally Transferred Mitigation Outcomes (ITMO) and other activities. However, the enthusiasm surrounding blockchain deserves greater scrutiny. Building and maintaining these systems requires significant technical expertise, software infrastructure, cybersecurity capacity, energy capacity, and long-term administrative support. For many host countries, participation may therefore require continual reliance on external vendors. At the same time, countries in the Global South may be encouraged to invest scarce institutional resources into highly technical registries. Capacity-building can easily become capacity-dependence when the technologies and expertise remain concentrated elsewhere. The result may be a familiar colonial pattern in which some resources are built locally, while authority over the broader system remains concentrated in the Global North.

Artificial intelligence (AI) emerged as another recurring theme in discussions about implementation. AI is already widely used for monitoring emissions, verifying project performance, analysing satellite data, detecting land-use changes, and carbon accounting processes. Proponents claim greater efficiency and lower transaction costs. AI systems rely on the data upon which they are trained and carbon trading emissions levels, projects, and data are already scrutinised based on transparency and accuracy. Moreover, AI can create a false sense of objectivity around inherently political decisions. We have already witnessed decades of false claims by proponents of carbon markets touting carbon markets and junk credits that have exploited people around the world.

Over time, AI-assisted governance could deepen existing asymmetries of power making Article 6 even more dependent upon specialised actors capable of controlling these technologies. As with increasingly complex bureaucracies based on registries and accounting systems using blockchain and AI, the danger becomes a wider structural dilemma over the transfer of authority from democratic deliberation toward increasingly opaque technical systems. In this sense, AI potentially expands the technocratic infrastructure through which carbon markets are governed and embeds these systems for decades to come.

A recurring theme throughout the Article 6.2 Ambition Dialogue concerned inconsistencies in reporting. The African

Group of Negotiators (AGN) noted that countries are simultaneously engaging with Paris Agreement Crediting Mechanism (PACM), independent crediting standards, bilateral Article 6.2 agreements, and Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) requirements. AGN questioned how discrepancies identified across initial reports and review processes should be interpreted, asking whether apparent inconsistencies reflect genuine accounting problems or simply varying reporting or methodology expectations.

Their intervention underscored a broader challenge facing Article 6 implementation as multiple carbon market architectures become considerably more complex. For example, the International Civil Aviation Organization (ICAO) is developing its own offsetting framework, CORSIA, which is expected to interface with the PACM under Article 6.4. However, aligning these systems has proven far from straightforward. Delegates highlighted ongoing challenges related to differing accounting rules, baseline methodologies, authorisation procedures, and reporting requirements. Several Parties called for clearer standard operating procedures to ensure consistency across systems.

Viewed collectively, the Ambition Dialogue revealed a tension that extends far beyond carbon accounting. The rapid growth of registries, digital infrastructure, and technical governance mechanisms suggests implementation itself is not neutral. As more countries establish registries, develop accounting frameworks, adopt blockchain systems, and integrate AI, new forms of institutional path dependency are created. Financial accumulation generates administrative systems; administrative systems generate expertise; expertise generates authority; authority shapes power.

This dynamic is particularly significant given the concentration of purchasing power among a handful of wealthy countries shaping the market and the growing role of carbon markets within national climate strategies. Will the implementation architecture currently being built ultimately serve the goal of rapid emissions reductions, or does it risk reproducing a system in which market expansion, bureaucracy, and the circulation of carbon assets become mistaken for climate ambition? More to the point, what if all of the energy and money over the last decade used to build this contested carbon trading regime were directed into actually phasing out fossil fuels and their emissions at source?

Article 6.8: Lip-service is Still Being Paid to Non-Market Approaches

The Article 6.8 negotiations at SB64 morphed from attempting to get more projects on an overlooked website to how the UNFCCC Non-Market Approaches (NMA) Platform, which facilitates cooperation on non-market approaches under the Paris Agreement, could be expanded and connected to other UNFCCC and national implementation mechanisms. The central dispute revolved around the mandate contained in Decision 13/CMA.7, paragraph 11, which requests SBSTA (Subsidiary Body for Scientific and Technological Advice) to consider additional functionalities that would allow Parties to record projects through their Article 6.8 national focal points and to enable interconnection between the NMA Platform and other platforms, including national platforms upon request. [3]

What might appear to be a simple discussion about digital functionality quickly became a debate about the future purpose and expansion of the platform. Developing country groups including Liked-Minded Developing Countries (LMDCs), Saudi Arabia, Egypt, and AGN representatives argued that the mandate required meaningful operationalisation of these additional functions, including mechanisms for recording projects and creating more substantive linkages between platforms. They repeatedly stressed that hyperlinks alone would not satisfy the mandate. By contrast, the EU and Switzerland appeared more cautious about expanding the platform's role, expressing concerns about scope and how these proposals fit within the existing mandate.

A second major issue concerned the relationship between Article 6.8 and finance. As with all of the UNFCCC negotiation tracks, developing countries repeatedly emphasised that finance remained the primary barrier to implementation and argued that the NMA Platform had not yet delivered on its potential because very few actual projects had emerged (as of this writing, there are five projects on the NMA Platform compared to the thousands in the "market-based" Article 6.2 and 6.4 pipelines). The Coalition for Rainforest Nations (CfRN), LMDCs, the Philippines, and others pushed for greater attention to mobilising finance. Interestingly, this debate unfolded against the backdrop of the Mitigation Work Programme (MWP) and the Global Goal on Adaptation happening in other rooms, where many Parties were simultaneously discussing implementation barriers and finance as well,

before those agenda items ultimately collapsed under Rule 16.

The irony was difficult to miss, while adaptation and mitigation negotiations struggled to produce outcomes, Parties were simultaneously debating whether and how to build additional digital and institutional infrastructure to facilitate implementation of Article 6. In many respects, the Article 6.8 discussion reflected a broader trend visible throughout Bonn; an increasing push for governance architecture and institutional design, even when underlying conflicts about finance and global inequalities remain unresolved.

From a critical perspective, this reveals an important tension. Article 6.8 is purported to be the non-market pillar of Article 6, but much of the Bonn discussion focused on building platforms, functionalities, recording systems, and interconnections, raising questions of how out-of-the-market it will stay. Further, the process was once again drawn into debates of institutional and technical expansion. This raises a broader question regarding how Article 6.8 is gradually drawn into the same governance ecosystem that underpins carbon markets, even if it does not directly generate ITMOs. The controversy surrounding NMA Platform expansion reflects deeper concerns about the future direction of non-market cooperation.

These concerns are not new. Easing standards through morphing language, meaning and purpose is what the UNFCCC does best. Since the Paris Agreement was adopted, some observers have worried that Article 6.8 could eventually become a staging ground for activities that later migrate or overlap with market mechanisms. REDD+ offers a useful example. Originally promoted through multiple channels emphasising conservation, sustainable development, capacity-building, and non-market support, REDD+ was easily drawn into subnational and voluntary carbon markets, and is now eligible to be an offset in Article 6.4 PACM. While the CfRN representatives explicitly warned against introducing “new carbon” into the Article 6.8 space and emphasised that NMAs should focus on non-carbon benefits, at the same time, interventions proposed expanded discussions around finance, forests, coastal ecosystems, marine ecosystems, and restoration.

Meanwhile, marine carbon dioxide removal (mCDR) offers another useful example. In another space at SB64, the Ocean and Climate Change Dialogue was unfolding. Conversations are ongoing regarding how mCDR may be incorporated into the Paris Agreement Crediting Mechanism (PACM) as removals, and at the same time, there is potential overlap with marine-based projects on the Article 6.8 NMA Platform. The distinction between non-market-based approaches and market-based carbon trading may continue to erode, morph and language-switch, extending the reach of carbon markets into ever more ecological domains.

Through these emerging bureaucratic channels, Nature itself gradually becomes redefined according to its potential contribution to carbon economics and climate governance. The discussions in Bonn revealed the contradictions in the distinctions of markets, an underlying flaw in global finance, and where the line between market and non-market approaches becomes increasingly blurred.

Article 6.4: Rapidly Becoming One of the Most Significant Institutional Pillars in the UNFCCC Process

Unlike Article 6.2 and Article 6.8, there were no formal dialogues or negotiations on Article 6.4 at SB64. This is because much of the substantive work under the Paris Agreement Crediting Mechanism (PACM), the UN’s centralised carbon market established under Article 6.4, occurs through the Article 6.4 Supervisory Body (SBM) and its technical Methodology Expert Panel, which meet several times throughout the year. While these meetings often receive far less public attention than the formal UNFCCC negotiations, they are arguably where some of the most consequential decisions about the future of carbon markets are being made. Article 6.4 is intended to succeed and replace the Kyoto Protocol’s Clean Development Mechanism (CDM), creating a centralised system through which carbon offsets can be generated, transferred, and potentially used by countries for their NDCs and other actors toward climate targets.

As of June 2026, 1,515 CDM transition requests had been submitted, with 208 approved and 22 activities formally registered under PACM, including 11 projects and 11 Programmes of Activities (PoAs). Notably, approximately 94 percent of registered transition volumes are concentrated in Bangladesh (8.38 million tonnes) and Bhutan (2.92 million tonnes), highlighting the uneven geographic distribution of early activity. At the same time, 1,248 new activities have been proposed under the mechanism. [4] Roughly two-thirds of these are legacy CDM wind and

hydropower projects, while the new emerging project pipeline is increasingly focused on solar energy, cookstoves, electric vehicles, cropland management, and afforestation. The first approved methodologies include methane flaring and utilisation, and nitrous oxide (N_2O) abatement from nitric acid production, covering approximately 90 projects across both legacy CDM transitions and new PACM activities. With more than 100 Nationally Determined Contributions (NDCs) indicating openness to Article 6 participation and negotiations underway to integrate CORSIA eligibility within the mechanism, Article 6.4 is rapidly becoming one of the most significant institutional pillars in the UNFCCC process. [5]

One of the most consequential but least publicised developments under Article 6.4 is the upcoming revision of the Sustainable Development (SD) Tool, the mechanism's primary safeguard framework intended to address human rights, labor rights, Indigenous Peoples' rights, land tenure, stakeholder participation, and environmental and social risks. Civil society organisations, Indigenous Peoples' representatives, labor groups, and legal advocates have pushed for stronger provisions, including independent risk assessments, continuous Free, Prior and Informed Consent (FPIC), protections against involuntary resettlement, recognition of customary land rights, stronger labor protections, and greater alignment with international human rights law to name a few. A lot is at stake.

Although the first review cycle was scheduled for consideration at the Supervisory Body's May 2026 meeting (SBM021), the Supervisory Body and Secretariat initially appeared prepared to make only limited adjustments while focusing on activity-specific appendices, including those related to carbon dioxide removal (CDR). However, significant engagement from civil society organisations prompted a reconsideration of that approach. The Supervisory Body subsequently agreed to launch an additional Call for Public Input in early July, with submissions to be reviewed at SBM023 in October 2026. Following that meeting, the Secretariat will prepare a revised version of the SD Tool, incorporating recommendations. The revised framework is expected to be presented at the first Supervisory Body meeting of 2027.

This is a core issue because well-documented harms associated with previous carbon market projects, particularly REDD+, and more recently with cook stoves, land-based offsets, and other resource-intensive interventions, reveal ongoing harm. Even the strongest safeguards can only mitigate harms within a framework whose fundamental purpose remains the generation of carbon credits. Thus, revealing its limited scope. The SD Tool cannot resolve the underlying conditions of colonialism and global inequality, and certainly not within the contradictions of Article 6.4, including: the commodification of emissions reductions, the financialisation of ecological processes, persistent power imbalances between project developers and affected communities, language barriers, cultural exploitation, and a market structure that allows continued emissions in one location to be justified through credited activities the most impacted by climate change somewhere else. In this sense, the SD Tool safeguards debate is important *precisely* because it reveals the limits of safeguards and the inherent flaws in carbon markets.

Looking Ahead to COP 31

As attention now shifts toward COP31 in Antalya in November, the unresolved tensions that defined SB64 will carry over. As expected, finance remained the central fault line running through nearly every agenda item, shaping debates on adaptation, mitigation, just transition, implementation, and carbon markets. Negotiations on adaptation and mitigation stalled, with both the Global Goal on Adaptation and the Mitigation Work Programme falling under Rule 16 with the window for meaningful climate action continuing to narrow. The result was a familiar pattern of extensive discussion on implementation, ambition, and cooperation accompanied by a lack of focus on the structural transformations needed to rapidly phase out fossil fuels and support impacted communities. As climate disasters intensify across the globe, the gap between the scale of the crisis and the pace of political action is widening.

At the same time, the machinery of Article 6 continued to move forward. Registries are being built, methodologies approved, reporting systems expanded, blockchain linked, experts are experting and new layers of technical and bureaucratic climate governance are being established. Discussions on Article 6.2, Article 6.4, Article 6.8, and CORSIA integration all pointed toward the accelerating institutionalisation of a global carbon market architecture. This should give Parties and negotiators pause. The greatest danger facing the climate regime may not be that Article 6 fails to reduce emissions, but that it succeeds in becoming deeply embedded, and its underlying assumptions are never adequately scrutinised.

As carbon assets become integrated into financial systems across the UNFCCC negotiating streams (i.e. GGA) and as new forms of expertise and authority become concentrated within an expanding carbon bureaucracy, path

dependency begins to set like concrete. There is a real concern that the institutions and bureaucracy being constructed now for carbon markets will become too politically and economically entrenched to challenge.

Meanwhile, the brave observers at these meetings are heard as a mere formality by negotiators, and the spiralling costs of delay continue to be borne by those least responsible for the crisis, including frontline communities, environmental defenders, victims of war, women, Indigenous Peoples, marginalised populations, and nature upon which all life depends.

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[1] Rule 16 is a formal procedure and means that the Chairs of the conference do not adopt the text, and moves unresolved or deadlocked negotiations to the next meeting or conference.

[2] Data from presentation by Andi Sanusi at Article 6 Markets Day organized by UN Climate Change and GIZ, 8 June 2026, Bonn, Germany.

[3] According to 13/CMA.7 para 11: requests the SBSTA at SB64 in the context of the work program under the framework for NMA *to consider ways to implement additional functionalities in the NMA Platform that would enable Parties to record the projects referred to in paragraph 10 above through their national focal points for Article 6, paragraph 8, of the Paris Agreement, and enable interconnection between the NMA Platform and other platforms, including national platforms for Parties that request it.*

[4] Data from Andi Sanusi presentation at Article 6 Markets Day organized by UN Climate Change and GIZ, 8 June 2026, Bonn, Germany. See also: https://article6pipeline.unepccc.org/

[5] *Ibid.*