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Article 6 Implementation: Lessons for Emerging Markets

How developing nations can effectively participate in international carbon markets under Article 6.2 and 6.4 of the Paris Agreement, with case studies from India, Ghana, and Indonesia.

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ABSTRACT

The conclusion of negotiations at the twenty-ninth Conference of the Parties in Baku, followed by the adoption of the first methodology under the Paris Agreement Crediting Mechanism in October 2025 and the Belém Package at the thirtieth Conference, has shifted Article 6 from a rulemaking exercise into a period of practical implementation. For emerging markets, this transition presents an asymmetric opportunity: host countries possess low-cost mitigation potential, yet participation requires institutional depth, accounting capacity, and political economy choices that many jurisdictions have not fully resolved. This paper interrogates how developing nations can participate in cooperative approaches under Article 6.2 and in the centralised mechanism under Article 6.4 without undermining either their Nationally Determined Contributions or their long-term industrial strategy.

Drawing on three contrasting case studies, India, Ghana, and Indonesia, the paper argues that effective participation rests on four pillars: a credible national crediting architecture; an explicit political choice on what to authorise for international transfer and what to retain for domestic compliance; transparent benefit sharing arrangements that secure local legitimacy; and reporting practices that satisfy the consistency checks established at Baku. Ghana demonstrates how early institutional investment and a narrow, conditional activity list can translate bilateral agreements into actual issuance of Internationally Transferred Mitigation Outcomes. India illustrates the strategic logic of building a domestic compliance market first and calibrating international participation to industrial competitiveness. Indonesia reveals the costs of regulatory volatility and the difficulty of reconciling a national exchange with international standards.

The paper concludes that the central risk for emerging markets is not exclusion from Article 6 but premature or mispriced authorisation of mitigation outcomes. A cautious, sequenced approach, grounded in high-integrity domestic infrastructure, is more likely to generate durable finance than a rush to export cheap credits.

Keywords: Article 6, Paris Agreement, ITMOs, Paris Agreement Crediting Mechanism, corresponding adjustment, emerging markets, climate finance, NDC, Ghana, India, Indonesia.

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1. Introduction

Article 6 of the Paris Agreement occupies a paradoxical position in the architecture of international climate governance. Negotiated as a single, tightly worded provision in December 2015, it took six subsequent Conferences of the Parties to develop the operational rules that would allow it to function. The Glasgow decisions of 2021 established the basic modalities; Sharm el-Sheikh and Dubai refined them; Baku in November 2024 finally concluded the technical rulebook; and Belém in November 2025 initiated the implementation phase. Between these milestones, an entire industry of project developers, registries, verification bodies, and sovereign wealth entities has organised itself around a set of instruments whose effective functioning remained, until recently, uncertain.¹

For emerging markets, this long gestation has produced both opportunity and risk. The opportunity is structural. Developing countries typically host the lowest-cost mitigation options in the global economy, whether in distributed clean cooking, renewable electrification, methane abatement, or forest conservation. Article 6 provides a framework through which these reductions can be monetised and, in principle, scaled. The risk is equally structural. A country that authorises the international transfer of its cheapest mitigation outcomes before securing its own domestic trajectory may find itself with only costly abatement options remaining when the time comes to meet its Nationally Determined Contribution. The problem of overselling, studied in the earlier literature on the Clean Development Mechanism, returns in a more consequential form under the Paris regime, because Article 6 requires corresponding adjustments that directly debit the host country's emissions accounts.

This paper offers a structured examination of how three emerging markets, India, Ghana, and Indonesia, are navigating this terrain. The three cases are selected to illustrate meaningfully different pathways. Ghana has prioritised early institutional build-out and bilateral agreements, and is now among the first African jurisdictions to have completed actual ITMO transfers. India has prioritised the construction of a domestic compliance market before full engagement with international instruments. Indonesia has experimented with a voluntary exchange and restrictive export rules, and is in the process of overhauling its framework following Presidential Regulation 110 of 2025. Together they span the principal design choices available to emerging markets: early export, calibrated domestic primacy, and regulatory iteration.

The remainder of the paper is organised as follows. Section 2 sets out the architecture of Article 6. Section 3 traces the state of operationalisation from the Baku outcomes through the first methodology approval in October 2025 and the Belém Package of November 2025. Section 4 proposes a four-pillar analytical framework for assessing country participation. Sections 5, 6, and

¹UNFCCC, *Paris Agreement* (2015), Article 6.1. See also Decision 1/CP.21.

7 apply the framework to Ghana, India, and Indonesia respectively. Section 8 synthesises cross-case lessons. Section 9 offers policy recommendations. Section 10 concludes.

2. The Architecture of Article 6

Article 6 establishes three instruments, each reflecting a distinct theory of how international cooperation can raise climate ambition. Article 6.2 permits bilateral or multilateral cooperative approaches. Article 6.4 creates a centralised crediting mechanism under the authority of a Supervisory Body. Article 6.8 provides a framework for non-market approaches. The three instruments are complementary in design and competitive in practice, because participating countries must choose where to direct scarce institutional capacity and which mitigation outcomes to assign to which instrument.²

2.1 Article 6.2: Cooperative Approaches and ITMOs

Article 6.2 is a decentralised instrument. Participating Parties enter into a cooperative approach, specify the mitigation activities covered, and authorise the transfer of Internationally Transferred Mitigation Outcomes. An ITMO is a unit of mitigation expressed in tonnes of carbon dioxide equivalent or, in certain cases, in non-greenhouse gas metrics, that has been generated by a mitigation activity in one Party and authorised for use by another. Where the acquiring Party uses an ITMO against its NDC, the host Party must apply a corresponding adjustment to its own emissions balance, ensuring that the same reduction is not counted twice.

The Glasgow decision on Article 6.2, Decision 2/CMA.3, set out initial requirements for authorisation, accounting, reporting, and review. The Baku decision, Decision 5/CMA.6 (also cited as 6/CMA.6 in some analyses), completed the rulebook by clarifying three matters of consequence. First, it specified three distinct types of authorisation: of the cooperative approach, of participating entities, and of individual ITMOs. Second, it established a dual-layer registry system, combining a United Nations international registry with optional national or private registries, and required interoperability between them. Third, it introduced automated consistency checks within the Centralised Accounting and Reporting Platform, the results of which are to be made publicly available. Where inconsistencies are flagged, Parties are requested, but not required, to refrain from using the affected ITMOs.³

The Belém outcomes of November 2025 made incremental improvements in the area of transparency and review, but did not resolve the principal tension in Article 6.2, which is the asymmetric relationship between flexibility and integrity. Parties enjoy significant latitude in defining cooperative approaches, designing authorisation terms, and invoking confidentiality. Oversight mechanisms remain limited to flagging, with no binding consequences. For emerging

²Decision 2/CMA.3, “Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement” (Glasgow, 2021); Decision 6/CMA.6 (Baku, 2024).

³Decision 5/CMA.6, “Guidance on cooperative approaches”, paras. on authorization, first transfer, and registry architecture. COP29 adopted the dual-layer registry model.

market hosts, this implies that the integrity of their ITMO transactions is primarily a function of their own domestic frameworks, not of international review.⁴

2.2 Article 6.4: The Paris Agreement Crediting Mechanism

Article 6.4 is a centralised instrument. A Supervisory Body, composed of twelve members drawn from the five United Nations regional groups with dedicated seats for least developed countries and small island developing States, governs the Paris Agreement Crediting Mechanism. The mechanism issues Article 6.4 Emission Reductions, which can be authorised either for use towards an acquiring Party's NDC or for other international mitigation purposes such as the Carbon Offsetting and Reduction Scheme for International Aviation. Unauthorised units, known as Mitigation Contribution A6.4ERs, can be used for climate finance purposes without a corresponding adjustment, but cannot be counted against any NDC.⁵

The operationalisation of Article 6.4 proceeded through a sequence of standards adopted by the Supervisory Body. In October 2024, two foundational standards were adopted: the Standard on Methodology Requirements and the Standard on Activities Involving Removals. Further standards on additionality, baselines, leakage, and non-permanence and reversals were adopted during 2025. On 30 October 2025, the Supervisory Body approved the first methodology, AMMO01, governing landfill gas capture and utilisation. The approval was described by the Chair of the Supervisory Body as the first practical application of Paris-aligned crediting. Additional methodologies addressing renewable energy, industrial processes, agriculture, and forestry are in development.⁶⁷

The financial architecture of Article 6.4 distinguishes it from Article 6.2 in three respects. First, a Share of Proceeds, set at five per cent of issued units, accrues to the Adaptation Fund. Second, an Overall Mitigation in Global Emissions contribution, set at two per cent, is cancelled at issuance to ensure that the mechanism itself delivers net mitigation. Third, the centralised methodologies impose a common technical standard on all projects, which simplifies due diligence for acquirers but also raises fixed compliance costs for hosts.⁸

2.3 Article 6.8: Non-Market Approaches

⁴Carbon Market Watch, "Attempts to dilute inadequate carbon market rules thwarted" (22 November 2025).

⁵Decision 3/CMA.3, "Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4" (Glasgow, 2021).

⁶Article 6.4 Supervisory Body, "Standard: Requirements for methodologies and activities under the Article 6.4 Mechanism", adopted 9 October 2024.

⁷UNFCCC, "UN approves first methodology for Paris Agreement Crediting Mechanism" (press release, 30 October 2025). Methodology AMMO01 governs landfill gas capture.

⁸Decision 6/CMA.6 introduced the Share of Proceeds (SOP) of 5 per cent of issued A6.4ERs and the Overall Mitigation in Global Emissions (OMGE) adjustment of 2 per cent cancellation at issuance.

Article 6.8 establishes a framework for non-market approaches, including cooperation on mitigation, adaptation, finance, technology transfer, and capacity building. A dedicated platform has been under construction since 2022. For emerging markets, Article 6.8 is of growing strategic importance because it provides a venue in which mitigation cooperation can occur without the corresponding adjustment burden, and therefore without the risk of compromising domestic NDC achievement. However, Article 6.8 does not generate tradable units, and its financial scale remains modest.

3. From Baku to Belém: The State of Operationalisation

The negotiating history of Article 6 since 2021 is one of deliberate sequencing. The Glasgow decisions created the scaffolding. The Sharm el-Sheikh decisions of 2022 introduced operational detail but also weakened certain oversight provisions, notably by restricting the scope of technical expert reviews. The Dubai negotiations in 2023 failed to reach agreement, producing no Article 6 decision. The Baku outcomes of 2024 closed the substantive rulebook. The Belém outcomes of 2025 marked the pivot from rulemaking to implementation.⁹¹⁰

Three developments during 2025 merit particular attention. The first is the accreditation of the initial Designated Operational Entity under Article 6.4. At its fifteenth meeting, the Supervisory Body accredited Carbon Check (India) Private Limited for validation and verification of Article 6.4 activities within defined sectoral scopes. The accreditation signalled that the verification infrastructure of the Paris Agreement Crediting Mechanism was operational for the first time.

The second is the completion of the first Clean Development Mechanism transition project. The Clean Energy Program supported by the Republic of Korea, hosted in Myanmar, became the first programme of activities to complete the formal transition from the Clean Development Mechanism framework to the Paris Agreement Crediting Mechanism. Transition rules permit legacy projects to continue using their existing methodologies until the expiry of their current crediting periods or 31 December 2025, whichever is earlier, subject to compliance with the newer Article 6.4 standards. As of late 2025, approximately 27 per cent of registered Clean Development Mechanism projects and 45 per cent of registered programmes of activities were eligible for transition.

The third is the approval of the first Article 6.4 methodology. The landfill gas methodology, AMM001, adopted on 30 October 2025, introduces a downward adjustment mechanism that progressively reduces crediting levels over time. Projects that flare methane face a faster downward adjustment than projects that convert methane to energy, creating a crediting gradient that rewards higher-value use of captured gas. The methodology also mandates an investment analysis to demonstrate additionality, requiring project developers to show that carbon revenue is necessary for project viability. These design features are expected to inform subsequent methodologies across other sectors.¹¹

The Belém outcomes of November 2025 were, in the Article 6 context, primarily defensive. Civil society observers have noted that attempts during the negotiations to weaken the non-permanence and reversal standard or to introduce exceptions for nature-based crediting were successfully resisted. The adopted Article 6.2 decision strengthened reporting obligations modestly but did not introduce binding consequences for inconsistent reporting. The Belém Package also confirmed the transfer of residual Clean Development Mechanism Trust Fund resources, reportedly in the order of 26.8 million United States dollars, of which up to 5 million will support capacity building in developing countries.¹²¹³

Taken together, these developments mean that, as of late 2025, Article 6 has transitioned from an architectural project to a working system. Bilateral activity under Article 6.2 has accelerated, with over thirty countries now signed to cooperative approaches or memoranda of understanding. The Paris Agreement Crediting Mechanism has issued its first accreditation, approved its first methodology, and is expected to issue its first credits during 2026. The question for emerging markets is no longer whether Article 6 will function, but how to participate in it without compromising other strategic objectives.¹⁴

¹³Belém Package, COP30 (22 November 2025); see in particular the Article 6.2 decision on consistency and transparency reporting.

¹⁴A6 Implementation Partnership Center, “Implementation Status of Article 6.2 Guidance” (2026). Nineteen Parties had submitted initial reports as of the latest reporting cycle.

4. Analytical Framework: The Four Pillars of Participation

This paper proposes that effective participation by an emerging market in Article 6 rests on four interdependent pillars. Weakness in any one pillar produces systemic vulnerability. The framework is summarised in Table 1 and is used in the country case studies that follow.

Pillar I: National Institutional Architecture

The first pillar is the institutional machinery that allows a country to authorise, track, verify, and adjust mitigation outcomes. At minimum this requires a Designated National Authority, a national registry capable of interoperating with the United Nations international registry, a legal instrument clarifying the ownership of mitigation outcomes, and procedures for authorising cooperative approaches and individual ITMOs. Countries that have invested early in these capabilities, such as Ghana, Singapore, and Thailand, now transact under Article 6.2 with relative fluency. Countries that have not, face a structural disadvantage regardless of their mitigation potential.

Pillar II: Strategic Authorisation Discipline

The second pillar is the political economy choice about which mitigation activities to authorise for international transfer. Every authorisation subtracts from the host country's own trajectory. The question is therefore not whether to participate, but which activities to designate as surplus to domestic needs. Kenya's practice of distinguishing between conditional and unconditional NDC measures and authorising only the former for international transfer provides one credible model. Ghana's use of positive and negative activity lists provides another. The absence of such discipline exposes a host country to overselling risk, particularly where conditional NDC ambition is high but conditional finance is uncertain.¹⁵

Pillar III: Benefit Sharing and Local Legitimacy

The third pillar concerns the distribution of revenues and non-monetary benefits within the host country. Without credible benefit sharing, carbon projects face local opposition that undermines their operational viability and, ultimately, the credibility of the host Party's authorisations. Kenya's Climate Change (Amendment) Act of 2023 mandates that land-based carbon projects allocate at least 40 per cent of net earnings to community beneficiaries, and that non-land-based projects allocate 25 per cent. Indonesia's regulatory framework requires community benefit

¹⁵M. Michaelowa et al., "Governance of Article 6 of the Paris Agreement and Implications for Scaling up Climate Action", *Climate Policy* 19, no. 10 (2019): 1211–1224.

demonstration for nature-based projects. These provisions raise project costs but are increasingly treated by investors as evidence of project durability rather than as regulatory friction.¹⁶

Pillar IV: Transparency and Reporting Integrity

The fourth pillar is the country's ability to meet the reporting requirements under Article 6.2 guidance and to survive the automated consistency checks within the Centralised Accounting and Reporting Platform. Countries that cannot report in line with the agreed formats risk having their ITMOs flagged, which can undermine buyer confidence and depress prices. Transparency is therefore an economic interest, not merely a compliance obligation.

Table 1. The Four Pillars of Effective Article 6 Participation

Pillar	Core Requirement	Principal Failure Mode
I	National Designated Authority, interoperable registry, legal clarity on ownership of mitigation outcomes.	Institutional paralysis; inability to authorise or track transfers.
II	Explicit choice on which activities to authorise for international transfer, calibrated against NDC trajectory.	Overselling; exhaustion of low-cost abatement; stranded NDC commitments.
III	Transparent benefit sharing with local communities, particularly in land-based sectors.	Local opposition; project cancellation; reputational damage to host authorisations.
IV	Reporting capacity adequate to pass automated consistency checks under CARP.	ITMO flagging; buyer discount; loss of access to premium demand segments.

¹⁶Government of Kenya, Climate Change (Amendment) Act, 2023, Sections 23B and 23C on benefit sharing in carbon projects.

5. Case Study I: Ghana

Ghana is arguably the most institutionally advanced host country for Article 6.2 transactions in Africa. Its approach has combined early political commitment, investment in legal and technical infrastructure, and a deliberately narrow initial activity scope. The result is a country that, by mid-2025, had transitioned from bilateral authorisation to actual issuance of ITMOs used against a buyer's NDC, the first such transaction for a mitigation activity in Africa.¹⁷

5.1 Institutional Architecture

The Ghana Carbon Market Office, located within the Environmental Protection Authority, was established as the operational arm of the national framework on international carbon markets and non-market approaches. The framework clarifies the authorisation process, establishes positive and negative activity lists that link authorisable activities to conditional NDC measures, and codifies the expectation of benefit sharing. Ghana operationalised the Ghana Carbon Registry, which was connected through a Memorandum of Agreement signed at COP29 to a blockchain-enabled trading and settlement network in Singapore, allowing digital tracking of ITMO transactions.^{18,19}

5.2 The Switzerland Agreement and First ITMO Issuance

Ghana was the first country to authorise the export of ITMOs at COP27 in 2022, in partnership with Switzerland and the United Nations Development Programme. The first mitigation activity authorised under the bilateral agreement was the Transformative Cookstove Activity in Rural Ghana, implemented by ACT Group and supported financially by the Swiss KliK Foundation. The two countries formalised authorisation on 31 January 2024, and the first ITMOs were issued on 7 July 2025 in the Swiss Emissions Trading Registry. The KliK Foundation acquired the units to meet its obligations under the Swiss CO₂ Act, with onward use towards Switzerland's NDC target.²⁰

The structural integrity of the transaction rests on three features. First, Ghana's authorisation is conditional on demonstration that carbon revenue is necessary for project financial viability, a stricter test than conventional additionality. Second, the activity is included in Ghana's whitelist

¹⁷KliK Foundation, "First ITMO transfer: Switzerland and Ghana" (7 July 2025). The ACT Group activity issued the first ITMOs used for NDC purposes from an African host.

¹⁸Government of Ghana, Environmental Protection Authority, Carbon Market Office, "Framework on International Carbon Markets and Non-Market Approaches" (Accra, 2022, updated 2024).

¹⁹Ghana EPA and ZERO13, Memorandum of Agreement signed at COP29, Baku (November 2024); Implementation Agreement between Ghana and Singapore, signed 27 May 2024.

of measures considered additional to the unconditional component of its NDC, thereby reducing overselling risk. Third, the activity incorporates safeguards against overcrediting through a methodology developed by the project developer that adjusts for dynamic cookstove usage.

5.3 The Singapore Agreement

In May 2024, Ghana signed an Implementation Agreement with Singapore, complementing its existing arrangement with Switzerland. The Singapore arrangement is structurally distinct. Singapore requires that both Share of Proceeds and Overall Mitigation in Global Emissions contributions be applied to Article 6.2 pilots, a feature that is voluntary under the Article 6.2 rulebook. This increases the ambition of the cooperative approach and places Ghana's arrangement with Singapore on a footing comparable to that of Article 6.4. The subsequent Memorandum of Agreement with ZERO13 enabled digital tracking and settlement.²¹

5.4 Assessment

Ghana scores highly on the first two pillars of the framework. Institutional architecture is in place; authorisation discipline is formalised through activity lists and additionality linked to NDC classification. The third pillar, benefit sharing, is encoded in the framework but its practical implementation in specific projects is less documented. The fourth pillar, transparency, is supported by the registry infrastructure, though the confidentiality provisions permitted under Decision 5/CMA.6 limit public visibility into deal terms. The principal risk facing Ghana is volume-related: demand for its ITMOs has come primarily from Switzerland and Singapore, both of which are comparatively small buyers, and Ghana has yet to demonstrate that its model scales to larger acquirers or to higher-volume activities such as grid-scale renewables.

6. Case Study II: India

India's approach to Article 6 has been notably cautious by design. Unlike Ghana, which built infrastructure to facilitate ITMO exports, India has prioritised the construction of a domestic compliance market as the primary instrument of carbon pricing, with international participation calibrated to industrial strategy considerations, notably the European Union's Carbon Border Adjustment Mechanism.

6.1 The Carbon Credit Trading Scheme

The legal foundation for Indian carbon market architecture is the Energy Conservation (Amendment) Act of 2022, which authorised the establishment of the Carbon Credit Trading Scheme. The scheme was officially notified in June 2023 and elaborated through detailed regulations in 2024. It comprises two mechanisms: a compliance mechanism for obligated entities in energy-intensive sectors, and an offset mechanism for voluntary participation from outside the compliance perimeter. Governance is vested in the National Steering Committee for the Indian Carbon Market, chaired by the Secretary of the Ministry of Power and co-chaired by the Secretary of the Ministry of Environment, Forest and Climate Change.^{22,23}

The Carbon Credit Trading Scheme is an intensity-based baseline-and-credit system. Rather than imposing absolute emissions caps, the scheme assigns each obligated entity an emissions intensity target expressed in tonnes of carbon dioxide equivalent per unit of output. This rate-based design reflects India's growth trajectory and the political preference for an instrument that does not constrain absolute industrial expansion. Entities that achieve intensity below target receive Carbon Credit Certificates; entities that exceed target must purchase certificates. The Bureau of Energy Efficiency administers the scheme, the Grid Controller of India operates the registry, and the Central Electricity Regulatory Commission licenses trading exchanges.²⁴

6.2 Implementation Timeline

Seven of the nine initially covered sectors entered compliance obligations from fiscal year 2025 to 2026. Targets for aluminium, cement, chlor-alkali, and pulp and paper were notified by the Ministry of Environment, Forest and Climate Change in October 2025. Targets for petroleum refining, petrochemicals, and textiles followed in January 2026. Approximately 490 industrial

²²Ministry of Power, Government of India, "Carbon Credit Trading Scheme", Gazette Notification (28 June 2023) and amendments thereto; Energy Conservation (Amendment) Act, 2022.

²³International Carbon Action Partnership, "Indian Carbon Credit Trading Scheme", ETS Status Report (updated 2026).

units are now subject to legally binding intensity trajectories. Targets are set against a fiscal year 2024 baseline and extend through fiscal year 2027 in the first compliance cycle.²⁵

The Indian Carbon Market Portal was launched by the Minister of Power on 21 March 2026 at the Prakriti 2026 International Conference on Carbon Markets in New Delhi. The portal functions as the central digital infrastructure for entity registration, certificate issuance, and verification body accreditation. It includes provisions for interaction with international carbon markets under Article 6, permitting project developers to register activities intended for cross-border crediting. First trading of Carbon Credit Certificates is expected to commence by mid-2026.²⁶

6.3 The Offset Mechanism and International Linkage

On 28 March 2025, the Ministry of Power approved eight crediting methodologies for the voluntary offset mechanism. These cover energy distribution and demand-side management, green hydrogen, industrial efficiency, waste management, mangrove afforestation, and related project types. The methodologies are designed to be consistent with international standards, enabling credits generated under the Indian framework to be, in principle, eligible for use under Article 6.²⁷

India's principal bilateral engagement under Article 6 is with Japan, through the Joint Crediting Mechanism. The cooperation has been framed in terms of high-integrity credits and technology partnership rather than volume-driven credit export. India has so far refrained from broad authorisation of ITMOs, consistent with its stated position that the most economically valuable Article 6 participation is one that supports national industrial decarbonisation rather than transfer of cheap mitigation outcomes.²⁸

6.4 Assessment

India's approach is distinctive in the weighting it assigns to the four pillars. Pillar I, institutional architecture, is well developed and will be further strengthened by the Indian Carbon Market Portal. Pillar II, authorisation discipline, is implemented through a conservative policy on international transfer, reflecting the strategic view that India's mitigation options are scarce and should primarily serve domestic compliance. Pillar III, benefit sharing, is less formally developed

²⁵MoEFCC, "Notification of GHG Emission Intensity Targets" (October 2025, January 2026). Targets for approximately 490 units across seven sectors now in force.

²⁶Ministry of Power, Government of India, "Launch of Indian Carbon Market Portal at Prakriti 2026" (21 March 2026).

²⁷Bureau of Energy Efficiency, "Eight Methodologies for the Offset Mechanism" (Gazette notification, 28 March 2025).

²⁸India and Japan, Joint Crediting Mechanism, announced at the 14th India-Japan Annual Summit (2024) and progressed through subsequent technical dialogues.

because the scheme is oriented towards industrial compliance rather than nature-based crediting. Pillar IV, transparency, will be tested when the portal begins operational issuance.

The principal strategic question facing India is the extent to which the Carbon Credit Trading Scheme can be linked with international instruments without undermining its domestic function. The Carbon Border Adjustment Mechanism of the European Union, which entered full implementation during 2026, creates pressure on Indian exporters in covered sectors. A domestic carbon price that is credibly equivalent to the European Union price may permit partial exemption from the Carbon Border Adjustment Mechanism levy. This creates an economic case for strengthening the Carbon Credit Trading Scheme that is independent of Article 6 considerations and that, if pursued, will deliver the institutional depth required for later international integration.

7. Case Study III: Indonesia

Indonesia's experience illustrates both the potential and the difficulties of building a carbon market architecture in a jurisdiction with substantial mitigation assets, pronounced regulatory iteration, and incomplete alignment between central and sectoral agencies. The country possesses some of the world's largest natural carbon sinks, including tropical forests, peatlands, and mangroves. Its formal carbon pricing framework was initiated through Presidential Regulation 98 of 2021 and has been substantially overhauled through Presidential Regulation 110 of 2025.

7.1 IDX Carbon and Early Market Activity

Indonesia Stock Exchange Carbon, known as IDX Carbon, was launched on 26 September 2023 as the official trading venue for the domestic compliance market, initially focused on the power sector, and for the voluntary offset scheme. The exchange handles two instruments: emission quotas known as PTBAE-PU for the emissions trading system, and GHG Emission Reduction Certificates, known as SPE-GRK, for verified reduction credits. Supervision is provided by the Financial Services Authority.²⁹

Initial trading activity was modest. Cumulative transactions from September 2023 to September 2025 amounted to approximately 78 billion Indonesian rupiah, equivalent to approximately 4.9 million United States dollars. The average carbon price in December 2024 was approximately 55,985 rupiah per tonne, equivalent to approximately 3.90 United States dollars, a price level significantly below comparable Asian compliance markets. In January 2025, IDX Carbon opened to international buyers, which generated a modest increase in activity but did not resolve the underlying liquidity constraint. As of September 2025, only eight projects had been listed and only 132 participants were registered. Cumulative retired carbon units had reached 600,768 tonnes of carbon dioxide equivalent.³⁰³¹

7.2 Presidential Regulation 110 of 2025

On 10 October 2025, Presidential Regulation 110 of 2025 revoked Presidential Regulation 98 of 2021 and restructured Indonesia's carbon market framework. The new regulation introduces four consequential changes. First, it formally recognises voluntary carbon trading alongside the mandatory compliance mechanism, creating a legal pathway for private project developers. Second, it introduces the Sistem Registri Unit Karbon, a consolidated registry system that

²⁹Institute for Energy Economics and Financial Analysis, "Two years after launch, Indonesia's carbon market struggles to find momentum" (October 2025).

³¹The figure represents cumulative transactions on IDX Carbon between September 2023 and September 2025 as reported by Indonesia Stock Exchange, converted at prevailing rates.

subsumes the earlier national registry. Third, it distinguishes explicitly between transactions that require corresponding adjustment, namely those under Article 6.2 and 6.4 and for other international mitigation purposes, and transactions that do not. Fourth, it broadens the definition of recognised carbon units to include units issued under international certification schemes, complementing the domestic SPE-GRK.³²³³

Alongside the regulatory overhaul, the government signed Mutual Recognition Agreements with Gold Standard in May 2025 and with Verra in October 2025. These agreements permit credits certified under international standards to be registered on the national platform, subject to regulatory approval. The combination of Presidential Regulation 110 of 2025 and the Mutual Recognition Agreements is intended to address the low volumes recorded since launch and to improve the interoperability of the Indonesian system with global markets.³⁴

The Presidential Regulation also reshapes institutional governance. A cross-ministerial dedicated committee, led by the Coordinating Minister for Food Affairs, is proposed to oversee implementation. The timing of full operationalisation has been indicated as June 2026, with large-scale transactions expected to commence shortly thereafter.

7.3 Assessment

Indonesia's performance against the framework is uneven. Pillar I is under construction: the SRUK registry is intended to provide the missing architecture, but its operational readiness is cited in the regulation itself as a determinant of implementation speed. Pillar II has been the principal source of past difficulty. The earlier framework imposed restrictive export rules that were periodically reversed, creating regulatory uncertainty that depressed project pipeline development. Presidential Regulation 110 of 2025 clarifies the export regime but has not yet been tested through actual ITMO transfers. Pillar III is addressed through benefit sharing expectations for nature-based projects but remains ambiguous in implementation detail. Pillar IV is the immediate test: the credibility of the new framework will depend on whether the SRUK can be integrated with the United Nations international registry and whether reporting practices can satisfy automated consistency checks.

The strategic lesson from Indonesia is that regulatory stability is an input to market credibility at least as significant as regulatory content. Policy reversals between 2021 and 2025 discouraged project development and buyer engagement despite the country's exceptional mitigation

³²Government of the Republic of Indonesia, Presidential Regulation No. 110 of 2025 on the Implementation of Carbon Economic Value Instruments and National Greenhouse Gas Emissions Control, revoking PR 98/2021.

³³Ministry of Environment, Republic of Indonesia, Presidential Regulation No. 110 of 2025, Articles concerning corresponding adjustment and the Sistem Registri Unit Karbon (SRUK).

³⁴Government of Indonesia, Mutual Recognition Agreements with Gold Standard (May 2025) and Verra (October 2025).

potential. The 2025 overhaul is substantively sound, but its effectiveness will be judged over a period of years, not months.

8. Cross-Case Analysis and Lessons for Emerging Markets

The three case studies reveal contrasting pathways to Article 6 participation, each with distinct trade-offs. Table 2 summarises the comparison along the four pillars.

Table 2. Comparative Assessment of Article 6 Participation

Pillar	Ghana	India	Indonesia
I. Institutional	Advanced. Dedicated CMO, operational registry, digital linkage to Singapore.	Developed. NSCICM, BEE, GCI, ICM Portal. Strong domestic orientation.	Under reconstruction. SRUK pending full operationalisation.
II. Authorisation	Formalised. Positive/negative lists, conditional NDC linkage.	Conservative. Limited international authorisation to date.	Restructured via PR 110/2025. Untested in practice.
III. Benefit sharing	Encoded in framework; practical detail variable.	Industrial focus limits land-based benefit questions.	Required for nature-based projects; implementation variable.
IV. Transparency	Registry infrastructure in place; confidentiality provisions apply.	Portal-based reporting; awaiting first issuances to test.	Low transaction volume has limited stress-testing.

8.1 The Sequencing Question

The three cases answer the question of sequencing in different ways. Ghana sequenced institutional architecture ahead of domestic compliance infrastructure, banking on external buyer demand to sustain its ITMO pipeline. India sequenced domestic compliance ahead of international authorisation, treating Article 6 engagement as a later stage in a longer industrial strategy. Indonesia initially attempted parallel development but encountered policy volatility that undermined both tracks; its current approach, following Presidential Regulation 110 of 2025, is to consolidate domestic architecture first and then attract international flows through recognition agreements.

The evidence from the three cases suggests that the Indian sequence has lower downside risk. A domestic compliance market creates verifiable demand for mitigation outcomes, which in turn

generates price signals, pipeline formation, and institutional experience. These are the prerequisites for credible authorisation under Article 6. By contrast, a pure export-first strategy relies on external demand that may be episodic, concentrated in a few buyer countries, and vulnerable to changes in the Carbon Offsetting and Reduction Scheme for International Aviation scope or in voluntary market sentiment. Ghana has executed the export-first strategy with unusual discipline, but its replicability depends on institutional quality that is not widely available across emerging markets.

8.2 The Volume-Integrity Trade-off

All three cases confront a common tension between volume and integrity. Ghana's first ITMO transaction involved 1,916 units, a small figure relative to Switzerland's cumulative requirement. India's industrial compliance volumes will be substantially larger but are concentrated within the domestic perimeter. Indonesia's exchange trades at a fraction of the scale of comparable Asian markets despite access to one of the world's largest carbon sinks. The binding constraint in each case is not physical mitigation potential but verified, high-integrity supply that satisfies buyer due diligence and rulebook requirements.³⁵

The policy implication is that emerging markets face a period in which integrity premia can be expected to widen. Buyers, including sovereigns, CORSIA operators, and voluntary market participants subject to Science Based Targets initiative expectations, are actively differentiating between credit types. Jurisdictions that invest in methodological rigour, verification capacity, and transparent authorisation practices are likely to command higher prices even at lower volumes, while jurisdictions that prioritise volume over integrity are likely to see their credits discounted or excluded from premium demand segments.

8.3 The Domestic Political Economy

A further cross-case observation concerns the political economy of domestic support for Article 6 participation. In each of the three countries, carbon market development depends on coalitions across ministries responsible for environment, energy, finance, and industry. Ghana's framework is hosted within the Environmental Protection Authority but was developed in coordination with the Ministry of Finance. India's Carbon Credit Trading Scheme is co-chaired by the Ministry of Power and the Ministry of Environment, Forest and Climate Change. Indonesia's Presidential Regulation 110 of 2025 creates a cross-ministerial committee under the Coordinating Minister for Food Affairs. These institutional designs reflect the recognition that carbon markets are not solely environmental instruments; they are financial and industrial instruments with distributional consequences that require broad governmental ownership.

³⁵L. Schneider and S. La Hoz Theuer, "Environmental integrity of international carbon market mechanisms under the Paris Agreement", *Climate Policy* 19, no. 3 (2019): 386–400.

9. Policy Recommendations

The analysis supports a set of recommendations for emerging markets considering or deepening their engagement with Article 6. They are presented in order of priority.

Recommendation 1: Build domestic compliance capacity before broadening international authorisation.

A functional domestic carbon market is the most reliable foundation for credible international participation. It produces verified data, institutional learning, and a price signal that disciplines project selection. Countries without such infrastructure should regard Article 6 participation as a medium-term objective rather than an immediate revenue source.

Recommendation 2: Distinguish explicitly between conditional and unconditional NDC measures, and authorise only the former for international transfer.

This principle, developed most clearly in the Kenyan and Ghanaian frameworks, protects host countries from overselling. Where a country has not formally distinguished between conditional and unconditional components, it should do so before issuing broad Article 6 authorisations.

Recommendation 3: Codify benefit sharing in primary legislation or equivalent binding instruments.

Voluntary benefit sharing commitments lose credibility during periods of fiscal or political stress. Legislative codification, as in Kenya's 2023 Amendment Act, provides both local legitimacy and buyer comfort. The specific percentages matter less than the enforceability of the commitment.³⁶

Recommendation 4: Invest in reporting infrastructure at a scale commensurate with future transaction volumes.

The Centralised Accounting and Reporting Platform's automated consistency checks will increasingly determine which ITMOs are marketable at premium prices. National registries and reporting practices should be designed to pass these checks without iteration. This is a technical task that requires sustained investment, not an administrative afterthought.

Recommendation 5: Engage selectively with Article 6.4 rather than attempting full participation across all sectors.

The fixed compliance costs of Article 6.4 favour activities with relatively large mitigation volumes and well-defined methodologies. Early engagement through methodologies such as landfill gas,

where technical standards are now operational, is a lower-risk entry point than exploratory engagement in sectors where methodologies are still in development.³⁷

Recommendation 6: Treat Article 6.8 as a complementary, not residual, instrument.

Non-market approaches permit mitigation cooperation without corresponding adjustment obligations. For countries with tight NDC trajectories, Article 6.8 can provide finance and technology transfer without the accounting consequences of Article 6.2. Strategic use of Article 6.8 can preserve mitigation potential for later, higher-value Article 6.2 or 6.4 transactions.

Recommendation 7: Anticipate the interaction between domestic carbon pricing and external trade measures.

The European Union's Carbon Border Adjustment Mechanism, entering full implementation in 2026, creates a direct link between domestic carbon pricing and export competitiveness. Jurisdictions with credible domestic prices may secure partial exemptions; those without may face full levies. This consideration should be reflected in the design of domestic schemes, including the stringency of intensity targets and the recognition of imported credits.

Recommendation 8: Invest in human capital for carbon market governance.

Each of the four pillars ultimately depends on the availability of trained staff in environment ministries, energy regulators, registries, and verification bodies. The gap is most acute in the least developed countries but is also visible in several middle-income hosts. Bilateral capacity-building programmes, including the resources transferred from the Clean Development Mechanism Trust Fund confirmed at Belém, should be directed towards durable institutional capacity rather than one-off technical assistance.³⁸

³⁸COP30 Presidency, "Belém Political Package: Mutirão Decision" (22 November 2025); see also Article 6 technical expert review report discussions.

10. Conclusion

Article 6 of the Paris Agreement is now operational in substance rather than merely in principle. The Baku decisions of 2024 completed the rulebook. The Paris Agreement Crediting Mechanism has accredited its first verification body, approved its first methodology, and is expected to issue its first credits during 2026. Article 6.2 transactions have moved from pilot to practice, with Ghana, Thailand, and a growing list of jurisdictions executing formal transfers. The Belém Package of 2025 confirmed the transition from rulemaking to implementation, without substantively weakening the integrity architecture that had been negotiated at Baku.

For emerging markets, this development is simultaneously a promise and a warning. The promise is finance: a functioning Article 6 can channel capital to low-cost mitigation in jurisdictions that have long struggled to attract it. The warning is that participation is demanding. A country that signs cooperative approaches without institutional depth, authorises activities without reference to its NDC trajectory, or reports without meeting consistency requirements will find itself trading volume for price, and price for credibility.

The three case studies support a cautious conclusion. Ghana demonstrates that early, disciplined participation is possible for well-governed jurisdictions with modest mitigation portfolios. India demonstrates that sequencing, domestic compliance first, international engagement second, is a defensible strategy for large economies with complex industrial bases. Indonesia demonstrates the cost of regulatory volatility and the difficulty of reconciling a national exchange with international integration. Together the three cases suggest that there is no single pathway to effective participation, but there are common prerequisites: institutional architecture, authorisation discipline, benefit sharing, and transparency.

The central risk facing emerging markets is not exclusion from Article 6 but premature participation. A country that authorises its cheapest mitigation outcomes before building the infrastructure to price them correctly will find the Paris Agreement's central promise, that climate finance can flow to where it is most efficient, inverted at its own expense. The discipline of the coming period is therefore to build slowly, authorise narrowly, report transparently, and treat Article 6 not as an export opportunity but as an instrument of industrial and climate strategy.

The Sustainable Capital Research Foundation will continue to monitor Article 6 implementation through its working paper series. Subsequent papers will address the interaction of Article 6 with the Carbon Border Adjustment Mechanism, the evolution of benefit sharing architectures, and the fiscal treatment of carbon market revenues in host jurisdictions.

References

- Abatable. 2025. “Indonesia’s Carbon Market: What You Need to Know.” Policy Briefing, June 2025.
- A6 Implementation Partnership Center. 2026. Implementation Status of Article 6.2 Guidance. Available at: <https://a6partnership.org>.
- Article 6.4 Supervisory Body. 2024. “Standard: Requirements for Methodologies and Activities under the Article 6.4 Mechanism.” Adopted 9 October 2024, entered into force same date.
- Article 6.4 Supervisory Body. 2025. “Methodology AMM001: Methane Emission Reductions from Landfill Gas Capture.” Adopted 30 October 2025.
- Ashurst. 2025. “Major Overhaul of Indonesia’s Carbon Regulatory Framework.” Legal Briefing, December 2025.
- Bureau of Energy Efficiency, Government of India. 2023. Carbon Credit Trading Scheme, 2023. Gazette Notification, 28 June 2023.
- Bureau of Energy Efficiency, Government of India. 2025. “Eight Methodologies for the Offset Mechanism.” Gazette Notification, 28 March 2025.
- Carbon Market Watch. 2024. “FAQ: Fixing Article 6 Carbon Markets at COP29.” November 2024.
- Carbon Market Watch. 2025. “COP30: Attempts to Dilute Inadequate Carbon Market Rules Thwarted.” 22 November 2025.
- Clean Air Task Force. 2024. “Article 6 Can Make or Break Carbon Markets at COP29.” October 2024.
- Climate Policy Initiative. 2024. Global Landscape of Climate Finance 2024. London: CPI.
- Clyde & Co. 2024. “Article 6 Developments at COP29 and Their Implications for Carbon Markets.” December 2024.
- COP30 Presidency. 2025. “Belém Political Package: Mutirão Decision.” 22 November 2025.
- Ecosystem Marketplace. 2025. “From Crisis to Compromise: What Article 6.4’s Permanence Standard Means for Carbon Markets.” Commentary, November 2025.
- Environmental Protection Authority, Government of Ghana. 2024. Framework on International Carbon Markets and Non-Market Approaches. Accra: EPA.
- Fastmarkets. 2025. “UNFCCC’s Article 6.4 Supervisory Body Approves First PACM Methodology.” 7 November 2025.
- Government of India. 2022. Energy Conservation (Amendment) Act, 2022. Act No. 19 of 2022.
- Government of Indonesia. 2025. Presidential Regulation No. 110 of 2025 on the Implementation of Carbon Economic Value Instruments and National Greenhouse Gas Emissions Control.
- Government of Kenya. 2023. Climate Change (Amendment) Act, 2023.
- Institute for Energy Economics and Financial Analysis. 2025. “Two Years after Launch, Indonesia’s Carbon Market Struggles to Find Momentum.” October 2025.
- International Carbon Action Partnership. 2026. “Indian Carbon Credit Trading Scheme.” ETS Status Report, updated April 2026.

- International Institute for Sustainable Development. 2025. “COP 30 Outcome: What It Means and What’s Next.” November 2025.
- KliK Foundation. 2025. “First ITMO Transfer: Switzerland and Ghana.” Press Release, 7 July 2025.
- Legal Response International. 2025. “The Paris Agreement Crediting Mechanism.” Briefing, November 2025.
- Michaelowa, A., Shishlov, I., and Brescia, D. 2019. “Evolution of International Carbon Markets: Lessons for the Paris Agreement.” *Wiley Interdisciplinary Reviews: Climate Change* 10, no. 6: e613.
- Michaelowa, A., Hermwille, L., Obergassel, W., and Butzengeiger, S. 2019. “Governance of Article 6 of the Paris Agreement and Implications for Scaling up Climate Action.” *Climate Policy* 19, no. 10: 1211–1224.
- Ministry of Power, Government of India. 2026. “Launch of Indian Carbon Market Portal at Prakriti 2026.” Press Release, 21 March 2026.
- Nature Conservancy, The. 2025. *Article 6 Implementation: Emerging Trends for Countries’ National Strategies*. Arlington: TNC.
- Schneider, L., and La Hoz Theuer, S. 2019. “Environmental Integrity of International Carbon Market Mechanisms under the Paris Agreement.” *Climate Policy* 19, no. 3: 386–400.
- Streck, C. 2021. “How Voluntary Carbon Markets Can Drive Climate Ambition.” *Journal of Environmental Law* 33, no. 2: 195–209.
- Sylvera. 2025. “COP 30 Article 6 Readiness Update: Which Countries Are Best Prepared?” November 2025.
- Sylvera. 2026. “CDM to Article 6.4 PACM: Details to Ensure Carbon Credit Quality During the Transition.” February 2026.
- UNFCCC. 2015. Paris Agreement. Adopted 12 December 2015; entered into force 4 November 2016.
- UNFCCC. 2021. Decision 2/CMA.3: Guidance on Cooperative Approaches Referred to in Article 6, Paragraph 2, of the Paris Agreement. Glasgow.
- UNFCCC. 2021. Decision 3/CMA.3: Rules, Modalities and Procedures for the Mechanism Established by Article 6, Paragraph 4. Glasgow.
- UNFCCC. 2024. Decision 5/CMA.6: Guidance on Cooperative Approaches. Baku.
- UNFCCC. 2025. “UN Approves First Methodology for Paris Agreement Crediting Mechanism.” Press Release, 30 October 2025.
- UNEP. 2024. *Adaptation Gap Report 2024*. Nairobi: United Nations Environment Programme.
- World Bank. 2025. *State and Trends of Carbon Pricing 2025*. Washington, DC: World Bank.
- ZERO13 and Environmental Protection Authority, Ghana. 2024. Memorandum of Agreement on ITMO Trading Hub and Settlement Network. Signed at COP29, Baku, November 2024.

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