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WHITE PAPER

Taking Stock of the Regulatory Landscape for Project-Based Carbon Credit Markets

By **Dr. Gautam Jain, Preetha Jenarthan, Victoria Prado,** and **Shubham Deshmukh**
June 2026

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Glossary of Key Abbreviations and Terms

Abbreviations

ARR	Afforestation, reforestation, and revegetation: A category of land-based carbon removal activities
ART TREES	Architecture for REDD+ Transactions (ART) and the REDD+ Environmental Excellence Standard (TREES): A certification standard that issues high-integrity carbon credits to national and subnational jurisdictions for verified reductions in deforestation and forest degradation
BACX	Bolsa Argentina de Carbono: A private carbon trading platform in Argentina formed in partnership with the AirCarbon Exchange (ACX) Group, a global digital exchange
BYMA	Bolsas y Mercados Argentinos: The Argentine stock exchange
CA	Corresponding adjustment: The accounting adjustment applied by participating countries under Article 6 to avoid double counting of Internationally Transferred Mitigation Outcomes (ITMOs)
CCP	Core Carbon Principles: ICVCM's benchmark criteria for high-integrity carbon credits
CCTS	Carbon Credit Trading Scheme: India's national carbon credit framework
CDM	Clean Development Mechanism: A carbon crediting mechanism established under the Kyoto Protocol
CDSC	Climate Data Steering Committee: An international coalition of regulators, policymakers, and civil society leaders that aims to standardize corporate climate transition data globally
CO_2e	Carbon dioxide equivalent: A metric used to express the climate impact of different greenhouse gases in a common unit
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation: A global market-based measure that requires airlines to limit their CO_2 emissions by purchasing eligible carbon credits
CRCF	Carbon removal and carbon farming: The European Union's regulatory framework establishing certification criteria and methodologies for carbon removals and carbon farming activities
ETS	Emissions trading system: A compliance market based on a cap-and-trade mechanism, in which a regulator sets a limit on total emissions and issues tradable emissions allowances that covered entities must surrender to match their emissions

IA	Implementation agreement: A bilateral agreement between two countries establishing the terms under which ITMOs may be generated, authorized, and transferred under Article 6.2 of the Paris Agreement
ICC	International carbon credit: A credit issued under Singapore's ICC framework, which sets eligibility and quality criteria for carbon credits that companies may use to offset taxable emissions under the country's carbon tax regime
ICVCM	Integrity Council for the Voluntary Carbon Market: An independent governance body that sets quality standards for carbon credits issued in the voluntary carbon market
IFM	Improved forest management: Practices that increase carbon stocks in existing forests beyond business-as-usual scenarios
IFRS S2	International Financial Reporting Standard 2: A climate-related disclosure standard issued by ISSB
ISDA	International Swaps and Derivatives Association: An industry body that develops standard contracts and legal frameworks for over-the-counter (OTC) derivative markets
ISSB	International Sustainability Standards Board: An independent body that develops standards for companies to disclose sustainability-related information to investors
ITMO(s)	Internationally Transferred Mitigation Outcome(s): Emissions reductions or removals that can be transferred between countries under Article 6.2 of the Paris Agreement to meet climate targets
JCM	Joint Crediting Mechanism: Japan's bilateral carbon crediting mechanism, linked to Article 6.2
JPX	Japan Exchange Group
K-ETS	Korean Emissions Trading Scheme
MRV	Measurement, reporting, and verification
NDC	Nationally determined contribution: Climate action plans submitted by countries under the Paris Agreement
OTC	Over-the-counter: Bilateral or dealer-mediated trading outside centralized exchanges
PACM	Paris Agreement Crediting Mechanism: An international carbon crediting mechanism established under Article 6.4 of the Paris Agreement that generates transferable emissions reduction or removal credits
PCCM(s)	Project-based carbon credit market(s)
REDD+	Reducing emissions from deforestation and forest degradation, plus the roles of conservation, sustainable forest management, and enhancement of forest carbon stocks
SBCE	Sistema Brasileiro de Comércio de Emissões: Brazil's emissions trading framework

SBTi	Science Based Targets initiative: An independent initiative that helps companies set greenhouse gas reduction targets aligned with climate science
UNFCCC	United Nations Framework Convention on Climate Change: A United Nations treaty established to stabilize greenhouse gas concentrations in the atmosphere and provide a framework for international climate negotiations and action
VCMI	Voluntary Carbon Market Integrity Initiative: An independent initiative that provides guidance and frameworks for companies on how to credibly use carbon credits in voluntary carbon markets
VVB(s)	Validation and verification body(ies)

Terms

Additionality	The principle that a credited emissions reduction or removal would not have occurred without the financial incentive provided by carbon credit revenue.
Afforestation	The establishment of forest biomass on land that was not previously covered by trees.
Allowance	A tradable compliance unit issued under an emissions trading system, representing authorization to emit one metric ton of CO_2e. Allowances are allocated or auctioned by a regulatory authority rather than generated from discrete mitigation projects, and are distinct from project-based carbon credits.
Avoidance credits	Credits generated by projects that prevent greenhouse gas emissions that would otherwise have occurred, such as displacing fossil-fueled power generation with renewable energy or capturing landfill methane that would otherwise be vented.
Avoided deforestation	Project activities that reduce emissions by preventing forest loss that would otherwise have occurred; often discussed in connection with REDD+.
Carbon credit	A tradable unit representing one metric ton of CO_2e reduced, avoided, or removed from the atmosphere relative to an established baseline.
Carbon offset	A carbon credit that is used to compensate for emissions elsewhere, whether in voluntary claims or in certain compliance systems.
Co-benefits	Additional positive environmental or social outcomes associated with a carbon project, such as biodiversity conservation, water protection, rural livelihoods, or local economic development.
Compliance market or carbon pricing system	A regulatory system in which covered entities are legally required to account for their greenhouse gas emissions—either by surrendering allowances or eligible carbon credits, if permitted, corresponding to their emissions under an ETS or paying a fixed charge per unit of emissions under a carbon tax framework.

Corresponding adjustment	A national greenhouse gas accounting entry applied by both the transferring and acquiring countries when an ITMO is transferred under Article 6.2, ensuring the underlying mitigation outcome is counted toward only one country's NDC.
Demand-side regulations	Rules governing how carbon credits may be purchased, used, disclosed, and claimed by buyers, including voluntary-use rules, compliance integration, eligibility conditions, and greenwashing-related enforcement.
Double counting	The risk that the same emissions reduction or removal is credited or claimed more than once, whether through duplicate issuance, use by multiple buyers, or simultaneous claiming by more than one country or entity.
Emission reduction credit	A carbon credit that is generated by activities that reduce or avoid greenhouse gas emissions compared with a baseline.
Engineered removals	Technology-based methods that remove greenhouse gases from the atmosphere and store them durably, including direct air capture with geological storage and some forms of carbon capture and storage.
Fungibility	The extent to which carbon credits can be interchangeable across systems, registries, and trading venues.
Integrity criteria	The core quality attributes that are required of a credible carbon credit, including being real, additional, quantifiable, independently verified, unique, and permanent.
Interoperability	The ability of registry systems, accounting frameworks, and market infrastructure to interact effectively across jurisdictions while preserving traceability and environmental integrity.
Legacy credits	Credits from older issuance or project vintages, which are often subject to greater scrutiny and tend to trade at a discount relative to newer vintages, reflecting concerns about baseline integrity, methodological robustness, and alignment with current quality standards.
Legal status of a carbon credit	The way a jurisdiction characterizes a carbon credit in law, for example, as an intangible asset, a tradable asset, or in some cases a financial instrument; it affects ownership, taxation, collateralization, transferability, and insolvency treatment.
Letter of authorization or authorization	A host-country approval allowing a carbon credit or mitigation outcome to be used or transferred in a specified way, particularly for Article 6 purposes.
Market-side regulations	Rules governing trading venues, intermediaries, market infrastructure, transaction transparency, legal classification, accounting treatment, and cross-border exchange of credits.
Mitigation hierarchy	The principle that entities should first reduce and avoid greenhouse gas emissions within their value chains before using carbon credits to address residual emissions that cannot be eliminated.

Permanence	The requirement that credited emissions reductions or removals are durable and are protected against reversal; approaches to managing reversal risk include buffer pools, insurance mechanisms, and minimum durability thresholds, with some jurisdictions requiring storage periods of 100 years or more.
Project-based carbon credit market (PCCM)	A market covering carbon credits generated from discrete projects that reduce, avoid, or remove greenhouse gas emissions, rather than from the allocation or auctioning of emissions allowances.
Removal credit	A carbon credit generated by activities that physically remove carbon dioxide from the atmosphere and store it in biomass, soils, products, geological formations, or other sinks.
Reforestation	Re-establishing forest biomass on land that was previously forested but later lost forest cover.
Retirement	The permanent withdrawal of a carbon credit from circulation after it has been used, such that it cannot be traded or claimed again.
Science-based target	An emissions reduction target aligned with climate science and typically validated under recognized frameworks such as SBTi.
Supply-side regulations	Rules governing the generation of credits, including integrity standards, MRV requirements, registry oversight, methodologies, and sanctions for non-compliance.
Vintage	The year or period in which the underlying mitigation outcome occurred, as distinct from the date of credit issuance.

Executive Summary

Project-based carbon credit markets (PCCMs) facilitate the generation, trading, and retirement of carbon credits from projects that remove, reduce, or avoid greenhouse gas emissions. They offer a pathway to crowd in significant financing for critical decarbonization activities that would otherwise struggle to attract investment, while also, in some cases, providing important co-benefits such as the preservation of water, land, forests, and biodiversity.

PCCMs have expanded steadily following the Paris Agreement, which prompted a proliferation of corporate net-zero commitments. However, the pace of growth has slowed as demand is now concentrating on a smaller pool of high-integrity credits that produce independently verified real, additional, measurable, unique, and permanent reductions in greenhouse gas emissions. In response to this demand, several credible and robust standards have been proposed to advance credit integrity, but because they remain voluntary by design, they cannot provide enforceable safeguards, consistent oversight, or dependable recourse for market participants. For PCCMs overall to gain credibility and function with integrity, countries need regulatory frameworks that can fill these gaps, much as regulation has strengthened trust and accountability in broader financial markets. That said, regulatory oversight should be viewed as an enabling condition rather than a guarantee of a scalable, high-integrity market because structural barriers may still keep demand weak and markets fragmented.

To better understand the varying evolution of regulations for PCCMs across the globe, the Center on Global Energy Policy (CGEP) at Columbia University SIPA conducted a year-long project combining research and stakeholder engagement through multiple convenings. The effort examined regulatory frameworks for PCCMs and emerging trends across countries and regions and assessed whether such frameworks could help close the integrity gap in these markets. The project aims to inform policymakers and regulators seeking to design or refine regulatory approaches for PCCMs, as well as market participants and other stakeholders for whom these regulations are pertinent.

This white paper, a product of this effort, provides a comparative analysis of how G20 countries and Singapore align and differ across key dimensions of PCCM regulation based on an in-depth stocktake of their regulatory landscapes, which are included in the appendix. (The United States was excluded from the stocktake and analysis in this report because it is part of a separate study.)

Several cross-cutting themes emerged from the analysis:

- **Compliance markets are increasingly accepting carbon credits:** While voluntary carbon

markets have been the primary driver of demand for PCCMs from companies seeking to meet their climate pledges, a growing number of countries with compliance mechanisms for mandatory emissions reductions now permits the use of project-based carbon credits under binding rules, but with varying limits on credits and design frameworks.

- **Supply-side frameworks have advanced:** Early regulatory efforts have concentrated on credit generation, where jurisdictions have made the clearest progress in governance and are converging around the quality criteria used to determine credit integrity, although with differing comprehensiveness and stringency.
- **Demand-side rules are emerging but with divergences:** Rules governing credit use and disclosure are gaining traction; however, a lack of consistency, especially around transparency and assurance, is limiting buyers' ability to manage exposure to greenwashing, legal, and reputational risks.
- **Market-side rules reflect a spectrum of regulatory maturity:** Market infrastructure for PCCMs varies across jurisdictions, with regulated exchanges in some countries and self-regulated platforms in others, although bilateral transactions dominate. These differences influence market transparency, oversight, and price discovery.
- **Countries are creating national tracking systems instead of relying solely on international registries:** The shift toward national, government-supervised systems reflects a broader transition to using registries not just for record-keeping but also for authorization, accounting, and market oversight.
- **Progress toward data standardization enables integrity:** Efforts to make credits more traceable across domestic and international markets—including a recent proposal by the G20 Sustainable Finance Working Group for a voluntary carbon data model—seek to strengthen digital interoperability, standardize data, and tighten integration with disclosure and national accounting systems.
- **Legal classification of credits varies:** Jurisdictions differ in how they classify carbon credits and the extent to which they subject them to broader legal and financial oversight. This divergence matters because it shapes not only ownership, taxation, and oversight but also cross-border transferability, which is key to market scalability.
- **Article 6 readiness is a key milestone:** Countries are forming bilateral authorization frameworks and interoperable registry systems to operationalize Article 6 of the Paris Agreement—which allows for voluntary cooperation between countries to reduce emissions

using carbon credits—by either incorporating them into regulations or exploring approaches for compatibility.

Looking ahead, PCCM regulation is likely to move toward a more state-anchored, integrity-driven, and interoperable architecture in which credits are treated less as stand-alone voluntary instruments and more as part of broader climate-governance systems. The next phase of market development is likely to center on deeper integration into national climate law and compliance frameworks, stronger domestic integrity rules that are still globally aligned, and faster development of demand-side governance around claims and disclosure. At the same time, sovereign registries are likely to become critical regulatory infrastructure, while financial oversight may deepen as carbon credits become more liquid and widely traded.

Introduction

Project-based carbon credits create incentives for private entities—especially companies with net-zero emission targets—to finance decarbonization activities outside the scope of their businesses. These credits can offset residual emissions that may be costly or impossible to avoid. The market for these credits thus facilitates the flow of capital to decarbonization activities that otherwise might struggle to attract investments.

But project-based carbon credit markets (PCCMs) have so far fallen short of their potential. The market's inability to self-regulate has led to several controversies and scandals in recent years, some of which involved explicit fraud.[1] The result has been market stagnation, with a growing surplus of credits that have not been retired and credit prices weakening. In response, independent initiatives have proposed robust standards that strengthen best practices for creating high-integrity credits. However, these standards are voluntary and therefore non-binding. Regulations, on the other hand, though not a guarantee, could restore market confidence by creating enforceable safeguards, enabling liquid and scalable PCCMs.

Use of the term "project-based carbon credit markets" in this paper, rather than the more common "voluntary carbon markets" (VCMs), is intentional. The demand for carbon credits is expanding beyond voluntary use, with a growing number of compliance regimes permitting their use by regulated entities. PCCMs therefore encompass VCMs, compliance-eligible carbon credits, and credits traded under international mechanisms, such as those established by Article 6 of the Paris Agreement and the aviation sector.

The authors undertook an examination of existing PCCM regulatory frameworks for the G20 (Group of 20) countries (except the US, which is part of a separate study) and Singapore. The parameters studied across countries—as detailed in section 4—can help identify gaps within a jurisdiction's regulations and offer a means to compare jurisdictions' efforts to identify areas where approaches align and enable interoperability and where they differ in ways that could fragment the market. The 20-country PCCM regulatory profiles, provided in the appendix, inform this white paper's discussion and findings.

This paper begins with a broad description of the current landscape of PCCMs, which, despite recent headwinds, has the potential to meet its promise as the demand for high-integrity credits is likely to grow. Realizing this potential requires first understanding the impediments the market faces and needs to address, which section 2 covers. The next section examines the role of regulations

in strengthening market integrity, transparency, and scalability. As noted, section 4 describes the authors' approach to analyzing existing PCCM regulatory frameworks and provides a snapshot of the current status by country and regulation type, with details covered in the appendix. Section 5 presents the main findings, including the increasing acceptance of carbon credits in compliance markets, regulations evolving from a sole focus on credit generation to also include demand-side use and market infrastructure controls, and the developing dynamics of registry sovereignty and data standardization.

The authors conclude that PCCM regulatory frameworks are likely to evolve along several converging lines: greater integration of voluntary and compliance markets, further global alignment of integrity rules, expanding demand-side regulations, and increasing financial oversight, with sovereign registries emerging as key regulatory instruments. The future of PCCMs is likely to be guided by the legal architecture being built for governing the issuance, use, and oversight of carbon credits, rather than by voluntary, unregulated offsetting commitments.

1. State of Project-Based Carbon Credit Markets

PCCMs are markets covering tradable carbon credits generated from discrete emission removal, reduction, or avoidance projects, which can be used to offset emissions or meet climate goals. Each credit is intended to represent one metric ton of carbon dioxide equivalent (tCO_2e) removed, reduced, or avoided from the atmosphere relative to an established baseline scenario that enables the assignment of a monetary value to a carbon ton.[2] PCCMs are distinct from allowance-based emissions trading systems (ETSs)—they generate credits from discrete mitigation projects, whereas in ETSs, a regulatory authority allocates or auctions compliance allowances, each of which represents permission to emit a ton of carbon dioxide.[3]

To be considered credible, credits should generate real, additional, quantifiable, independently verified, unique, and permanent reductions in greenhouse gas emissions.[4] Projects underlying the credits may include reforestation, afforestation, avoided deforestation (more specifically known as Reducing Emissions from Deforestation and Forest Degradation, or REDD+), engineered removals, soil carbon sequestration, methane capture, improved cookstoves, renewable energy installations, and other activities that would not otherwise occur without the financial incentive from the credit (i.e., activities for which the emissions removed or avoided from the project are deemed additional).[5]

In addition to direct environmental benefits, many projects are designed to generate co-benefits such as biodiversity conservation, natural resource preservation including water, land, and forests and local economic development.[6] Credits generated from projects with such co-benefits often trade at a premium.[7]

The PCCM ecosystem encompasses multiple actors:[8]

- **Project developers** originate and implement mitigation projects and are responsible for managing and maintaining project upkeep throughout its duration.
- **Standard setters** establish methodologies, eligibility rules, and procedural requirements for carbon credit generation and, because of this role, are sometimes viewed as overseers of credit quality.
- **Registries** are systems in which carbon credits are issued, serialized, transferred, retired, canceled, and tracked over their life cycle. (Sometimes standard setting and registry functions are performed by the same entity.)

- **Validation and verification bodies (VVBs)** are responsible for validating, auditing, and verifying project performance throughout its lifespan, and are typically accredited by the standard setter.
- **Intermediaries** such as carbon credit ratings agencies, traders, brokerage firms, online platforms, custodians, insurers, project finance providers, and marketplaces facilitate transactions.
- **Governments and host countries** grant approvals and set rules for domestic use and international transfer.
- **Credit buyers** include corporations, investors, and sometimes sovereigns. Some use the credits as offsets and retire them, while others use them for trading purposes.

1.1 Carbon Credit Demand Drivers

The demand base for project-based carbon credits is broadening beyond voluntary corporate buyers to participants in compliance systems (in jurisdictions that allow it), international market mechanisms (particularly under Article 6 of the Paris Agreement), and specific sectors like aviation. The nature of these emerging demand drivers suggests that the market will consolidate around higher-integrity credits.

Voluntary carbon markets (VCMs) serve as the primary conduit for the issuance and trade of credits to companies seeking to meet voluntary climate targets, satisfy investor expectations, and comply with emerging disclosure requirements.[9] More than 10,000 companies have set or committed to emissions reduction targets validated by the Science Based Targets initiative (SBTi), which in 2025 updated its guidance to allow high-quality credits for mitigating greenhouse gas emissions outside a company's scope 1, 2, and 3 emissions.[10] In parallel, emerging disclosure frameworks, including the International Sustainability Standards Board's International Financial Reporting Standard (IFRS) S2 climate disclosure standard, are increasing transparency expectations around corporate climate strategies and the use of carbon credits.[11]

An additional source of demand is compliance markets, which are increasingly permitting the use of project-based carbon credits to meet regulatory mandates for emissions reductions, albeit with quality filters, geographic restrictions, and usage caps. The largest compliance market, the European Union (EU) ETS, currently does not allow use of carbon credits to meet regulatory requirements, though it recently signaled a potential reintroduction of the use of international carbon credits toward its 2040 climate target.[12] But many other compliance markets, such as those in California, China, Japan, and South Africa, already do. Currently, around 40 percent of

implemented compliance mechanisms (ETSs and carbon taxes) allow for some use of project-based carbon credits to meet obligations.[13] World Bank data shows that of the total carbon credit retirements, the share of credits retired for regulatory compliance went from 9 percent in 2023 to 24 percent in 2024,[14] indicating the increasing relevance of compliance markets as a source of demand.

International carbon markets could also raise demand in the coming years. Article 6.4 of the Paris Agreement establishes the Paris Agreement Crediting Mechanism, which allows for the trading of project-based carbon credits globally under the auspices of the United Nations. Carbon credits can also be transferred between countries as Internationally Transferred Mitigation Outcomes (ITMOs) under Article 6.2, if authorized, and are subject to corresponding adjustments (CAs) to emissions inventories of the seller and buyer countries.[15] Once these mechanisms reach full operationalization, they are expected to generate additional demand, as they enable countries to achieve national emission reduction targets more cost-effectively.

Aviation and other hard-to-abate sectors are driving a portion of structural demand. One such mechanism is the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which allows airlines to use eligible credits from approved programs to meet offsetting requirements.[16] Under CORSIA, airlines must offset emissions above 85 percent of 2019 levels.[17] Under these guidelines, estimated credit demand in 2024 reached 58 million credits and is projected to rise to 160–260 million by 2035.[18] Additionally, CORSIA-approved credits (e.g., Guyana forestry projects) trade at over US$20 per ton, higher than the typical range of $5–$15 per ton for nature-based credits, indicating that aviation can generate a sustained compliance-driven demand while supporting a durable price premium for high-integrity credits.[19]

1.2 Demand Shifting to High-Integrity Credits

PCCMs are undergoing a quality-driven transformation as they move away from oversupplied legacy credits to a smaller pool of newer, higher-quality credits. Even as overall issuance, prices, and market value have fallen, retirements have remained relatively steady, and demand has become more selective, which suggests that the market's next phase will be shaped by credibility, quality, and stronger regulatory foundations.

Cumulative issuance of project-based carbon credits expanded from around 200 million tons of carbon dioxide equivalent ($MtCO_2e$) in 2018 to almost 2,500 $MtCO_2e$ in 2025 (see Figure 1).[20] However, issuance and trading activity have slowed dramatically in recent years due to increased credit integrity concerns, lack of regulatory clarity, and broader macroeconomic factors.[21] The annual issuance of credits dropped by 40 percent from the 2021 peak of 500 $MtCO_2e$ to 320 $MtCO_2e$ in 2024 (see Figure 2). A sharp drop in prices has accompanied the slowdown in issuance

volume—the market value of issued credits declined nearly 30 percent from 2023 to 2024, falling to US$535 million.[22] Despite the drop in issuance, supply continued to exceed retirement volumes, contributing to a growing surplus of unretired credits.[23]

Figure 1: Cumulative carbon credits issuance

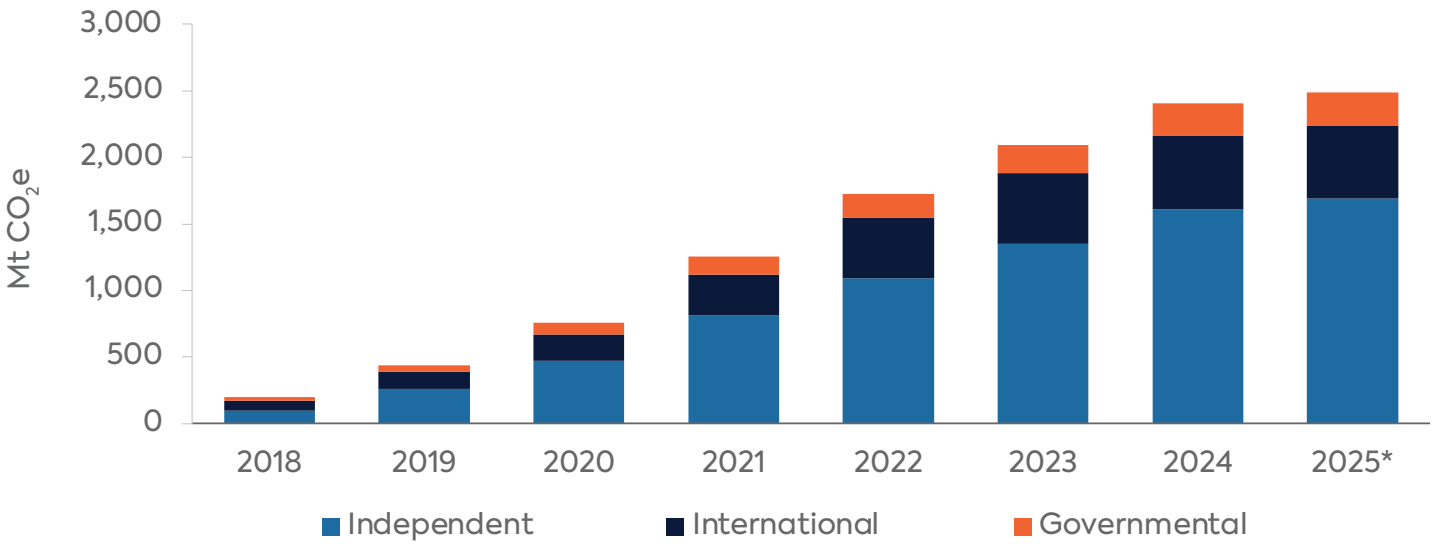
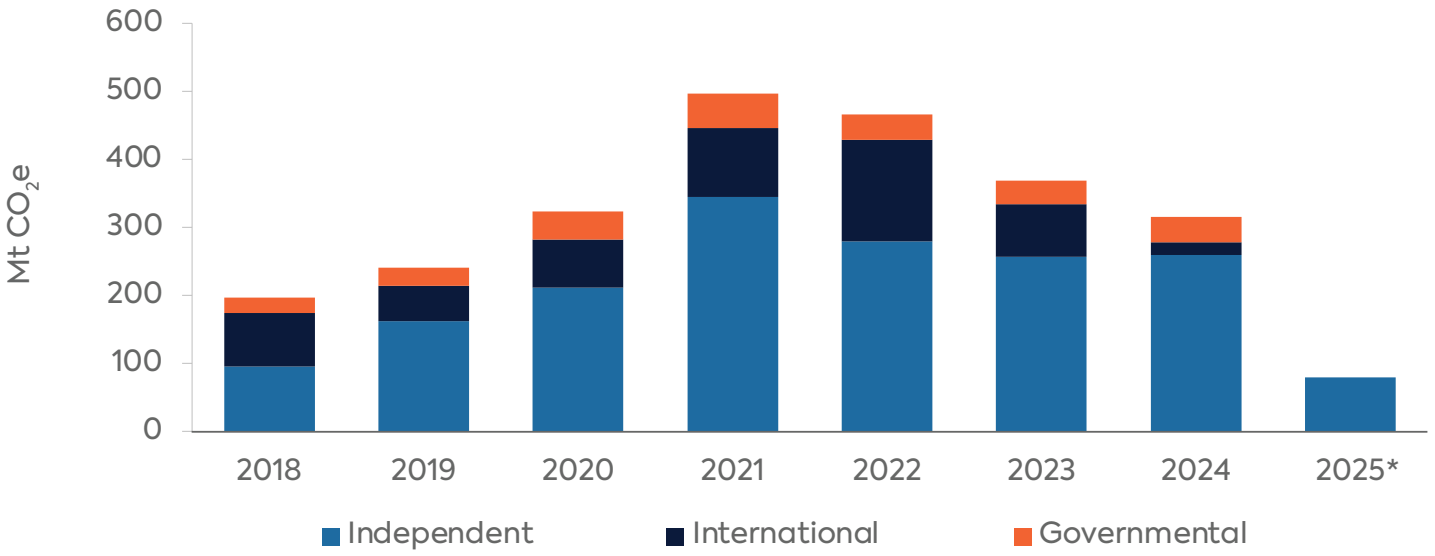


Figure 2: Annual carbon credits issuance



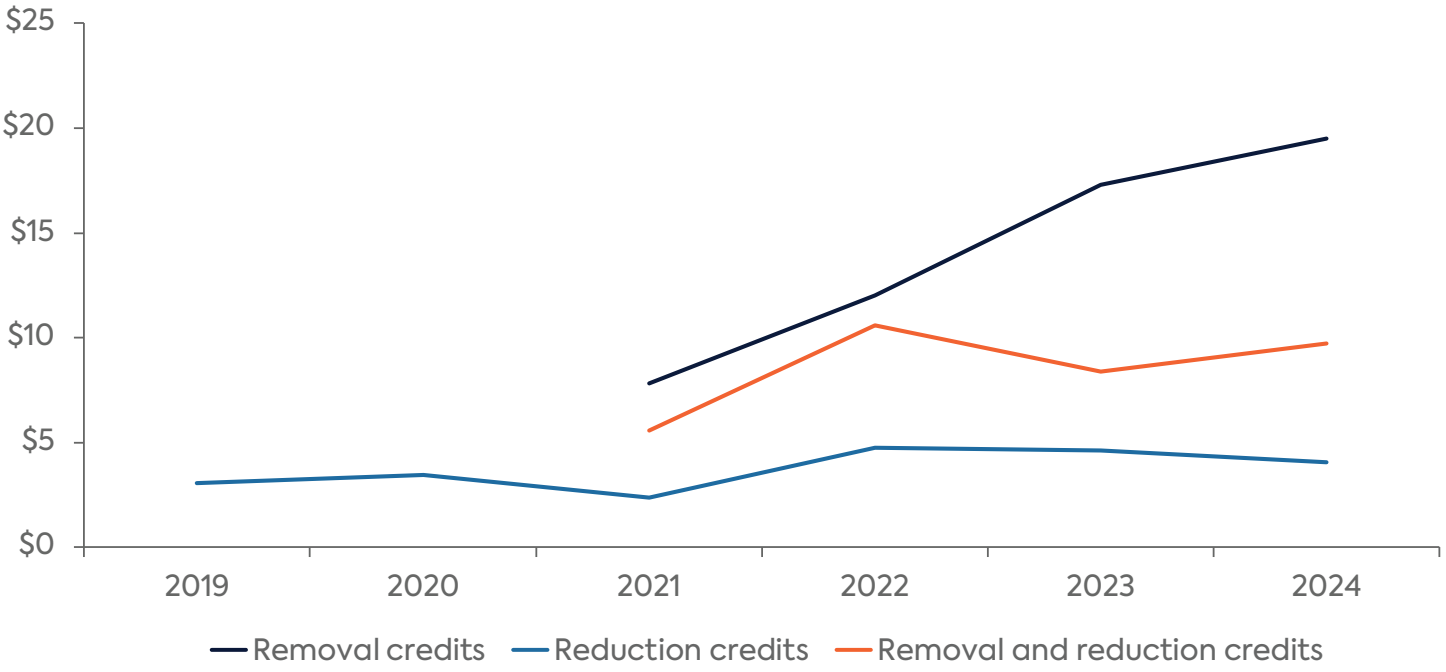
*Note: *Partial year data.*
Source: World Bank, "State and Trends of Carbon Pricing Dashboard," June 2025, https://carbonpricingdashboard.worldbank.org/credits/issuance.

Even as annual issuance and market value of carbon credits have slumped, compliance carbon markets continue to expand at a rapid pace. As of June 2025, ETSs and carbon taxes cover 28 percent of emissions globally, and 80 jurisdictions price carbon.[24] The most advanced is the EU ETS, which covers around 40 percent of the region's greenhouse gas emissions.[25] The total trading volume of global compliance carbon markets reached close to US$1 trillion in 2023, with the EU ETS representing almost 90 percent of it.[26] Total global ETS and carbon taxes revenue for the same year was over $100 billion.[27]

While the contrast between the growth of compliance carbon markets and PCCMs may appear concerning for the latter, there are positive indications of demand when stronger integrity standards, transparency, and regulatory safeguards are in place. First, even as annual issuance of credits has slowed, credit retirements have remained steady at around 180 $MtCO_2e$ per year since 2021.[28] Second, demand patterns are shifting, with buyers becoming increasingly selective toward high-quality credits amid a growing stock of low-quality legacy supply.

Changing demand patterns can be discerned in the data. The price realized for removal credits, on average, was almost five times more than that for reduction credits in 2024 (see Figure 3); it was three and a half times more on average in 2023. Buyers are also concentrating their purchases in newer vintages, which traded at around three times the price of legacy credits in 2024, compared to a 50 percent premium in 2023,[29] as newer vintages are seen as more credible. Older vintage credits face declining demand, with nearly 160 million non-retired pre-2016 credits seeing waning interest,[30] a pattern reflected in the pool of nearly one billion unretired credits, of which approximately two-thirds were issued before 2022.[31]

Figure 3: Price in US dollars per ton of CO_2e for carbon credits from different types of projects



Note: Removal credits are sourced from nature-based and technology-based projects that extract greenhouse gases from the atmosphere and store them durably. Reduction credits are generated by projects that reduce or avoid greenhouse gas emissions. Some nature-based projects produce credits representing both reductions and removals.

Source: Ecosystem Marketplace.[32]

Global retirement data thus reveal the following:

- There is a preference for credits issued within two to five years of retirement, driven by regulatory restrictions, compliance eligibility rules, and market perceptions that post-2016 credits align better with Paris Agreement accounting frameworks.[33] For example, Phase 1 eligibility criteria under CORSIA prioritize credits generated from emissions reductions occurring after 2021.[34]
- Integrity concerns—including questions around additionality, baseline setting, permanence, double counting, transparency, and lack of standardization—have undermined market confidence and momentum, contributing to the demand shift.
- Fragmented rules governing eligibility, accounting treatment, and cross-border integration remain obstacles to the broader scalability and interoperability of project-based credits across jurisdictions.

In response to evolving integrity expectations, the launch of voluntary initiatives like the Integrity Council for the Voluntary Carbon Market (ICVCM) and the Voluntary Carbon Market Integrity Initiative (VCMI) provides an anchor for the market. Suppliers are slowly shifting new project activities to align with ICVCM's Core Carbon Principles (CCPs), which establish a global benchmark for what comprises credit quality.[35] Similarly, VCMI's "Claims Code of Practice" offers guidance for corporate use of credits, focusing on the integrity and transparency of claims.[36]

The 2025 G20 Sustainable Finance Working Group (SFWG) report, under the South African presidency, also advanced the agenda of improving the integrity and interoperability, accessibility, transparency, and scalability of carbon credit markets by articulating voluntary guiding principles for carbon credit data models.[37] The proposal was based on the Common Carbon Credit Data Model developed by the Climate Data Steering Committee (CDSC), which aims to reduce market fragmentation and strengthen traceability across the credit life cycle.

While the development of rigorous standards and data models is a step forward, they remain largely nonbinding and voluntary in nature.

2. Constraints to Scaling Project-Based Carbon Credit Markets

Despite technical advances and growing demand drivers, PCCMs face structural constraints that limit confidence, participation, and scalability. These constraints span integrity concerns, market fragmentation, and gaps in accountability and enforcement.

2.1 Integrity and Credibility Challenges

Heightened scrutiny of methodologies for assessing the integrity of carbon credits and climate claims is making buyers more cognizant of reputational risks. In turn, they are attempting to distinguish credits that are considered credible from those that are not.

PCCMs experienced periods of rapid growth in the mid-2000s following the establishment of the Kyoto Protocol's Clean Development Mechanism—a means of allowing advanced economies to meet their climate targets more cost-effectively by funding emissions reduction projects in emerging and developing countries. A second phase of VCM expansion happened between 2017 and 2021, with widespread corporate net-zero commitments following the Paris Agreement. Credit issuance increased across numerous project categories, including renewable energy, forestry, and household devices. During this period, the primary focus was on scaling the supply of mitigation credits and mobilizing private capital toward emissions reduction and removal activities.

In recent years, however, greater scrutiny has emerged regarding credit quality and market integrity, which are undermining market confidence and deterring some participation despite technical advances.[38] Concerns have centered on methodological robustness, including issues related to additionality, baseline setting, permanence, leakage, transparency, and risks of double counting under the evolving Paris Agreement Article 6 framework.[39]

Although substantial progress has been made in strengthening governance and methodological standards—including the development of supply-side integrity frameworks by ICVCM and demand-side guidance by VCMI—confidence in certain project categories has been affected by high-profile investigations and academic assessments. For example, media reporting and independent research have raised questions about over-crediting in selected REDD+ and cookstove methodologies, contributing to broader debates about methodological rigor and environmental integrity.[40]

In parallel, corporate use of carbon credits has faced increased scrutiny in some jurisdictions from regulators, investors, civil society, and courts. Legal proceedings and public reporting regarding

climate-related claims have heightened attention on the conditions under which credits can credibly support net-zero or carbon neutrality claims.[41]

Market activity has since reflected a degree of recalibration in buyer behavior. Buyers, particularly those with formal sustainability commitments, have demonstrated increased selectivity with respect to project types, vintages, and certification status. Heightened attention to reputational risk, accounting treatment, and regulatory developments coincided with lower voluntary retirement volumes in 2023 relative to preceding years.[42]

Companies are also revising their carbon market strategies due to evolving standards, greater scrutiny of environmental claims, and political pushback on climate policies, which have led some to backtrack on carbon neutral claims.[43] This is particularly important because, outside of voluntary net-zero pledges, there are limited policy incentives for companies to purchase credits.

Reflecting a new, early stage of implementation of stringent integrity standards, ICVCM has approved a few methodologies. It stated, for example, that the CCP label could not be used for credits generated under some of the existing renewable energy methodologies, which represented almost a third of the market at the time of the announcement.[44]

2.2 Market Fragmentation and Transparency Deficits

Differences in registry designs, eligibility rules, accounting approaches, and disclosure practices across jurisdictions raise transaction costs, limit fungibility, and complicate cross-border transfers, underscoring the need for stronger coordination and harmonization.

Project-based carbon credit markets operate across a heterogeneous landscape of registries, standards, and verification bodies. Independent crediting mechanisms, domestic compliance systems, and the emerging Article 6 framework maintain distinct governance structures, methodologies, and registry infrastructures. Limited interoperability between registry systems increases administrative complexity for project developers, intermediaries, and buyers, and may affect liquidity, price discovery, and transaction costs.

Different jurisdictional approaches to carbon credit eligibility and accounting further contribute to market fragmentation. Compliance markets differ in their acceptance of credits based on the crediting mechanism, permitted vintages, and project types. Under Article 6 of the Paris Agreement, corresponding adjustment requirements and authorization processes introduce additional layers of complexity for countries to reconcile. These variations may shape supply and demand conditions and constrain fungibility across markets.[45]

Transparency practices for project-level and market data are also uneven across jurisdictions. While

some registries provide open access to project documentation, monitoring reports, and issuance data, disclosure practices are not uniform. Information related to transaction volumes, pricing, contractual terms, and retirement motivations is often incomplete, missing, or reported with a significant lag. The lack of transparency can complicate price assessment and formation, risk evaluation, and due diligence for market participants. Absence of digitization can also slow down the process of issuing credits.

Efforts to improve coordination across markets and jurisdictions are under development. International initiatives, including the implementation of Article 6 reporting requirements and the efforts to link registry systems, aim to improve tracking of credit use and reduce the risk of double counting. However, differences in registry design, data architecture, and recognition rules continue to require further harmonization to support scalable and transparent cross-border credit transfers.

2.3 Accountability and Enforcement Gaps

Governance and accountability gaps exist because standards and oversight systems remain voluntary, privately administered, and unevenly required across jurisdictions. Differences in VVB oversight, liability frameworks, corrective mechanisms, and regulatory treatment increase uncertainty for buyers, project developers, and long-term investors, reinforcing the need for clearer and more consistent rules across the market.

Many carbon credit standards operate primarily on a voluntary basis and are governed through private contractual arrangements rather than statutory regulatory frameworks. While standards establish rules for methodology approval, validation, monitoring, and verification, enforcement mechanisms may be limited, if any, and those that exist often rely on registry controls, contractual remedies, and market incentives. This has led to variation in how rules are interpreted or applied across participants and jurisdictions.[46]

Oversight of VVBs varies similarly, with accreditation procedures, supervisory practices, and accountability mechanisms differing by jurisdiction and standard. This can create inconsistent—or in some cases perverse—incentives across verifiers. For example, where VVBs are accredited by standard setters but hired and paid by project developers, there may be a risk of conflicts of interest that lead to overly lenient validation or verification outcomes.[47] These differences in oversight can result in uneven application of methodological requirements and, in turn, undermine the credibility of the market.[48]

Buyers and investors face other challenges as well. Where credits are questioned, invalidated, or determined to have underperformed, legal pathways for recourse are either undefined or inconsistent across standards and markets.[49] Approaches to buffer mechanisms, reversals, and

credit cancellation also differ across registries, contributing to further variation in how liability and corrective action are managed.[50]

Beyond market-level governance, divergent policy approaches across jurisdictions add another layer of uncertainty. Variations in regulatory treatment—for example, eligibility rules for compliance systems, recognition of project-based credits, and approaches to Article 6 authorization—coupled with evolving policy signals on corporate claims and disclosure obligations, increase perceived regulatory and market risk, particularly for project developers and long-term investors whose crediting horizons extend over multiple decades.[51]

3. Regulatory Frameworks Respond to Market Challenges

3.1 Voluntary Standards Represent Progress, but Are Non-Binding

The voluntary carbon market has made meaningful strides in self-governance over the past several years, helping to raise expectations for integrity in PCCMs, but the nonbinding nature of the standards continues to limit the impact. While frameworks such as the ICVCM's CCPs and VCMI's "Claims Code of Practice" are beginning to shape supply- and demand-side behavior, most credits in circulation still fall outside these benchmarks, and persistent gaps in enforceability, oversight, and transparency continue to constrain broader market confidence and growth.

On the supply side, ICVCM has developed its CCPs, which are 10 science-based criteria covering governance, emissions impact, and sustainable development, to establish a standardized quality floor for what constitutes a credible carbon credit. As of December 2025, the ICVCM had approved eight carbon crediting programs as CCP-eligible so far: American Carbon Registry, Architecture for REDD+ Transactions The REDD+ Environmental Excellence Standard, Climate Action Reserve, Gold Standard, Verra, Isometric, Puro.earth, and Equitable Earth.[52] As of February 2026, ICVCM has approved 38 methodologies under CCP, with approximately 105 million credits approved to use the CCP label, of which 52 million are available in the market and 53 million have been retired or canceled.[53] Importantly, CCP-labeled credits command an average 25 percent price premium over unlabeled alternatives.[54]

On the demand side, VCMI has developed its "Claims Code of Practice," which complements the ICVCM's supply-side CCPs by defining what constitutes credible corporate use of carbon credits. Companies must first meet VCMI's four foundational criteria—measurement (maintain and disclose greenhouse gas inventory), targets (net-zero commitment and near-term science-based emission reduction targets), progress tracking (demonstrate on track to meet targets), and policy alignment (public posture supports Paris Agreement goals)—before becoming eligible to make a VCMI carbon integrity claim. Once these prerequisites are met, companies may access the tiered silver, gold, and platinum carbon integrity claims, which recognize progressively higher levels of climate action when retiring high-quality carbon credits. VCMI defines high-quality carbon credits as those that satisfy the ICVCM CCPs and are validated through its assessment framework.[55]

On the market side the infrastructure that supports pricing, trading, and reporting of credits

between issuance and retirement—progress toward developing voluntary standards has been more limited. At COP29, the 2024 United Nations Climate Change Conference, the International Organization of Securities Commissions released a final report setting out 21 good practices for regulators and market participants, covering regulatory frameworks, primary and secondary market structures, and the use and disclosure of carbon credits to improve financial integrity and promote orderly, transparent trading in VCMs.[56] It stated that most carbon credits are traded bilaterally or over the counter (OTC), with little information publicly available on prices. In most jurisdictions, only the participants in regulated exchanges, where derivative contracts on carbon credits are traded, are subject to regulatory oversight. In contrast, spot trading in carbon credits remains outside the scope of financial regulation in most jurisdictions, leaving price formation and transaction reporting largely ungoverned. A significant step toward building the necessary infrastructure was the 2025 G20 SFWG report that proposed six voluntary principles to guide the design of carbon credit data tools to promote transparency, accessibility, and interoperability for improving market integrity and scalability.[57]

Yet despite this progress, the fundamental limitations of voluntary frameworks persist across all three dimensions. While it's still early to judge the impact, only 4 percent of total carbon credit issuance in 2024 was CCP approved—the vast majority of credits entering the market have not been assessed against leading quality thresholds.[58] Despite corporate credit retirement patterns indicating a steady shift toward higher-quality credits, most retirements are still mid- to lower-quality credits, as high-quality supply is limited. Sylvera's 2025 report states that the share of high-quality credits (rated BBB or higher) in retirements grew in 2025, but still only to 31 percent from 25 percent in 2024; concurrently, high-rated credits experienced a market deficit for the third year in a row.[59] BeZero Carbon finds a similar trend: The share of retired credits rated A or higher has risen from 17 percent in 2022 to 30 percent in 2025, but 54 percent are still BB or lower (though their share has dropped from 67 percent in 2022).[60] MSCI data based on the first half of 2025 reinforce this pattern, showing that over 60 percent of retirements are still rated BB or lower, and, at the same time, retirements of BBB-and-above credits exceeded new issuances for the first time, creating a deficit in high-integrity supply.[61]

One of the reasons lower-quality credits still dominate supply is that standards are non-binding by definition, as they are voluntary, across all three dimensions—supply, demand, and market-side. As such, there is no mechanism to compel crediting programs to seek CCP assessment, require buyers to meet VCMI thresholds, or mandate transparency in market trading. The result is a market where integrity is advancing, but structural gaps to ensure integrity on the supply, demand, and market sides limit its growth. This reflects a broader reality: Without legal enforceability, voluntary frameworks can set expectations but cannot guarantee outcomes.

3.2 Lessons from Financial Markets' Evolution

Voluntary standards can help establish early market norms, but durable market growth ultimately depends on binding regulatory frameworks that reinforce those norms through legal enforceability, supervisory oversight, and clear market rules. As has been the case in securities, commodities, and derivatives markets, regulations are most effective when they build on existing market practices rather than replace them.

National regulatory frameworks for PCCMs can ensure environmental integrity, strengthen market trust, enhance liquidity through cross-border interoperability, and provide clear avenues for recourse in cases of fraud or non-compliance. Regulations can, for example, make quality thresholds mandatory, requiring additionality, permanence, and robust verification as prerequisites for market access, rather than leave it to a buyer's discretion. An increasing number of countries are either designing or have implemented compliance systems that allow for carbon credits,[62] underscoring a broader move toward binding regulatory frameworks for ensuring the integrity of credits used across both voluntary and compliance systems.[63]

The developmental challenges facing PCCMs, such as the need for consistent standards, robust verification, transparency, fungibility, and safeguards against market manipulation, are not unique. Comparable issues have shaped the evolution of commodities, securities, and derivatives markets over more than a century. Their evolution offers two critical lessons. First, enforcement powers are necessary to gain market trust. Second, functional market norms typically emerge through private experimentation, which is followed by formal regulation that codifies and enforces the standards already established by early market practice, which then allows markets to scale.

As an example of the first lesson, the introduction of mandatory disclosure and civil enforcement powers in US securities markets under the "Securities Exchange Act of 1934," following the 1929 market crash, contributed to a shift in market behavior and illustrates how binding rules and enforcement mechanisms address market integrity gaps that voluntary disclosure cannot.[64] The rigorous enforcement framework established by the act is a deterrent against misconduct and fosters a transparent marketplace, which has supported greater confidence in US securities markets and underpinned their development into one of the most liquid capital markets globally.

As an example of the second lesson, organized trading practices, grading systems, and contract specifications in US commodity markets were defined by the Chicago Board of Trade, which played a central role in establishing standardized terms for forward contracts by the mid-19th century. Federal oversight came decades later, when Congress enacted the "Grain Futures Act" in 1922 and the "Commodity Exchange Act" in 1936. These statutes did not replace existing practices; instead, they formalized and expanded on exchange rules, introduced anti-manipulation safeguards,

and added supervisory authority, establishing a regulatory framework atop pre-existing market infrastructure.[65] Similarly, in global derivatives markets, the International Swaps and Derivatives Association (ISDA)—established in 1985 as a private trade association—developed its first standard documentation in 1987 and introduced the ISDA Master Agreement in 1992. Although not a legal instrument, the Master Agreement has become the de facto contractual standard for OTC derivative markets worldwide.[66]

For PCCMs, this suggests that regulations are necessary and they will be most effective when they incorporate and strengthen emerging standards—such as ICVCM and VCMI—rather than create parallel systems that could fragment the market or conflict with existing practices. Of course, every market faces idiosyncratic issues. PCCMs do not perfectly parallel the other financial markets cited here, and their oversight must be adapted accordingly. For example, since third-party verification and validation are essential elements of project-based carbon credits, regulations must ensure the entities performing these functions are independent and free of any vested interests.

But regulations alone will not be sufficient to meet the challenges the market faces. Even if regulations are introduced across jurisdictions, significant differences between them may perpetuate market fragmentation and limit the ability to scale. Even when rules align well across borders, they may not provide buyers with confidence that reputational risks have been sufficiently mitigated. Similarly, if not designed properly, some of the methodological requirements in the regulations may not be necessary for integrity but could make projects uneconomical for developers and hinder the market's growth. There could also be some jurisdictions where the rules are not enforced, creating loopholes in the system. And given the heterogeneity of carbon credit project types, it may be near impossible to have standardized contracts, proper price discovery, and clearing and settlement mechanisms that institutional capital requires—unlike more homogeneous commodity markets.

Aside from the regulatory system, other structural barriers may exist. For example, corporate net-zero commitments may weaken for political reasons or may not translate into credit purchases even when pledges are sincere, thus keeping demand fragile, which is not something that a regulatory framework can rectify. More fundamentally, absent a domestic compliance obligation or other policy interventions, such as regulated offset allowances, procurement mandates, tax credits, or results-based climate finance, companies face limits on what they are willing to buy on reputational or voluntary commitment grounds alone.

Well-designed regulatory frameworks that strike the right balance for project developers, buyers, and other stakeholders are therefore necessary but not solely sufficient for creating a credible, scalable project-based carbon credit market.

4. Mapping Regulatory Approaches Across G20 Countries and Singapore

4.1 Research Approach and Analytical Framework

The authors performed a detailed analysis of current PCCM regulatory approaches of G20 countries (except the US) and Singapore to assess the state of governmental oversight within supply-side, demand-side, and market-side buckets.

The result—the stocktake provided in the appendix—can be used to identify gaps within a jurisdiction's regulations as well as to compare jurisdictions' efforts to identify areas where approaches align and enable interoperability and where they differ in ways that could fragment the market. The findings could also be used to assess how well each country's regulations are aligned with international frameworks, particularly progress toward integrating domestic credit markets with the Paris Agreement's Article 6—both 6.2 and 6.4—and their intersection with stakeholder-led initiatives like ICVCM and VCMI.

To facilitate the analysis, the regulations were divided into three broad categories: supply-side regulations that oversee credit generation, demand-side regulations that govern credit use, and market-side rules that administer credit trading infrastructure.

Supply-side regulations cover the following parameters:

- **Credit integrity standards:** These are requirements that credits meet pre-defined criteria upon issuance, including standards for additionality, permanence, quantification accuracy, and avoidance of double counting.
- **Monitoring and verification regimes:** These cover rules governing MRV (measurement, reporting, and verification) providers, third-party auditors, and verification processes to ensure credits deliver claimed emissions reductions.
- **Registry and issuance oversight:** These include regulatory frameworks for carbon credit registries, standard setters, and the processes by which credits are issued, tracked, and retired.
- **Sanctions:** These cover penalties and enforcement actions for non-compliance with the regulations.

Under demand-side regulations, the following characteristics are examined:

- **Voluntary use framework:** This can be guidance or requirements for corporations and other buyers for what constitutes acceptable credit use to meet voluntary climate commitments, carbon neutrality claims, corporate sustainability reporting, and accounting treatment of credits by buyers.
- **Compliance market integration:** These are rules governing contexts in which credits can be used to meet regulatory obligations under emissions trading systems, carbon taxes, CORSIA requirements, or carbon border adjustment mechanisms.
- **Eligibility and quality criteria:** These specify standards for which types of credits are eligible for various uses, whether there is a mitigation hierarchy, and what the verification or auditing process is.
- **Sanctions:** These cover enforcement actions against greenwashing or misleading climate claims by the buyers of carbon credits.

Finally, market oversight regulations cover the following parameters:

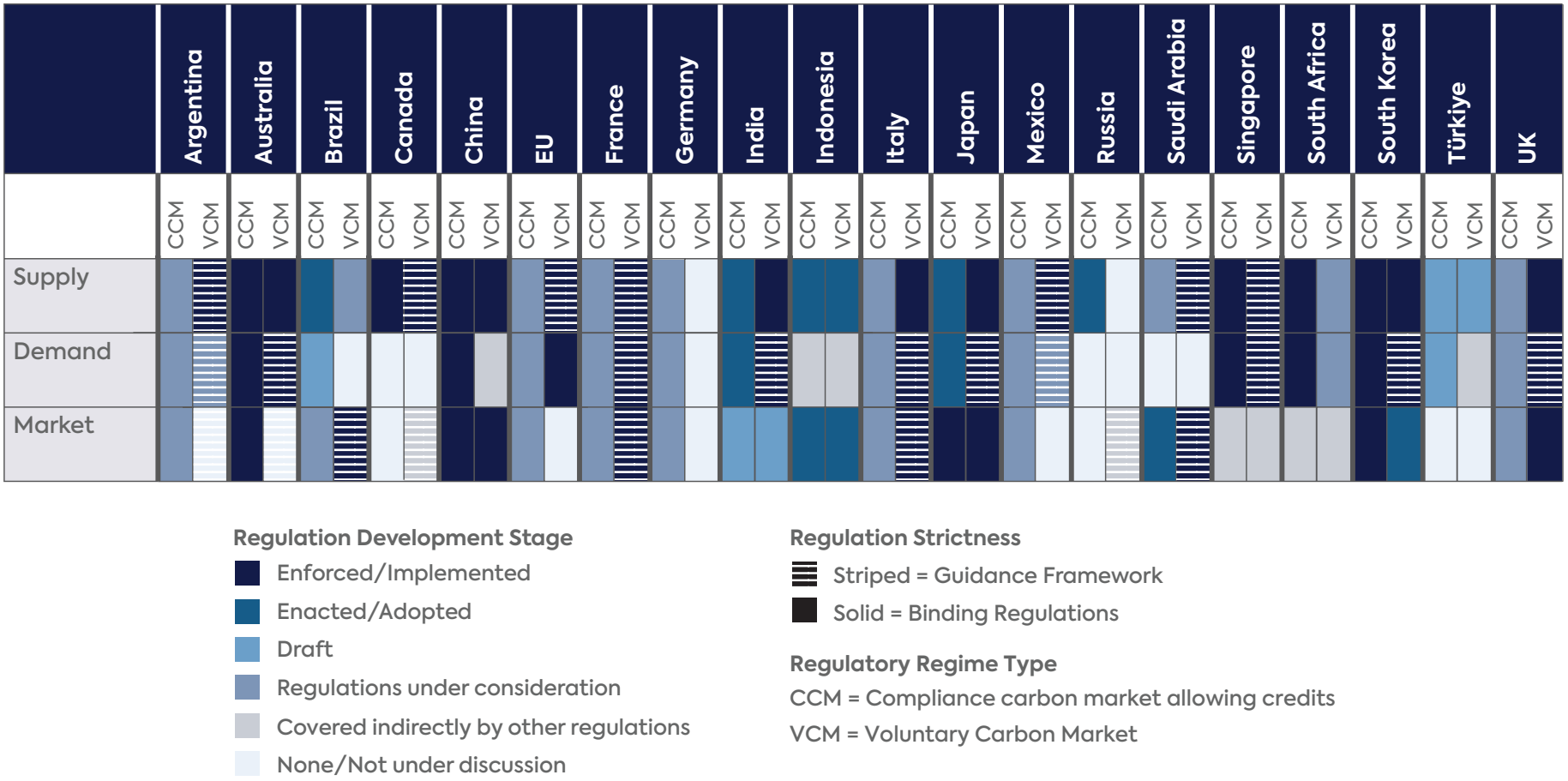
- **Transparency requirements:** These mandate disclosure of transaction volumes, prices, project-level data, and verification documentation to enable informed market participation.
- **Legal classification:** The legal status of a carbon credit shapes its ownership, taxation, oversight, and transferability, with key implications for interoperability.
- **Market infrastructure regulation:** These provide oversight of intermediaries, including exchanges, trading platforms, custodians, and other entities that facilitate credit transactions.
- **Cross-border trading:** These define the rules of engagement with other carbon markets, including those falling under Article 6.

4.2 Regulatory State of G20 Countries and Singapore

The analysis found that while PCCM regulatory frameworks have broadly advanced in recent years, wide disparities remain across G20 countries and Singapore. As such, countries in more advanced stages of implementing detailed regulations could serve as models for those in earlier stages.

Figure 4 provides a summary of the state of regulations in the form of a color shading scheme—with the darkness of the shade reflecting greater maturity of the regulation—complemented with design overlays to capture further details. The table is meant to provide a snapshot of regulatory status across these countries rather than explain every nuance, which can instead be found in the appendix.

Figure 4: A snapshot of PCCM regulatory status by country and regulation category



Source: Authors; more details in the appendix..

The snapshot reveals that regulatory approaches to PCCMs are developing at different speeds across jurisdictions, with Australia, China, Japan, South Korea, and Singapore in more advanced stages than others in developing supply-side, demand-side, and market infrastructure regulations for both compliance markets that allow credits and voluntary carbon markets. In general, early regulatory efforts have concentrated on the supply side, where jurisdictions show the clearest progress in governance and some convergence around core integrity criteria. By contrast, demand-side rules remain more fragmented and largely guidance-based. On the market side, only a few countries demonstrate well-developed trading architectures. These and other themes emerging from the analysis are discussed in more detail in the next section.

5. Cross-Cutting Themes and Insights from the Regulatory Stocktake

Stakeholder engagements by the Center on Global Energy Policy (CGEP) in the form of private convenings with many of the relevant parties in the PCCM ecosystem over the past year have underscored broad agreement that regulations governing the full carbon credit life cycle are necessary for the market to scale up.[67] Stable institutional arrangements and durable policy commitments were viewed as essential to sustaining market confidence and enabling long-term investment in carbon mitigation projects, as companies seek an environment in which the purchase and retirement of carbon credits do not expose them to reputational, legal, or compliance risks.[68]

Inconsistencies in regulatory development across various categories for the 20 jurisdictions examined limit price transparency, increase reputational risk for corporate buyers, and constrain the scaling of PCCMs, despite growing policy attention to integrity and market oversight.

This section highlights the primary themes that emerged from the stocktake of countries'/regions' PCCM frameworks, which can be found in the appendix along with detailed citations. Figure 5 provides a snapshot of how each country has progressed on these themes, followed by a summation analysis.

Figure 5: Country progress across stocktake themes

Themes	Sub-themes	Argentina	Australia	Brazil	Canada	China	EU	France	Germany	India	Indonesia	Italy	Japan	Mexico	Russia	Saudi Arabia	Singapore	South Africa	South Korea	Türkiye	UK
Increasing acceptance in compliance markets	Carbon credit limits																				
	Compliance-VCM framework integration																				
Supply-side frameworks have advanced	Additionality																				
	Permanence																				
	Double-counting																				
	MRV																				
	Co-benefits																				
	Sanctions																				
Demand-side rules emerging, but vary greatly	Use, mitigation hierarchy, and claims rules																				
	Transparency and assurance																				
Market-side rules: A spectrum of regulatory maturity	Trading platform																				
Moving from Int'l registries to national tracking systems	Sovereign vs. international registries																				
Data standardization enables integrity	Registry data standardization																				
Divergence of legal classification	Legal clarity of carbon credits																				
Article 6 readiness as a key milestone	Operational framework																				

Note: The snapshot is based on the current state of regulations. Dark-to-light shading indicates for carbon credit limits: unlimited use, capped use, and prohibited use; for sovereign versus international registries: sovereign registry, reliance on international registries, and no registry in use; and for all other categories: as defined in the legend.

Source: Authors' stocktake analysis.

5.1 Increasing Acceptance in Compliance Markets

Key Takeaways:

- *Areas of convergence: Compliance markets are increasingly relevant as a demand source and a driver of improving credit integrity because of their growing acceptance of carbon credits with clear and binding rules on eligibility and accounting.*
- *Areas of divergence: A wide variation in limits and design features shows that governments still differ on the role credits should play in meeting regulated obligations. They also diverge on whether voluntary crediting frameworks should be integrated with compliance systems or governed separately.*
- *Implementation outlook: A shift toward more structured regulatory treatment of carbon credits through clearer rules on eligibility will improve the integrity of PCCMs. The unresolved question is the extent to which voluntary and compliance markets converge over time.*

A review of regulatory frameworks shows that countries with established compliance mechanisms in the universe analyzed are increasingly permitting the use of carbon credits by regulated entities to meet a portion of their obligations. In these systems, governments have issued binding regulations defining what types of credits are eligible, how they must be generated, and the conditions under which they may be used. Countries that fall within this group of the 20 studied are Australia, Canada, China, Singapore, South Africa, and South Korea.

However, the amount of credits accepted varies considerably across jurisdictions:

High Limits

Under Australia's reformed Safeguard Mechanism, regulated facilities may use Australian carbon credit units or Safeguard Mechanism credits without quantitative limits to offset emissions above their baselines. While use is unlimited, facilities that rely on offsets for more than 30 percent of their baseline are required to explain why on-site emissions reductions were not undertaken.

In Canada's federal output-based pricing system, facilities exceeding their assigned emission limits may use both federal and approved provincial credits. Since 2022, regulations have required that at least 25 percent of compliance must be met through payment into the federal system, effectively capping carbon credit use at 75 percent of a facility's compliance obligation.

In Indonesia, the ETS is currently operational for the power sector and allows the use of eligible carbon credits without a binding quantitative limit. However, as Indonesia expands its ETS to additional sectors, credit use rules are expected to become sector-specific based on regulations

issued by relevant ministries, indicating that a quantitative limit could be set in the future.

Low Limits

China, Singapore, and South Korea allow entities to use only a limited share of carbon credits—capped at 5 percent each—toward meeting their compliance obligations.

South Africa permits facilities to use carbon credits for between 5 and 10 percent of their taxable emissions, depending on sector and activity, though this limit is expected to increase by an additional five percentage points pending parliamentary approval.

Prohibited

A notable exception to these trends is the compliance systems of the EU, France, and the United Kingdom (UK), all of which currently prohibit the use of carbon credits to meet compliance obligations. The EU ETS previously accepted international credits under the Kyoto Protocol but phased out its use in 2021. However, the EU is exploring limited use of high-quality international credits: a December 2025 political agreement permits the use of such credits for up to 5 percent of the 1990 EU net emissions toward the 2040 climate target.[69]

Another area where jurisdictions differ is whether VCM frameworks are being developed separately or in conjunction with the compliance markets:

Joint VCM and Compliance Frameworks

China, South Africa, and South Korea developed voluntary crediting frameworks to function alongside compliance mechanisms that interface through shared registries, methodologies, or eligibility criteria. In these cases, regulations are structured to ensure consistency with national mitigation accounting and to prevent double counting. As an example, South Africa's national consultation paper on developing the country's carbon credit market made several recommendations, including establishing a clearer link between compliance and voluntary markets and introducing exchange-control rules for voluntary carbon credits to facilitate investment, trading, and hedging while minimizing administrative burdens.

Singapore maintains binding rules for carbon credit use within its compliance regime, while voluntary corporate use of credits is addressed primarily through guidance rather than prescriptive regulation.

Mexico does not currently have formal regulations governing PCCMs, though the government has recognized that guidance on carbon credit use for the Mexican ETS should be issued once the ETS's operational regulations are finalized.

Independent VCM Framework

Jurisdictions that prohibit carbon credit use for compliance—such as the EU, France, and the UK—have separate VCM frameworks. These countries regulate essential aspects of voluntary markets through registry infrastructure, tracking systems, and broader legal frameworks governing corporate claims and sustainability disclosures.

In more nascent markets, such as Argentina's, carbon credit tracking mechanisms via a national registry have emerged, which record mitigation activities and support transparency in carbon reporting, even though project issuance and verification continue to rely heavily on international standards and public registries. Legislators were considering drafting a national voluntary carbon market law in November 2024, but a comprehensive domestic VCM regulatory framework has not yet been finalized.

5.2 Supply-Side Frameworks Have Advanced

Key Takeaways:

- *Areas of convergence: Supply-side oversight has advanced the furthest in PCCMs, with growing alignment on core credit features, including integrity criteria, eligible credit-generating activities, registry-level controls, verification requirements, and enforcement mechanisms.*
- *Areas of divergence: There is a wide variation in the comprehensiveness and specificity of the methodologies used for integrity criteria. Jurisdictions also diverge on the strictness of penalty regimes and whether verification is managed domestically through prescribed VVBs or delegated to approved international registries.*
- *Implementation outlook: How far countries move from broad principles to harmonization of rules will determine the level of the integration of markets.*

A consistent trend across jurisdictions is a focus on ensuring the quality of carbon credits generated by projects by addressing core integrity criteria such as additionality, permanence, avoidance of double counting, robust quantification of emissions reductions and removals, sustainable development safeguards, and alignment with net-zero objectives. However, the scope and level of detail vary across countries:

Additionality

Although additionality has been outlined differently across countries, common tests have emerged. The most widespread is a regulatory and statutory baseline test—requiring that projects go beyond

existing legal requirements—incorporated in Australia, Canada, and Singapore.

Many jurisdictions also apply a financial or investment test, requiring demonstration that the project would not have proceeded without the carbon credit revenue; this is reflected in the frameworks of China, the EU, France, India, Italy, South Africa, South Korea, and Türkiye.

As Brazil's and Indonesia's frameworks continue to develop, they are likely to address additionality primarily through project-level methodologies rather than explicit overarching regulatory definitions.

Permanence

While many frameworks acknowledge the concept of permanence, few specify buffer pools, reversal-risk mechanisms, or a defined duration for what qualifies as permanent, instead deferring to project-level methodologies to set those parameters.

Australia is on the more prescriptive end: It defines permanence as a pre-defined duration based on the project type and requires a dedicated permanence plan as part of project registration.

France and Singapore take a less prescriptive approach, referencing permanence as a quality criterion for carbon credits without specifying parameters such as duration requirement, reversal-risk mechanisms, monitoring, and reversal liability, likely relying on project-specific methodologies for details.

Mexico, despite currently lacking a formal regulatory framework for PCCMs, recognizes the need for permanence standards, articulating that carbon credits should have a duration comparable to the emissions they offset.

Indonesia, Russia, and Türkiye may implicitly rely on project methodologies to address permanence, as it is not referenced in their current overarching regulations.

Double Counting

Most jurisdictions attempt to address double counting by requiring that offset activities occur outside compliance obligations and that issuance, transfer, cancellation, and retirement are tracked exclusively within national registry systems. Registry controls are often the primary institutional mechanism to prevent duplication, as elaborated in a later section.

Verification

Most jurisdictions mandate some form of measurement and reporting, with third-party verification through approved VVBs, a common feature across both advanced markets, such as Japan, and developing countries, such as Brazil and India.

Singapore takes a different approach, relying on approved international registries to manage the verification process rather than prescribing VVB requirements.

Co-Benefits

The greatest heterogeneity is observed in approaches to sustainable development benefits and alignment with net-zero transition goals.

South Africa adopts an ambitious approach, requiring that eligible projects actively deliver sustainable development benefits aligned with national priorities such as job creation, rural development, and biodiversity protection, and explicitly excludes activities that achieve emissions reductions without wider co-benefits.

Türkiye frames co-benefits through alignment with the UN Sustainable Development Goals, while Canada supports projects that contribute to ecosystem integrity, biodiversity conservation, and sustainable land use.

Singapore addresses this through a "no net harm" requirement. China, India, and Italy similarly require project-level impact assessments—typically embedded in project design documentation—to demonstrate that activities do not result in significant negative environmental or social outcomes.

Japan encourages co-benefit delivery but relies primarily on sector-specific safeguards, particularly for land-use and forestry projects.

Less developed PCCMs like Mexico's and Russia's have not yet addressed this issue in their regulations.

Sanctions

Enforcement mechanisms on the supply side vary considerably across jurisdictions. The most extensive frameworks—such as Canada, China, and South Korea—combine financial penalties, credit cancellation, and criminal liability. In Canada, for example, financial penalties apply specifically to the misuse of credits in breach of compliance obligations.

The EU's carbon removal and carbon farming (CRCF) regulation establishes a tiered sanctions regime, with consequences ranging from suspension to full exclusion from certification schemes, including safeguards against "scheme hopping"—the practice of switching certification schemes to avoid penalties or exploit weaker standards elsewhere.

Less punitive frameworks, such as Italy's, rely primarily on registry controls, buffer reserves, and compensation requirements rather than administrative fines. South Africa's 2024 law introduces

criminal penalties, though these apply to emissions reporting obligations rather than carbon credit project developers. Russia's framework is limited to procedural remedies, allowing resubmission of rejected applications, but it does not specify broader sanctions. Indonesia's regulations do not explicitly define consequences for non-compliance, though this may be addressed through future sector-specific regulations.

The regulatory stocktake also revealed different approaches to governance:

Central Governance Models

In this approach, one or two government ministries define regulations across the carbon credit life cycle and designate other entities to operationalize them and develop supporting procedures. In the EU, for example, the European Commission develops regulations across the supply and demand sides of the market. In China, the Ministry of Ecology and Environment has led the development of overarching regulations governing carbon credit generation and use, receiving consent from other ministries and designating agencies.

Coordinated Multi-ministry Models

In some jurisdictions, several government agencies develop and oversee different parts of the regulatory framework. Indonesia's Ministry of Environment, for example, leads the development of supply-side regulations, while sectoral ministries set parameters for implementation within their respective sectors. South Africa's model is similar: The National Treasury leads the design of carbon pricing and offset regulations, while the Department of Electricity and Energy develops the framework for domestic carbon credit standards. Australia represents another variation of this approach, with responsibilities for policy design, credit issuance, market oversight, and integrity oversight distributed to multiple institutions, creating checks and balances across the carbon market framework.

India represents a hybrid model, with central leadership from the Ministry of Power and the Bureau of Energy Efficiency, alongside coordination with other ministries, resulting in a centrally anchored but multi-institutional governance framework.

Overall, variations in the stringency of credit integrity criteria and governance models suggest that jurisdictions are setting different thresholds for what counts as a robust framework. This can contribute to market fragmentation, as credits may not be viewed as equally credible or substitutable across systems, and may therefore attract different levels of demand and pricing.

5.3 Demand-Side Rules Are Emerging, but Vary Greatly

Key Takeaways:

- *Areas of convergence: There is a growing recognition that clear demand-side rules on buyers' credit use and disclosure, mitigation hierarchy, and claims oversight are necessary to rebuild trust and enable scale.*
- *Areas of divergence: Regulations for credit buyers across jurisdictions remain fragmented in both legal force and scope, particularly around mitigation hierarchy, transparency, and third-party assurance, lessening buyers' confidence in using credits and making related climate claims.*
- *Implementation outlook: The view that robust credit integrity standards must be matched by clearer and more durable disclosure and credit use rules for buyers to rebuild trust and enable scale is gaining traction. However, how quickly jurisdictions move to binding demand-side obligations remains uncertain.*

While supply-side frameworks have matured considerably in many markets, the regulatory landscape governing how companies purchase and use voluntary carbon credits is at a much earlier stage of development globally. Demand-side rules addressing buyer obligations, mitigation hierarchy, disclosure, third-party verification, and the integrity of climate claims remain uneven across jurisdictions. This sentiment was echoed in CGEP's roundtable convenings, in which experts underscored that buyers are more likely to engage when they can transact under clear, stable, and durable rules that reduce legal and reputational risk, and that robust credit integrity standards and a predictable operating environment for buyers must advance together to rebuild trust and enable scale.[70]

One area among the G20 countries and Singapore where approaches to demand-side use rules vary considerably is in ambition and legal force:

Strict Rules for Use

Demand-side frameworks in several countries reflect a clear policy direction toward more structured and integrity-focused voluntary credit use, even if legal obligations have not yet been proposed.

Italy is in a more advanced position as it imposes a legally binding mitigation hierarchy on buyers participating in the national registry, requiring companies to measure, avoid, reduce, and compensate in strict sequence before credits can be used as offsets, with their use legally restricted to residual emissions only—defined in practice by reference to sector-specific decarbonization

benchmarks rather than physical abatement limits.

The UK positions credits as a complement to, not a substitute for, deep emissions reductions, and requires transparency in how credits are used within transition plans; net-zero or carbon neutrality claims relying on offsets must be substantiated and transparent, with civil and, in serious cases, criminal consequences for non-compliance. France similarly codifies a mitigation hierarchy for signatories and requires reporting across all three emissions scopes with time-bound reduction commitments.

The EU requires disclosure of carbon credit use in transition plans and investor-facing communications, though the scope of sustainability reporting has been narrowed following recent reforms.

Less Strict Rules for Use

In India, Japan, and Singapore, companies are strongly encouraged to prioritize internal emissions reductions before using credits, but no binding legal obligation enforces this hierarchy. Singapore is notable for its dual-track structure linking compliance and voluntary framework, but demand-side rules for voluntary corporate buyers in these jurisdictions remain guidance rather than statute.

Similarly, South Korea's Korean Emissions Trading Scheme (K-ETS) embeds credit use within a compliance architecture with defined eligibility, quantitative caps, and traceability, but it does not extend to rules governing voluntary corporate buyers or climate claims made outside the ETS. For voluntary use, Korea is expanding corporate climate disclosures, but neither system as yet imposes a binding mitigation hierarchy or substantiation requirement for offset-based claims.

The least developed areas of demand-side regulations are on transparency and assurance, including public reporting and third-party verification requirements:

Strict Disclosure and Verification Requirements

Japan imposes robust public disclosure and verification obligations under its compliance framework. Participants must report annual emissions, allowance holdings, compliance status, and credit use, while project-level data, including methodology, issuance volumes, and retirements, is publicly accessible. Credits must be independently validated by government-accredited third-party bodies, and corporate emissions reports require verified submissions.

The UK has concrete regulations governing claims disclosures for voluntary use, combining legally binding obligations across multiple regulators. Companies face fines of up to 10 percent of global annual turnover (i.e., worldwide revenue of the entire corporate group) for misleading environmental

claims. There is an advertising regulator with powers to ban ads and require corrective public statements, and a financial regulator requiring sustainability-related claims by authorized firms to be fair, clear, and not misleading. While still under consideration, credit use is expected to be disclosed separately rather than netted into emissions figures, and the transition planning framework encourages organizations to detail the role and volume of credits used toward targets.

Partial Disclosure and Verification Requirements

France mandates registry-level transparency—all issuances, transfers, and retirements are publicly published—and requires independent auditor validation and regional government approval for project credits under its low-carbon label. However, demand-side disclosure for voluntary users outside of the label carries no legal obligation, and additional corporate assurance over offset claims remains voluntary.

The EU requires third-party verification only on the supply side for credit issuance and recertification. Companies within the scope of mandatory corporate sustainability reporting must disclose credit use, but this flows through corporate reports rather than registries. There is no requirement to disclose who retires or uses credits for voluntary purposes, nor any demand-side assurance obligation for buyers.

Singapore presents a split picture. On the compliance side, transparency is largely achieved through the approved programs themselves, all of which publish project documentation, methodologies, and issuance and retirement records in publicly accessible registries, rather than through a stand-alone national requirement. A dedicated national registry for compliance credits is also being developed. In the voluntary market, companies are encouraged but not required to disclose credit type, volume, project location, and any third-party ratings obtained.

Italy's registry is publicly accessible, providing project and transaction-level data including issuance, transfers, and retirements. Corporate buyers face no disclosure obligation unless they make public environmental claims, in which case, the competition authority may investigate and require substantiation. There is no standing mandatory assurance requirement for buyers.

Minimal Disclosure and Verification Requirements

Canada, India, Mexico, Russia, and Saudi Arabia impose no meaningful demand-side transparency or assurance obligations.

As demand-side rules develop, a move toward harmonization across jurisdictions will be important. If rules vary too widely, buyers may continue to face uncertainty over permitted use, claims, and regulatory durability, undermining confidence and slowing the market's ability to scale.

5.4 Market-Side Rules Reveal a Spectrum of Regulatory Maturity

Key Takeaways:

- *Areas of convergence: Market-side infrastructure is becoming more formalized in several countries, with growing attention to registry-linked trading, settlement, retirement, and safeguards. Even where trading platforms are not yet under full financial supervision, there is a clear move toward more structured market design and stronger oversight.*
- *Areas of divergence: PCCM trading infrastructures vary widely across jurisdictions, from fully regulated exchange environments to markets where trading remains largely bilateral and outside formal oversight. They also differ in how far rules extend to market conduct, price transparency, clearing, and settlement.*
- *Implementation outlook: There is a gradual shift toward more formal and scalable trading infrastructure, supported by clearer legal treatment of credits and stronger market oversight. Whether nascent and self-regulated systems will evolve into fully regulated market ecosystems is unclear.*

Market-side infrastructure for carbon credit trading spans a wide institutional spectrum across countries: from fully regulated exchange environments to jurisdictions where no formal trading venue has yet been established.

Formally Regulated Trading Platforms

At the most formalized end of the spectrum, Indonesia has established a regulated national carbon exchange that is licensed, supervised, and overseen by the financial services authority, integrating carbon credit trading directly into the country's capital market infrastructure. All units must be recorded in the national registry and the carbon credit registry, with trading, clearing, settlement, and retirement conducted under formal regulatory oversight to ensure that credits are not reused or double counted.

The Japan Exchange Group (JPX) Carbon Credit Market is operated by the Tokyo Stock Exchange, commissioned by the Ministry of Economy, Trade and Industry, as part of the country's decarbonization policy. Day-to-day market rules covering participant eligibility, settlement, price discovery, and trade reporting are set by JPX's own operating protocols. Since the credits generated under Japan's J-Credit scheme are classified as non-financial instruments under Japanese private law, rather than securities, there is no financial regulatory supervision of carbon credit trading. However, in June 2024, Japan's financial regulator launched a study group that examined trading transparency, investor protection, and infrastructure design ahead of Japan's mandatory ETS, that

launched in April 2026. The group's draft report, published in June 2025, recommends developing high-level principles for carbon credit trading aligned with international frameworks, including the International Organization of Securities Commissions, signaling that closer financial regulatory oversight is anticipated as the market matures.[71]

Self-Regulated Trading Platforms

South Africa has developed several formal exchange infrastructures, including the Johannesburg Stock Exchange's V-Carbon platform, launched in partnership with Xpansiv in February 2025. The V-Carbon platform provides order-book trading, OTC settlement, and connectivity to both international and domestic registries. However, it currently operates on a self-regulatory basis rather than under dedicated government carbon market legislation, meaning formal regulatory oversight remains limited. South Africa's Green Asset Exchange, which is another private platform that facilitates voluntary carbon credit trading, announced in January 2026 a platform upgrade as well as a partnership with Credible Carbon, a local voluntary registry, reinforcing reliance on private infrastructure in the absence of a sovereign equivalent. A government consultation paper proposes legislative changes to clarify the legal and financial status of carbon credits, exploring their recognition as tradable intangible assets and adjusting financial market regulation to support both exchange-based and bilateral trading. Similar to Japan, this reflects an incremental shift toward a more formalized and scalable market ecosystem, though regulated derivatives, clearing, or cross-exchange carbon trading infrastructure are not yet in place.

Formal Trading Platforms Nascent or Absent

In Argentina, trading activity occurs primarily via OTC transactions or through the private Bolsa Argentina de Carbono (BACX) platform, which implements its own risk management procedures and due diligence processes but operates without formal government regulation or endorsement. The local stock exchange, Bolsas y Mercados Argentinos (BYMA), registers credit trading via an Excel database, although the Comisión Nacional de Valores, Argentina's national securities commission, has clarified that it does not supervise these transactions, having authorized BYMA to register them only as a complementary activity. While the national registry supports project-level tracking, it does not govern trading or settlement processes.

At the least regulated end of market-side rules, Türkiye has not yet established a formal trading venue for PCCMs. The country's draft crediting framework focuses primarily on a state-run registry for issuing credits rather than on trading infrastructure. In the absence of a regulated exchange or marketplace, trading may occur through bilateral private transactions between market participants.

As trading infrastructures evolve, differences in how markets are regulated will shape transaction

and pricing transparency, the strength of oversight, and the capacity of markets to support broader participation and growth in the future.

5.5 Moving from International Registries to National Tracking Systems

Key Takeaways:

- *Areas of convergence: There is a movement toward national registry architectures that record issuance, ownership, transfers, and retirements, creating an authoritative domestic accounting layer. Across jurisdictions, registries are being used as regulatory instruments to control eligibility, enforce MRV and disclosure requirements, prevent double counting, and support traceability, rather than merely as record-keeping tools.*
- *Areas of divergence: Some countries use centralized national registries, others rely on a sovereign accounting layer over external registries, and some integrate VCM and ETS registry infrastructures. These models also vary in how they handle interoperability, government control, and linkages with external or international registries.*
- *Implementation outlook: Registry design is viewed as the authoritative layer for carbon credit accounting and oversight, helping strengthen traceability and domestic control over issuance, transfers, and retirements. What remains challenging is interoperability across multiple registries, particularly how reconciliation, serialization, and Article 6 controls will be coordinated in practice.*

Sovereign registries are no longer merely passive record-keeping tools; they are increasingly functioning as regulatory instruments to:

- Control eligibility and authorization
- Enforce domestic MRV and disclosure rules
- Prevent double issuance and double claiming
- Anchor compliance-grade accounting
- Enable chain-of-custody traceability
- Support potential Article 6 interoperability

Importantly, "registry sovereignty" does not always mean constructing a single, state-operated registry for all credits. Rather, it means ensuring that the government retains a binding ledger function either by directly operating a national registry or by requiring regulated evidence of

issuance and retirement to be recorded within a government-controlled system that serves as the authoritative accounting layer.

Models of registry sovereignty include the following:

Centralized National Registry

Italy's PCCM is centered on the National Public Registry of voluntary carbon credits, which is designed to function as the official system of record for credits issued under the domestic forestry crediting framework. The registry assigns unique serial numbers, records issuance and retirement, and coordinates with national land and forestry information systems to enhance traceability and reduce the risk of double counting. The Italian integrity controls, such as serialization, cancellation or retirement controls, and cross-checking with land-use databases, are embedded at the registry layer itself, rather than left solely to project-level documentation.[72]

India's Carbon Credit Trading Scheme (CCTS) similarly embeds a registry with a centralized design that records the issuance, transfer, banking, and retirement of carbon credit certificates and is institutionally linked to scheme administration and trading oversight bodies.[73] The CCTS framework goes a step further than Italy as it anticipates the registry acting as a meta-registry, capable of establishing linkages with other registries subject to government approval. This signals a policy intent to centralize life cycle accounting domestically while enabling controlled interoperability, which is relevant in the context of India developing procedures for the authorization of corresponding adjustments under Article 6.[74]

Sovereign Accounting Layer over External Registries

Singapore's compliance-use channel allows facilities to use international registries from approved programs, but requires evidence of retirement via a government ledger entry. Under the country's International Carbon Credit (ICC) Framework, tax-liable facilities must submit a "Notice of ICC Use," retire the credits on an approved carbon crediting program registry,[75] and then submit evidence of retirement through a government system, which becomes the official compliance record for the state.[76] This structure preserves market access to multiple international registries while anchoring compliance integrity in a government-controlled reporting and validation process, thereby creating a sovereign accounting layer that sits above external registries.

Integrated Carbon Credit and ETS Registry Infrastructure

South Korea employs a unique state-operated model in which the carbon credit registry is integrated with the K-ETS registry.[77] This enables carbon credits to move into compliance surrender without losing traceability. The key design feature is interoperability within government systems:

Units maintain chain-of-custody integrity across issuance, conversion (where applicable), trading, and compliance surrender.[78] This integration reduces risks associated with registry fragmentation and reinforces the credibility of carbon credits used within K-ETS.

Registry as Regulatory Backbone

Brazil's national registry carries both regulatory and legal weight, functioning not only as a credit record-keeping system but also as an instrument of official climate policy enforcement. Following the enactment of a law in 2024 establishing the emissions trading system, Sistema Brasileiro de Comércio de Emissões (SBCE), Brazil has announced development plans for the digital infrastructure that will operate as the central registry layer for the compliance market.[79] Official communications describe the registry as consolidating emissions reporting, target tracking, and registration of tradable instruments, positioning it as core financial market infrastructure rather than a peripheral database.[80]

Registry systems are increasingly shifting toward sovereign models that go beyond record-keeping, serving instead as tools for domestic control over the accounting, authorization, and oversight of credits.

5.6 Data Standardization Enables Integrity

Key Takeaways:

- *Areas of convergence: Registry development is increasingly being paired with data standardization, with growing alignment around three principles: standardized unit metadata and unique identifiers, interoperable machine-readable systems, and public transparency.*
- *Areas of divergence: Jurisdictions differ in how fully they implement these principles and how far registry systems have evolved from basic record-keeping to integrated market infrastructure. Jurisdictions also diverge on public transparency versus confidentiality in registry design.*
- *Implementation outlook: Registry systems built on standardized data, traceability, and stronger integration with broader regulatory functions that support integrity, transparency, and interoperability are effective. Gaps remain in automated reconciliation, robust audit trails, and cross-border interoperability under Article 6.*

Integrity failures in PCCMs often manifest as data failures: inconsistent unit attributes, incomplete public documentation, limited traceability of transfers, or unclear retirement claims. Jurisdictions addressing these weaknesses are gravitating toward three data principles:

1. Standardized unit metadata and unique identifiers to make credits traceable and reduce double counting
2. Interoperable, machine-readable data systems to connect registries and enable automated checks
3. Public transparency to improve market confidence and oversight, while balancing confidentiality

Several countries are already implementing some of these three principles. The UK's registry illustrates principles 1 and 3 in a voluntary context: It provides a consistent, publicly accessible ledger for the issuance and retirement of units associated with UK standards (Woodland Carbon Code and Peatland Code), enabling buyers to verify status and confirm retirement.[81]

Australia's approach demonstrates all three principles at the compliance level—its registry uses serialized unit tracking, conducts account-based transfers, and supports interoperability with third-party trading platforms.[82] Japan's crediting frameworks (J-Credit scheme and Joint Crediting Mechanism [JCM]) similarly rely on registry systems to manage issuance, ownership, and transfer, supporting traceability for domestic-use cases and, increasingly, alignment with international cooperation pathways.[83]

The path forward, especially as Article 6 infrastructure matures, is registries that can support automated reconciliation and robust audit trails, similar to other financial markets.[84] The United Nations Framework Convention on Climate Change's (UNFCCC's) explicit emphasis on registries as official tracking tools, unique identifiers, and interoperability between national and international systems signals what best practices will be for cross-border carbon market operations. The 2025 G20 SFWG principles reinforce this direction, explicitly calling for data tools—such as the one developed by CDSC—that are publicly accessible, span the entire credit life cycle, use widespread interoperable formats, and leverage best practices from financial markets while remaining consistent with UNFCCC and Article 6 reporting structures.[85] In that context, machine-readable, interoperable data is the mechanism through which markets can scale while preserving environmental integrity.

A practical implication for regulators is that registry policy is becoming inseparable from: (i) MRV rules (data inputs), (ii) claims guidance (how retirements are used and disclosed), and (iii) cross-border authorization and accounting (Article 6 readiness). Countries that treat registry design as a stand-alone database could risk perpetuating fragmentation; those treating it as an integrated regulatory function are moving faster toward supporting international carbon credit trades. India's meta-registry framing and planned linkages, Indonesia's consolidation of national carbon economic value instruments within its national registry while simultaneously tracking its carbon

units separately, and Brazil's SBCE platform build-out each point to this integration logic of registry sovereignty and standardized data as the operational foundation for integrity, transparency, and eventual interoperability.

5.7 Divergence of Legal Classification

Key Takeaways:

- *Areas of convergence: Legal clarity is essential for market development, particularly for ownership, transferability, and cross-border transactions. Clarifying legal status is also important for market liquidity and financial intermediation.*
- *Areas of divergence: The legal status of credits across jurisdictions ranges from undefined to still being developed to expressly classified. Where defined, credits are classified in different ways, including as intangible assets, tradable assets, or securities.*
- *Implementation outlook: Greater legal clarity is helping support ownership rights, transferability, accounting treatment, and market confidence. It remains uncertain whether different domestic legal classifications can support cross-border interoperability without full harmonization but with alignment on core principles such as ownership, transparency, and credible standards.*

Understanding the legal status and classification of carbon credits has become essential to the expansion of PCCMs because of their relevance in cross-border transactions. The regulatory stocktake across the G20 and Singapore shows that the legal nature of credits is either undefined, in the process of being defined, or classified in different ways—for example, as intangible assets or financial instruments. These differences have important implications for how carbon markets operate in the future, because they determine key aspects of market functioning, including ownership rights, taxation, collateralization, and treatment in insolvency, but most importantly, transferability, which is key to creating interoperable markets.

Without clarity about the legal status of credits, buyers may face uncertainty over whether they acquire valid ownership, whether credits can be pledged as collateral, whether claims to credits would survive insolvency, or whether security interests can be enforced in international carbon markets.[86] Classification also affects fungibility, or the ability of credits to be treated as interchangeable units across registries and trading platforms—an essential feature for liquidity, price discovery, and the development of standardized trading and financial products.

Most countries covered in the stocktake define carbon credits in broadly functional terms as certified units representing one ton of CO_2 equivalent avoided, reduced, or removed,

without specifying if they are legally classified as a distinct asset class, thus leaving their legal status ambiguous. This approach is reflected across jurisdictions at different stages of PCCM development, including France, India, Japan, Singapore, and South Africa.

Differences emerge even in how these units are defined within domestic frameworks across compliance and voluntary use of carbon credits. South Africa distinguishes between carbon credits and carbon offsets, defining the latter as a specific type of credit issued under international standards that are eligible for use by regulated entities to reduce their carbon tax liability. India, by contrast, does not make this distinction depending on carbon credit use.

In Indonesia, carbon units are classified as securities when traded on exchanges, placing them under the supervision of the financial market authority and subjecting transactions to financial market regulation. In Brazil, under SBCE, carbon credits are defined as tradable assets ("civil fruits") representing one ton of CO_2 equivalent generated from verified mitigation projects or programs under approved methodologies. However, when carbon credits are traded in financial markets, they may be treated as financial securities and fall under the regulatory oversight of the Brazilian Securities and Exchange Commission.

Despite the absence of established legal definitions for carbon credits in some countries, several have begun examining how to provide greater clarity. Studies in France, Japan, and South Africa illustrate different approaches to two key questions: the legal nature of carbon credits and their treatment under financial market regulation. France adopts a property law approach, concluding that voluntary carbon credits should be treated as intangible assets recorded in registries, rather than securities or contractual claims, with ownership determined by registry entries. It also suggests that regulators monitor market development and consider extending financial market rules, particularly for derivatives, if secondary markets expand.[87]

Japan takes a more cautious approach, avoiding formal legal classification and instead treating credits as environmental value certificates generated under baseline-and-credit systems, with policy attention focused on strengthening trading infrastructure, transparency, and market conduct rather than integrating credits into securities regulation.[88]

South Africa may adopt a finance-integrated model in the future, recommending that carbon credits be defined as intangible assets while proposing that they may be treated as unlisted securities when traded in financial markets, enabling trading, clearing, and settlement through regulated financial infrastructure and providing clearer accounting, tax, and regulatory treatment.

Stakeholder engagement conducted through CGEP roundtables broadly reinforced the importance of clarifying the legal status of carbon credits to support market development.[89] Participants noted

that uncertain legal classification across jurisdictions can constrain market liquidity, particularly for cross-border trading and financial intermediation. Clear legal characterization—whether as property rights, securities, or other tradable assets—helps establish ownership, accounting treatment, and regulatory oversight, all of which are necessary for scaling participation by financial institutions and improving market liquidity.[90]

At the same time, stakeholders emphasized that full harmonization of legal classifications across jurisdictions may not be necessary. Even when approaches differ, participants suggested that interoperability between registries and regulatory frameworks could still enable cross-border trading if core principles such as clear ownership, transparency, and credible standards are aligned.[91]

5.8 Article 6 Readiness Is a Key Milestone

Key Takeaways:

- *Areas of convergence: Article 6 readiness is becoming a practical test of whether jurisdictions can connect domestic frameworks to international carbon markets. Countries are codifying corresponding adjustment functions in domestic rules and building the registry, reporting, and bilateral infrastructure needed to transfer ITMOs.*
- *Areas of divergence: Some countries have embedded Article 6 functions directly into policy design and operational structures, while others are targeting compatibility, enabling conditions, and readiness infrastructure.*
- *Implementation outlook: Countries that are embedding authorization procedures, registry upgrades, and bilateral transfer arrangements into their systems are better positioned to support credible cross-border PCCM activity.*

Across jurisdictions, Article 6 readiness is increasingly treated as a practical milestone for scaling cross-border PCCMs. This readiness is showing up in two reinforcing moves: (i) codifying authorization of CA functions in domestic rules or government operating procedures, and (ii) building the bilateral and technical infrastructure (registries, reporting workflows, and mutually recognized processes) needed to transfer ITMOs while keeping traceability and environmental integrity intact.

Several countries have established governance architecture or are explicitly upgrading registries to host CA modules. Many systems are now designed with binding regulations for Article 6, even if they have not executed any international transfers yet, while others are not.

Countries Incorporating Article 6 Functions into Policy Design

Japan's framework explicitly ties procedures to its Article 6 reporting architecture and to the official JCM program documentation, anchoring transfers in a formal governance and accounting channel.[92] The JCM program is structured as a bilateral crediting mechanism under Article 6.2, with partner-country cooperation enabling ITMO transfers, authorization by both countries, and corresponding adjustments to prevent double counting.

Singapore has also built a bilateral implementation agreement (IA) approach to operationalize Article 6.2 transfers.[93] Under this model, Singapore uses legally binding IAs with host countries to establish transfer procedures consistent with Article 6.2 and linking eligibility to the domestic carbon credit framework.[94]

South Korea provides another example of advanced Article 6 operationalization. As of April 2026, Korea had signed 10 bilateral agreements under Article 6.2. Korea has articulated a quantitative target of securing approximately 37.5 million carbon credits through Article 6 cooperation mechanisms to help achieve its 2030 nationally determined contribution (NDC), which commits to a 40 percent reduction in greenhouse gas emissions from 2018 levels by 2030.[95] Singapore is among the most engaged countries in Article 6.2, out of necessity to utilize international credits.

India is positioning Article 6 readiness as an extension of its national market infrastructure. Its road map notes that the institutional architecture for Article 6 participation is in place through the notification of the National Designated Authority and activity lists activity lists for cooperative approaches, while registry upgrades for authorization, transfer, and corresponding adjustments are underway.[96] The registry is being developed to include technical modules for Article 6.2 authorization, tracking, and reporting, explicitly framed to enable registry-level interoperability for bilateral arrangements—for example, in the India-Japan JCM.[97]

Countries Exploring Compatibility and Preparing Enabling Conditions

Policy work in Australia, Brazil, Canada, and China is oriented toward ensuring compatibility with Article 6, even if detailed authorization, corresponding adjustments, and registry transfer mechanics are still evolving. The common feature across these jurisdictions is the development of readiness infrastructure, such as exploring the following:

- Which domestic instruments could be authorized as ITMOs (or linked to ITMO issuance)?
- Which institutional authority could approve transfers and apply corresponding adjustments?
- What type of registry architecture (or registry linkages) would be required for secure tracking across borders?

The framework and supporting infrastructure build-out matter because Article 6 functioning requires not only rules on paper but also credible operational structures: registries, reporting channels, and data controls that allow governments to reliably apply corresponding adjustments when needed to prevent double counting.

6. Future Considerations as Carbon Market Regulation Evolves

Carbon market regulations are likely to evolve toward a more state-anchored, integrity-driven, and interoperable architecture in which carbon credits are treated less as a stand-alone voluntary instrument and more as one component of a broader climate-governance policy framework. Across the jurisdictions examined in this paper, the broad direction is toward a more structured landscape in which governments play a distinct role in defining eligible activities, approving methodologies, operating or supervising registries, controlling authorization for international transfers, and shaping how credits may be used in compliance systems and corporate claims, even if the approach differs across countries. In this setting, some of the following themes are likely to play out as well:

- **PCCMs will become more integrated with the compliance market.** PCCMs are increasingly being embedded within countries' wider policy tool kits, including a greater integration with the compliance market, rather than operating as isolated carbon credit markets. The implication is not that all countries will adopt the same model but that PCCMs will increasingly be judged by how well they fit into domestic mitigation systems, NDC implementation, and long-term net-zero strategies. Jurisdictions with mature frameworks are already moving in this direction, while systems under development, such as in Brazil and Indonesia, are building the institutional components that could support more integrated compliance and VCM models over time. In that sense, the next stage of market evolution is likely to be less about whether governments regulate PCCMs and more about how deeply they integrate them into national climate law, compliance market design, and public climate-accounting systems.
- **Integrity rules will develop domestically but be more globally aligned.** Looser, market-shaped crediting practices are moving toward more formalized, regulator-backed integrity frameworks. The EU's CRCF, for example, is built around EU-level methodologies, independent auditing, registry controls, enforceable sanctions, and differentiated permanence treatment. Similarly, Australia's framework relies on legally binding method determinations reviewed against statutory carbon credit integrity standards, with independent audits and permanence obligations for sequestration projects.

  Looking ahead, this suggests that credit quality will increasingly be defined by domestic regulations rather than by market standards alone. The most likely direction is not full

international harmonization but a narrowing consensus around core integrity expectations: additionality, conservative quantification of credit issuance, independent validation and verification, serialized registry accounting, stronger reversal management, and clearer double-counting controls. Jurisdictions may continue to differ on eligible project types and market design, but the space for low-governance, weakly evidenced crediting is likely to shrink as sovereign systems mature and voluntary systems come under greater public scrutiny.

- **Demand-side governance will speed up.** Across jurisdictions, the gap between the maturity of supply-side and demand-side regulations remains the defining characteristic of PCCMs and represents the area where regulatory development is most likely to accelerate in the near term. With governments and corporations increasingly concerned about greenwashing accusations, the importance of rules governing how credits are used, disclosed, and marketed is already gaining traction. The UK now applies a multilayered regime involving government integrity principles, the "Green Claims Code," Advertising Standards Authority advertising guidance, and Financial Conduct Authority anti-greenwashing rules for authorized firms. Australia combines the measure-reduce-offset logic and disclosure obligations with enforcement against misleading sustainability or offset claims, while requiring separate disclosure of gross emissions and the role of carbon credits in net targets. The EU, despite the weakening of corporate sustainability reporting, continues to shape demand-side rules through consumer protection law amendments.

  Future regulation may increasingly distinguish between the legal validity of a credit and the legal defensibility of the claim built around it. A unit may satisfy issuance rules and still be unsuitable for an unqualified carbon neutral or net-zero claim. This separation is likely to become one of the defining features of the next generation of PCCM regulation. Mitigation hierarchies, gross-versus-net disclosure, claim substantiation, and registry-linked transparency are all likely to be key elements of regulations. In practical terms, the future credibility of PCCMs may depend as much on how credits are used and disclosed as on how they are generated.

- **Article 6 will further boost credit integrity and market size.** As Article 6 gets fully operationalized,[98] international transferability is likely to become a critical differentiator of credits, commanding a premium—at least initially, because of the UNFCCC umbrella—compared to domestic credits. The increasing integration with Article 6 across jurisdictions points toward a future two-tier architecture. One tier will consist of domestic credits that contribute to host-country targets and remain within national registries or domestic compliance and voluntary frameworks. The second tier will consist of units for international transfer that require additional legal steps, clearer accounting treatment, more explicit host-

country authorization, and transparency around the first transfer and CA.

Article 6 will not fully harmonize domestic integrity rules across jurisdictions. Differences in national regulatory frameworks, methodological requirements, and institutional capacity could still create some scope for regulatory arbitrage or "jurisdiction shopping," particularly where market participants seek host countries with less stringent rules or oversight. This risk is at least partially alleviated by the UNFCCC reporting and review processes, which impose safeguards on internationally transferred mitigation outcomes. However, if this risk turns out to be greater than expected, more stringency may be needed in UNFCCC rules.

- **Sovereign registries will act as regulatory vehicles.** Nearly every mature or emerging framework among the jurisdictions studied points to the same conclusion: The sovereign-level registry is no longer just an administrative ledger but increasingly the legal conduit for issuance, ownership, transfer, retirement, cancellation, authorization status, and double-counting prevention. Some countries, such as Australia and India, are establishing integrated national registries that track credits across their life cycle. Others, including Indonesia and South Korea, are linking credit registries with ETS infrastructure or NDC accounting systems. Other frameworks, such as those in the EU and Singapore, include developing registries that interface with international credit systems.

  The future direction is similarly likely to be geared toward stronger digital interoperability and tighter integration with disclosure and national accounting systems. That could include tagging units by methodology, permanence profile, authorization status, use restrictions, claim purpose, and corresponding adjustment status. It could also push markets toward common data models and interoperability initiatives that make credits more traceable across national and international systems. As regulatory systems mature, registry design may become one of the main determinants of market credibility, comparability, and cross-border usability.

- **Financial oversight will deepen as carbon credits become more liquid.** As markets scale, carbon credit regulation is likely to expand beyond project integrity to trading conduct, market infrastructure, and financial oversight. Australia already treats carbon credits as regulated emissions units and, in relevant contexts, as financial products subject to licensing and conduct rules. Brazil's framework anticipates securities law oversight where credits are treated as financial assets and traded on financial platforms. India's draft market design points toward exchange-based trading, surveillance, position controls, and reporting under Central Electricity Regulatory Commission oversight.

  Over time, this suggests that the boundary between carbon market regulation and financial

market regulation will become more porous. Credits that are exchange-traded, warehoused, securitized, or used in investment products will increasingly attract questions of licensing, market abuse, disclosure, settlement integrity, anti-money-laundering laws, know-your-customer rules, and prudential treatment. The more PCCMs move from bilateral transactions to exchange-based trading, similar to other liquid markets, the harder it will be to keep them outside broader financial market regulation.

Taken together, the evidence across jurisdictions suggests that PCCM regulation is entering a more mature phase. The strongest regulatory trend is not market expansion but institutional and regulatory strengthening: more laws, more public oversight, more registry dependence, more integrity-based differentiation among credit types, tighter controls on claims and disclosure, and an emerging legal distinction between domestic mitigation and internationally transferred outcomes. That said, robust regulatory frameworks should still be viewed as an enabling condition rather than a panacea for a scalable and interoperable PCCM, particularly because it is still too early to conclude that these institutional changes are consistently leading to higher-quality credits, fewer integrity failures, and stronger market confidence.

Nevertheless, the future of PCCMs is likely to be shaped less by the broad idea of offsetting and more by the legal frameworks governing how credits are issued, authorized, transferred, retired, disclosed, and used. Jurisdictions that can combine integrity, operational clarity, and interoperability without weakening domestic decarbonization incentives are more likely to see their PCCMs expand and reach full potential.

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Appendix: Stocktake of 20 PCCM Regulatory Frameworks

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ARGENTINA

Overview

As part of its climate finance strategy, Argentina will use carbon markets to fulfill its successive nationally determined contributions (NDCs), as well as its Adaptation Communications, Long-Term Low-Emission Development Strategy, National Plan for Adaptation and Mitigation to Climate Change, and jurisdictional climate response plans. The broader strategy will encompass both compliance and voluntary markets at the regional, national, and international levels.[1]

Argentina's carbon market architecture remains under construction. At the national level, the government is developing a blended approach that anticipates both voluntary and compliance market mechanisms, guided by the National Strategy for the Use of Carbon Markets (ENUMeC). Legislative efforts are underway to establish a national voluntary carbon market (VCM), and policymakers continue to explore the design of an emissions trading system (ETS).[2] In parallel, several provinces—including Misiones, Santa Fe, Jujuy, and Córdoba—have introduced their own regulatory initiatives, with Misiones advancing a jurisdictional REDD+ (Reducing Emissions from Deforestation and Forest Degradation) program in 2025.[3]

Argentina's trading ecosystem is still emerging. Market activity currently takes place primarily through the private platform Bolsa Argentina de Carbono (BACX), which, supported by ACX technology, provides a global marketplace for carbon credits.[4] While BACX enables digital trading of credits across international standards, it is not yet integrated into the country's national registry of climate change mitigation projects (Registro Nacional de Proyectos de Mitigación [RENAMI]),[5] nor is it subject to government oversight. Market-side rules—covering participation criteria, data standards, price-discovery mechanisms, settlement requirements, and trading integrity—remain under development. Over time, RENAMI is expected to play a central coordinating role as Argentina defines its regulatory framework, aligns with Article 6 of the Paris Agreement, and strengthens governance across supply-, demand-, and market-side dimensions.[6]

I. Supply-Side Regulations

Argentina currently has no guidelines for a compliance market, although it is reportedly evaluating the possibility of creating an emission trading system and participating in Article 6 of the Paris Agreement.[7] While there is also no clear supply-side guidance for the voluntary market, Argentina's regulatory framework includes guidance for eligibility to be included in RENAMI, which encompasses credits traded in the VCM.[8] In December 2023, President Javier Milei proposed

creating a national cap-and-trade system as part of an omnibus reform bill, but the measure was removed from the April 2024 draft, leaving its future unclear.[9]

A. Regulatory Framework

1. **Market Classification:** There is no guidance or set of regulations yet for the compliance market. There is broader guidance on RENAMI, where credits issued in the VCM may be registered.

2. **Regulatory Status:** No binding regulatory status on the supply side has been established. The government has established the national registry for carbon markets, RENAMI, which keeps track of all Argentina-based projects and the status of credits issued on a voluntary basis.[10]

3. **Key Authorities:** Multiple draft bills were introduced in the Argentine National Congress in 2024 to establish a national framework for carbon markets. While the proposals differ in scope and institutional design, at least one designates the Undersecretariat of Environment—which currently oversees the implementation of Argentina's climate policy—as the National Enforcement Authority. In this role, it would be responsible for approving a National Strategy for Carbon Market Utilization, defining eligible project types, managing RENAMI, and issuing technical guidelines.[11] However, none of the initiatives has obtained committee opinion to date, and the institutional architecture remains under legislative discussion.[12]

4. **Sanctions:** No sanctions have been officially implemented. If the regulation proposed by the Argentine National Congress is adopted, violations—such as failure to register projects in RENAMI within 30 days of credit issuance, disclosure of issuance or transfer of credits, or providing false or misleading information—would lead to sanctions. These include warnings; temporary disqualification from registering new projects or transferring or modifying certified emission reductions for up to five years; and fines of up to 1,000 times basic public administration salaries at the entry level in the national public administration, with proceeds directed to environmental protection, corrective and compensatory environmental measures, and/or cancellation of project registration.[13] The severity of the sanctions would depend on the gravity of the infraction and harm to public interest. Fines would be allocated to the relevant environmental protection area.[14] Exact corrective measures are not specified.

B. Credit Generation Standards

1. **Eligible Activities:** Projects that can be registered under RENAMI include emission reduction and sequestration projects, particularly in the REDD+, AFOLU (agriculture, forestry, and other land uses), waste management, and IPPU (industrial processes and product use) sectors. Credits must stem from projects developed in Argentina and be registered under United Nations Framework Convention on Climate Change (UNFCCC) mechanisms (i.e., the

Paris Agreement Crediting Mechanism) or international standards such as Verified Carbon Standard and Gold Standard.[15]

2. **Methodology Framework:** The proposed regulatory framework references the following carbon market standards, frameworks, and mechanisms: Verified Carbon Standard, Gold Standard, Global Carbon Council, Plan Vivo, Architecture for REDD+ Transactions' REDD+ Environmental Excellence Standard (ART-TREES), American Carbon Registry, Climate Action Reserve, Bio Carbon Registry, Fondo Verde para el Clima (Green Climate Fund), REDD+, Forest Trends' International Database on REDD+ Projects and Programs, and IHS Markit.[16] Compliance with Article 6 is also planned, although it is still under development in accordance with the Argentine regulation.[17] At this stage, RENAMI does not issue credits or certify projects, but rather serves as a database for projects issued in other international standards.[18]

3. **Measurement, Reporting, and Verification (MRV) Requirements:** Argentina maintains the National Greenhouse Gas Inventory (INGEI), operating under Argentina's Climate Impact Directorate of the Undersecretariat of Environment, which follows Intergovernmental Panel on Climate Change (IPCC)-aligned methodologies.[19] RENAMI does not contain an approval or crediting MRV system of its own, but does require structured reporting, including project details (location, sector, methodology), issued units, retired and canceled credits, project status, and verification of listing in a public carbon credit registry.[20]

4. **Registry System:** RENAMI is Argentina's national registry system for mitigation projects, managed by the National Directorate of Sustainable Development and Climate Management within the Undersecretary of the Environment of the Nation. It functions as a transparency and tracking Excel database rather than a crediting or approval authority. RENAMI compiles project data from public carbon-crediting registries (e.g., Verra, Gold Standard, UNFCCC, and ART-TREES). Currently, few projects are listed in RENAMI due to its voluntary nature, with more than half of the listed projects already expired.[21]

   Going forward, credits under RENAMI are expected to be assigned a unique identifier and include the project identification number from the issuing registry.[22] The Argentine government recognizes the need for transparency in the implementation of its national climate change policy, in line with national regulations and international goals.[23]

C. Integrity Principles

1. **Additionality Tests:** None have been defined yet by the Argentine government, but the need is recognized.[24] Credits under RENAMI follow the methodologies of international public registries, which include safeguards to ensure additionality for credit issuance.

2. **Permanence Safeguards:** Credits registered under RENAMI follow international standards, which have their own independently verified methodologies, including permanence safeguards with specific time periods and credit type. At this stage, the Argentine regulation has no permanence safeguards of its own.[25]
3. **Quantification Standards:** Emission reduction quantification toward Argentina's NDC target is carried out in compliance with INGEI, which is the country's official IPCC-aligned accounting system.[26]
4. **Double-Counting Prevention:** Credits established under RENAMI follow methodologies from international public registries, which include safeguards to ensure avoidance of double counting.[27]

D. Sustainable Development

1. **Co-Benefits:** ENUMeC states that Argentina intends to promote projects with environmental and social co-benefits, consistent with the country's broader climate and sustainable development goals. However, adherence is encouraged, not legally mandated.[28]
2. **Net-Zero Compatibility:** The information registered in RENAMI feeds into Argentina's reporting obligations under the UNFCCC. RENAMI's structure and scope will be adjusted in accordance with UNFCCC requirements and Article 6 implementation.[29]

II. Demand-Side Regulations

There are currently no official demand-side regulations for project-based carbon credit markets (PCCMs) in Argentina. One of ENUMeC's nine principles identifies oversight of private market participation as a strategic pillar of Argentina's national carbon market strategy, although no further details have been disclosed.[30]

A. Use Authorization Framework

1. **Applications Allowed:** There is no current information on how credits may be used by companies for emission abatement.
2. **Regulatory Status:** There is currently no regulatory framework for the demand side.
3. **Oversight Bodies:** No oversight bodies have been identified.
4. **Standards Integration:** No standards have been identified.
5. **Enforcement Mechanisms:** No enforcement has been determined.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** There is currently no guidance on the mitigation hierarchy for the demand side.
2. **Scope Coverage:** There is currently no guidance for scope coverage.
3. **Quality Standards:** No demand-side quality standards have been determined.
4. **Accounting Treatment:** No guidance for demand-side accounting treatment has been established.

C. Transparency and Assurance

1. **Public Reporting:** No public reporting guidance has been established.
2. **Third-Party Verification:** No guidance on third-party verification for demand-side PCCM engagement has been established.
3. **Science-Based Targets:** No guidance on alignment to science-based targets has been established.
4. **Policy Advocacy:** No guidance on policy advocacy has been established.

D. Market Integrity Protection

1. **Anti-Greenwashing:** No guidance on anti-greenwashing frameworks has been established.
2. **Co-Benefits Delivery:** No guidance on alignment to specific co-benefits has been established.

III. Market-Side Regulations

Argentina's market-side framework remains in early development, with no formal government-run trading platform and limited statutory rules governing market operations. The national registry, RENAMI, functions as the core infrastructure for project-level tracking, but it does not yet govern the buying, selling, or settlement of carbon credits. Market activity occurs primarily through the private BACX platform (run in partnership with ACX, an electronic exchange that enables the trading, clearing, and settlement of standardized carbon credits, mainly from the VCM), which offers digital trading for multiple international certification standards and implements its own due diligence for clients, projects, and risk-management systems, including insurance tools. This platform is not formally regulated or endorsed by the government.[31] However, the government has stated its intention to promote the integrity of the VCM alongside regulated markets.[32]

The Buenos Aires stock exchange (BYMA) also provides a database for carbon credit transactions (under the name "carbon certificates") for companies seeking to offset their emissions voluntarily. BYMA states explicitly that the National Securities Commission (CNV) is not the authority of application and does not supervise carbon certificate trading, limiting its role to authorizing BYMA to conduct this complementary activity in OTC transactions.[33] As of January 2026, two projects are listed on the exchange's database.[34]

Key regulatory gaps include the absence of defined market participation criteria, a lack of price-discovery mechanisms, no government-specified rules, and no dedicated market-supervision authority. ENUMeC recognizes these gaps and identifies the development of market failures, infrastructure, and Article 6 alignment as priority future tasks. Overall, Argentina's market-side regulations currently center on RENAMI for transparency and MRV, while other elements of market function including trading platforms, data standards, cross-border trading, and enforcement remain under design.

A. Infrastructure Framework

1. **Market Structure:** Argentina currently operates only a VCM structure with no government-run trading platform. The government has expressly stated its intention to promote high-integrity voluntary markets alongside any future regulated schemes.[35] A private platform, BACX (promoted by ACX), has emerged to facilitate digital trading credits across multiple standards (e.g., Verified Carbon Standard, Gold Standard).[36] BYMA provides a parallel Excel database for credit listing, but it does not offer trading or registry capabilities. Trading is carried out on an over-the-counter basis. Further details on the exact functioning and authorities are not yet available.

2. **Registry Operations:** Registration through RENAMI which serves as the national tracking system for projects, issuance, transfers, and retirements remains voluntary.[37] BACX does not operate a government-approved registry but connects to external registries and relies on its own accreditation process.[38] BYMA similarly does not operate a national registry; instead, it relies on existing project registries and uses Argentina's central securities depository, Caja de Valores S. A. (CVSA), along with National Association of Securities Dealers Automated Quotations (NASDAQ) systems, for custody, ownership tracking, transfers, and retirement of Verified Carbon Units (VCUs) listed in its database.[39]

   ACX supports BACX as its technology backbone, enabling digital trading of Argentina-based projects. However, ACX/BACX is not integrated into RENAMI and does not have a regulatory mandate within the national registry system. Projects registered in RENAMI may be traded on BACX if they meet the relevant certification standards, but reconciliation between market

transactions and RENAMI records is not yet formalized. The government has not established requirements for trading platforms to synchronize with RENAMI.

3. **Data Standards:** Government rules for credit data standardization are under development. BACX requires projects and participants to be accredited through its internal due diligence process and recognizes third-party ratings from BeZero, Calyx Global, and Sylvera.[40] BYMA requires issuers to register on BYMA Digital, submit a sworn declaration, transfer VCUs into custody, and comply with platform validation prior to trading.[41]

B. Trading and Participation

1. **Eligibility Rules:** Argentina has not yet defined formal government rules for market participation. ENUMeC acknowledges the need for such criteria, but they remain under development.[42] BACX requires project developers and buyers to undergo an accreditation process before being allowed to trade or list projects.[43] BYMA requires traded credits to be "certified and verified," with each VCU representing the reduction or elimination of one carbon dioxide–equivalent ton in the atmosphere.[44]

2. **Trading Mechanisms:** The government has not issued rules on acceptable market mechanisms. BACX currently provides a fully digital trading environment that supports credits across various certification standards.[45] BYMA conducts trading primarily through auction mechanisms ("BYMA Subastas"), with spot settlement periods, and allows request-for-quote functionality for indicative pricing.[46]

3. **Settlement Systems:** No government-defined settlement rules exist. BACX applies its own digital settlement framework and offers insurance-backed risk mitigation (via Lockton, a privately held insurance brokerage firm) to cover delivery, cancellation, political risks, and registry risks.[47] BYMA applies exchange-style settlement through CVSA custody and NASDAQ systems, enabling secondary trading of VCUs prior to retirement.[48]

4. **Price Discovery:** Argentina does not yet have regulated price-discovery mechanisms. Trading occurs largely through over-the-counter-style mechanisms or within the BACX platform, which does not yet offer fully transparent market-wide pricing. BYMA introduces structured auction-based price formation, although this remains platform-specific rather than mandated by law.[49]

5. **Oversight Authority:** RENAMI serves as the oversight authority for project registration and tracking, but there is no government authority overseeing trading platforms or secondary-market activity. BACX operates without formal state supervision. BYMA explicitly states that the CNV does not supervise carbon certificate trading, meaning market-side oversight remains

exchange-driven rather than regulator-driven.[50]

6. **Legal Classification:** At this stage, there is no regulatory guidance on accounting treatment for PCCMs in Argentina. Carbon credits in Argentina are not currently classified as a financial instrument, nor are they integrated into Argentina's financial regulatory system.

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** Argentina has not yet established statutory anti-manipulation rules for market-side activities. BACX implements private safeguards, including insurance mechanisms, but these are not government requirements.[51] The government notes that market-integrity frameworks are necessary and under development.[52] BYMA relies on exchange-level controls, custody arrangements, and mandatory retirement procedures to prevent double claiming of carbon credits, but these safeguards are not government-mandated.[53]

2. **Transparency and Reporting Requirements:** RENAMI requires transparency at the project level, but detailed market-side disclosure requirements have not yet been issued. ENUMeC indicates that broader transparency measures for market activity will be developed.[54] BYMA enhances market transparency by publicly displaying retired credits on its platform and issuing formal retirement certificates via CVSA.[55]

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** Argentina does not currently classify carbon credits as financial instruments nor integrate carbon market oversight into its financial regulatory system. Trading platforms remain outside securities-law jurisdiction. BYMA confirms that carbon certificates are not treated as securities and are traded outside the public offering regime, keeping them outside Argentina's financial regulatory perimeter.[56]

2. **Cross-Border Trading Framework:** Argentina has expressed an intention to align with Article 6 mechanisms, but specific rules for international transfers, corresponding adjustments, and bilateral cooperation frameworks have not yet been released.[57]

E. Development Road Map

1. **Infrastructure Plans:** The government has identified the need to define participation rules, clarify credit-use governance through RENAMI, and determine whether private platforms such as BACX will have a role within a regulated framework. Future regulation is expected to cover trading infrastructure, settlement rules, and minimum data standards.

2. **International Cooperation:** Argentina intends to align with Article 6 for future cross-border activity, though formal cooperation agreements have not yet been put into place.[58]
3. **Regulatory Evolution:** The government is developing more detailed definitions of market functioning, including requirements for project registration, credit tracking, and oversight of market conduct.[59]
4. **Enforcement Enhancement:** Enforcement approaches for market-side conduct are expected to be developed as part of the upcoming regulatory framework.

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AUSTRALIA

Overview

Australia has built a mature, dual-track carbon market that combines a national project-based carbon crediting scheme with a baseline-and-credit regime for its largest emitters. At the core of supply is the Australian Carbon Credit Unit (ACCU) Scheme, enabled by the Carbon Credits (Carbon Farming Initiative [CFI]) Act 2011[1] and related rules, which issues one ACCU for each ton of CO.-equivalent (tCO_2e) avoided or removed through approved mitigation projects across land use, agriculture, industrial processes, waste, energy, and transport. ACCUs are defined by law as personal property and treated as "tradable financial products" under the Corporations Act 2001, so financial services in ACCUs generally require an Australian Financial Services Licence (AFSL).[2] The scheme is administered by the Clean Energy Regulator (CER),[3] with policy oversight from the Department of Climate Change, Energy, the Environment and Water (DCCEEW),[4] and periodic integrity reviews by the Climate Change Authority (CCA).

On the demand and compliance side, Australia operates the Safeguard Mechanism,[5] a baseline-and-credit system under the National Greenhouse and Energy Reporting (NGER) scheme, which applies to industrial facilities emitting more than 100,000 tCO_2e per year. Following reforms effective July 1, 2023, the Safeguard sets declining facility baselines (roughly 4.9 percent per year through 2030) aligned with national climate targets and requires covered facilities to surrender ACCUs or Safeguard Mechanism credits (SMCs) for emissions above their baseline. This dual-track design makes ACCUs fungible across voluntary and compliance uses, while SMCs function as a compliance-only unit specific to Safeguard facilities.

Both pillars sit within a legislated long-term climate framework. The Climate Change Act 2022 enshrines a target to cut national emissions 43 percent below 2005 levels by 2030 and reach net-zero by 2050,[6] with the government subsequently announcing a 2035 target of 62–70 percent below 2005 levels. The ACCU Scheme is explicitly framed as an instrument to mobilize private finance for abatement in support of these goals and is undergoing continuous integrity reform following the CCA's 2023 Review of the Carbon Credits Act[7] and the government's response. Market infrastructure is also being upgraded: In November 2025, the CER completed migration of ACCUs to a new application programming interface (API)–enabled Unit and Certificate Registry,[8] which consolidates ACCUs and SMCs on a single digital platform,[9] while international exchanges such as the Chicago Mercantile Exchange (CME) have launched physically settled ACCU futures,[10] deepening price discovery and hedging options alongside Australia's largely over-the-counter

(OTC) spot market. At the same time, Australia is exploring but has not yet implemented formal Article 6 export pathways for ACCUs, with current policy prioritizing their role in domestic decarbonization and emerging cooperative initiatives on voluntary market integrity rather than authorizing ACCUs as internationally transferred mitigation outcomes.

I. Supply-Side Regulations

Australia operates one of the world's longest-running project-based carbon credit systems, the Australian Carbon Credit Unit Scheme, established under the Carbon Credits (CFI) Act 2011,[11] which provides the legal basis for crediting, project registration, and unit issuance. Under this framework, the Clean Energy Regulator issues one ACCU[12] for each verified ton of CO_2-equivalent avoided or removed through approved methodologies, forming the core supply mechanism for both voluntary offsetting and compliance surrender.

A. Regulatory Framework

1. **Market Classification:** Australia combines a voluntary crediting program (the ACCU Scheme) with a compliance market (the Safeguard Mechanism). Projects approved under ACCU generate credits usable either voluntarily or for Safeguard compliance.[13]

2. **Regulatory Status:** Australia's project-based carbon credit market (PCCM) operates under a fully binding legal framework established by the Carbon Credits (CFI) Act 2011[14] and the Carbon Credits (CFI) Rule 2015,[15] which together govern project eligibility, additionality, crediting periods, monitoring, reporting, audits, and ACCU issuance. Methodologies ("ACCU methods")[16] are also legally binding legislative instruments approved by the minister under part 2 of the CFI Act, with compliance required for credit issuance. Administration is executed by the CER, which enforces statutory requirements, conducts audits, maintains the ACCU registry, and issues units in accordance with the CFI Act. Policy guidance is issued by the DCCEEW,[17] but the regulatory framework itself is binding, not voluntary.

3. **Key Authorities:**

    - *CER* administers ACCU projects, issues credits, and enforces compliance.[18]
    - *DCCEEW* sets climate policy and methodology priorities.[19]
    - *Emissions Reduction Assurance Committee* (ERAC; transitioning to the Carbon Abatement Integrity Committee) provides independent statutory integrity oversight for methodology development and reviews compliance with the Offsets Integrity Standards (OIS).[20]
    - *Climate Change Authority*[21] conducts independent statutory reviews of the ACCU Scheme

and the National Greenhouse and Energy Reporting system every three years to ensure they remain fit for purpose and support Australia's net-zero goals.

- *Australian Securities and Investments Commission* (ASIC)[22] regulates ACCUs and SMCs as financial products under the Corporations Act 2001, overseeing licensing, conduct, and disclosure requirements for market participants.
- *Australian Competition and Consumer Commission* (ACCC)[23] enforces the Australian Consumer Law to prevent misleading environmental claims (greenwashing) regarding carbon neutrality, offsets, and sustainability.

4. **Sanctions:** Non-compliance with ACCU project requirements, including false or misleading reporting, failure to monitor and report, or breach of audit and recordkeeping rules, triggers enforcement action,[24] including civil penalties, enforceable undertakings, relinquishment of ACCUs, and suspension or revocation of project declarations. The CER may also cancel or require relinquishment of units issued in error.

B. Credit Generation Standards

1. **Eligible Activities:** Eligible project types span vegetation management and reforestation, soil carbon sequestration, agricultural and livestock methane abatement, landfill gas capture, waste and industrial fugitives, energy efficiency, and renewable energy generation, subject to approved ACCU methods.[25]
2. **Methodology Framework:** All crediting follows legally approved "method determinations" under Sections 106–133 of the CFI Act.[26] ERAC reviews methods for consistency with the Offsets Integrity Standards, which require that abatement be real, additional, permanent, and verifiable.[27]
3. **Measurement, Reporting, and Verification (MRV) Requirements:** Projects must submit monitoring reports and independent audits by registered greenhouse and energy auditors accredited under the National Greenhouse and Energy Reporting Act 2007.[28]
4. **Registry System:** All issuances, transfers, and cancellations occur within the Australian National Registry of Emissions Units (ANREU), which records unique unit serial numbers and credit ownership.[29] ANREU is being modernized into the Unit and Certificate Registry for cross-scheme compatibility.[30]

C. Integrity Principles

1. **Additionality Tests:** Projects must satisfy the statutory OIS, including regulatory surplus,

conservative estimation, and avoiding abatement that is already required by law through compliance with approved ACCU methods. The ERAC reviews all methods to ensure additionality and consistency with the OIS.[31]

2. **Permanence Safeguards:** Sequestration projects must commit to 25-year or 100-year permanence periods,[32] with requirements to report and address any reversals, and may incur buffer deductions as set out in method determinations.

3. **Quantification Standards:** Emissions reductions or removals must be quantified using method-specific baselines, conservative assumptions, and measurement rules referencing the National Greenhouse and Energy Reporting (Measurement) Determination 2008.[33]

4. **Double-Counting Prevention:** All ACCUs carry a unique serial number recorded in ANREU, which prevents duplicate issuance or transfer and provides unit-level traceability.[34]

D. Sustainable Development

1. **Co-Benefits:** Although co-benefits are not required for ACCU issuance, many land-sector projects generate outcomes such as improved soil health, water quality, biodiversity enhancement, and regional employment. Developers commonly disclose these voluntarily through market frameworks supported by the Carbon Market Institute (CMI) and private standards.

2. **Net-Zero Compatibility:** The Climate Change Act 2022 legally anchors Australia's targets of a 43 percent emissions reduction below 2005 levels by 2030 and net-zero by 2050, ensuring that ACCU generation contributes to nationally determined contribution (NDC) implementation.[35]

II. Demand-Side Regulations

On the demand side, Australia's Safeguard Mechanism, reformed effective July 1, 2023, introduces declining facility-level baselines set to fall by an average of 4.9 percent per year through 2030 for large industrial facilities emitting more than 100,000 tCO_2e annually.[36]

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary claims:* Organizations may purchase and retire ACCUs for use in Climate Active certification[37] or other voluntary emissions-reduction claims. Climate Active provides a voluntary carbon-neutral standard requiring accredited offsets.

- *Compliance integration:* Facilities with reported Scope 1 emissions greater than 100,000 tCO_2e must surrender ACCUs or Safeguard Mechanism credits[38] to meet declining baselines; noncompliance attracts enforcement by the CER.[39]
- *NDC alignment:* The Australian government procures ACCUs via Emissions Reduction Fund (ERF) contracts;[40] these units (and compliance surrenders) feed Australia's national progress rather than private voluntary retirements.

2. **Regulatory Status:**
   - *Binding obligations:* Under the Safeguard Mechanism, covered facilities are required to surrender ACCUs or SMCs for their excess emissions.[41]
   - *Guidance-based voluntary claims:* Climate Active standards are optional for corporations, but misleading environmental claims are prohibited under the Australian Consumer Law and Corporations Act 2001.
3. **Oversight Bodies:**
   - *DCCEEW* sets policy for the ACCU Scheme, the Safeguard Mechanism, and broader emissions-reduction architecture.[42]
   - *ASIC* regulates financial products and financial services, including sustainability-linked financial products, and enforces greenwashing prohibitions where offset claims relate to financial disclosures or investment products.[43]
   - *CER* administers the Safeguard Mechanism, including ACCU and SMC surrender obligations;[44] manages ANREU,[45] which records ACCU issuance, transfer, and retirement; and ensures statutory compliance with the CFI Act and the NGER scheme.
   - *CCA* conducts independent reviews of the Safeguard Mechanism, ACCU Scheme integrity, and Climate Active settings.[46]
   - *ACCC* enforces the Australian Consumer Law against misleading environmental or offset claims.[47]
4. **Standards Integration:** There is no legal obligation for corporations to follow the Science Based Targets initiative (SBTi), the Voluntary Carbon Markets Integrity Initiative (VCMI), or the Integrity Council for the Voluntary Carbon Market (ICVCM) in Australia. However, Climate Active and the CCA reference these initiatives as best-practice guidance for corporate decarbonization strategies and voluntary offset use.[48]

5. **Enforcement Mechanisms:**

   - *Compliance enforcements (the Safeguard Mechanism):* This includes facilities covered by the Safeguard Mechanism that exceed their emissions baselines without surrendering sufficient ACCUs, or SMCs face civil penalties under the NGER Act, enforceable undertakings, infringement notices, and potential publication of non-compliance by the CER.[49]

   - *Greenwashing:*[50] This includes ASIC and ACCC[51] actions, including infringement notices, civil penalties, and corrective disclosures.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** Climate Active requires "measure-reduce-offset" (i.e., quantify emissions, implement reductions, and only offset residuals).[52] The CCA recommends stronger gross-reduction expectations for certified entities.[53] For entities outside Climate Active, there is no statutory "reduce-first" rule, but Australian Accounting Standards Board (AASB S2) Climate-Related Disclosures[54] requires reporting of climate-related targets and transition plans as well as planned use of carbon credits to achieve any net greenhouse gas (GHG) target, so companies must explain how much of their strategy relies on offsets versus gross reductions.

2. **Scope Coverage:** There is no law that limits which scopes (1, 2, or 3) can be covered by offsets in voluntary claims, provided claims are not misleading under the Australian Consumer Law. Climate Active's standards allow certification that covers Scope 1, Scope 2, and relevant Scope 3 emissions, depending on the certification type (organization, product, building, event, precinct).[55]

3. **Quality Standards:** Climate Active recognizes ACCUs and certain international credits (e.g., verified carbon units from Verra and verified emission reductions issued by Gold Standard)[56] that meet program eligibility criteria (scheme, vintage, project type, host country rules). Eligible offsets must be disclosed in the public disclosure statement (PDS), including unit type, registry, serial numbers or hyperlinks, vintage, and volumes used, banked, or carried forward. The CCA has recommended that Climate Active and Australian users increasingly align offset use with emerging VCMI and ICVCM integrity frameworks and strengthen offset-quality screens over time.[57]

4. **Accounting Treatment:** For mandatory climate reporting, the AASB S2 requires entities to disclose gross GHG emissions (by scope) and, separately, their net emissions targets and planned use of carbon credits (i.e., offsets[58] are not netted away inside the main scope metrics; their role in achieving "net" outcomes must be explicitly described). Climate Active requires a PDS detailing gross emissions, reductions, and offsets retired.[59]

C. Transparency and Assurance

1. **Public Reporting:**
    - *Climate Active:* Certified entities must publish an annual PDS detailing, including emissions inventory methodologies, Scope 1, Scope 2, and relevant Scope 3 emissions, emissions-reduction actions, and offsets retired (type, vintage, registry, and serial numbers).[60]
    - *AASB S2* (climate-related financial disclosures): Large entities must lodge climate disclosures with ASIC as part of their general-purpose financial reports, including Scope 1, Scope 2, and Scope 3 emissions (separately reported), climate targets and progress, and reliance on offsets to achieve net targets.[61]
2. **Third-Party Verification:**
    - *Climate Active:* Certification requires independent verification of the emissions inventory and offset claims, with periodic technical reviews by assessors appointed under the Climate Active program rules.
    - *Australian Accounting Standards Board:* Climate disclosures will be subject to phased assurance requirements, limited assurance in early implementation years, and transition toward reasonable assurance later in the decade. Assurance is provided by the entity's financial auditor under the Corporations Act 2001.
3. **Science-Based Targets:** There is no legal requirement to obtain SBTi validation; AASB S2 mandates disclosure of targets and progress, not third-party target validation.
4. **Policy Advocacy:** No mandatory buy-side requirements have been specified for offset volume, sector, or use intentions.

D. Market Integrity Protection

1. **Anti-Greenwashing:** ASIC issues infringement notices, civil penalties, stop orders, and corrective disclosures for misleading or unsubstantiated sustainability-related claims made in financial products or investment contexts. ACCC[62] enforces the Australian Consumer Law, targeting deceptive or misleading environmental and offset claims, and has the authority to seek civil penalties, court-enforceable undertakings, and public corrective statements.
2. **Co-Benefits Delivery:** No demand-side legal mandate to prioritize co-benefit credits has been specified; programs like the Aboriginal Carbon Foundation's Core Benefits Framework provide optional verification for social, cultural, and environmental outcomes.[63]

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** Australia operates a hybrid market design, in which the government registry is the system of record for units, while price discovery and trading occur mainly on private platforms.
    - The Clean Energy Regulator's new Unit and Certificate Registry replaced ANREU via a staged migration starting in November 2025.[64] It records issuance, transfer, relinquishment, and retirement of ACCUs and SMCs, but it is not a trading venue; it functions as an API-enabled digital infrastructure layer.
    - Spot ACCU trading is predominantly OTC through brokers and electronic platforms (e.g., CBL or Xpansiv),[65] with CER data showing a large share of secondary volume occurring off-registry and then settled through registry transfers.
    - A physically settled ACCU futures contract is listed on the New York Mercantile Exchange (NYMEX; CME Group), launched in October 2024, providing a transparent forward price curve and risk-management tool for project developers, Safeguard facilities, and intermediaries.[66]
    - The Australian government considered but has not launched a centralized national carbon exchange; consultation responses from industry players, including the CMI, are on record in the Safeguard and ACCU Scheme consultation processes.
2. **Registry Operations:** The Unit and Certificate Registry is designed as the "cradle-to-retirement" ledger for Australian carbon and related units. It maintains unit-level serialization linked to project ID, method, vintage, and (where applicable) location, and supports retirement tagging for claims. Migration from ANREU to the new registry is being implemented in phases, with ACCUs and SMCs moved into a single registry environment to support cross-scheme settlement (Safeguard, ACCU Scheme, and future unit types). The CER has explicitly positioned the registry as API-first, enabling third-party connectivity (brokers, exchanges, corporate systems) and future interoperability with other national or international infrastructures.[67]
3. **Data Standards:** Electronic submissions follow standardized formats; MRV aligns with ISO 14064 principles; CER's new Unit and Certificate Registry consolidates ACCUs and SMCs in a centralized digital platform that serves as the authoritative record of all unit holdings and transactions.[68] A national carbon-data platform was recommended by the Chubb Review to integrate ACCU and Safeguard Mechanism data for enhancing transparency, integrity analysis, and policy evaluation.[69]

B. Trading and Participation

1. **Eligibility Rules:** Individuals, companies, partnerships, trusts, and governments can open registry accounts to hold and transfer ACCUs or SMCs, subject to identity checks and a fit and proper person test.[70] ACCUs and SMCs are "regulated emissions units" and treated as financial products,[71] so anyone providing financial services in relation to them (dealing, advising, market-making, or operating a platform) will generally require an AFSL, in line with ASIC RG 236 and INFO 156.[72]

2. **Trading Mechanisms:**

    - *Spot or physical market:* Most ACCU trading is OTC or brokered, with execution commonly occurring on electronic platforms such as Xpansiv or CBL,[73] followed by settlement in the registry.

    - *Derivatives:* The CBL ACCU futures contract is listed on NYMEX (CME Group) and went live for trading in October 2024.[74] These contracts are physically settled, referencing CBL's spot ACCU market.

3. **Settlement Systems:**

    - *Spot:* ACCU or SMC spot trades are settled bilaterally by transferring units between accounts in ANREU and the new Unit and Certificate Registry.[75] The registry is not a central counterparty and does not provide delivery versus payment; cash settlement is handled off-platform between the parties.

    - *Futures:* CBL ACCU futures are cleared by CME Clearing with margining. On expiry, contracts can be physically delivered into ANREU, with CBL facilitating deliveries according to NYMEX contract rules.

4. **Price Discovery:** Government reverse auctions under the Emissions Reduction Fund acted as a key price signal historically, but the last ERF auction was in March 2023,[76] and no further auctions are scheduled. Today, price formation occurs mainly via brokered OTC trades and platform prints (CBL or Xpansiv, brokers), published indices (e.g., spot ACCU assessments from market data providers), and the NYMEX CBL ACCU futures forward curve.[77] CER's Quarterly Carbon Market Report (QCMR) discloses issuance, volumes, and surveyed price ranges.[78]

5. **Oversight Authority:**

    - *CER* administers the ACCU Scheme, the Safeguard Mechanism, and ANREU's new registry; publishes market data in the QCMR; and monitors compliance.

    - *ASIC* regulates financial services and market conduct in relation to regulated emissions

units and associated products, including AFSL requirements and greenwashing for financial products.

- *ACCC* enforces Australian Consumer Law for misleading or deceptive environmental and offset-related claims in the broader economy.

6. **Legal Classification:** There is no ACCU-specific accounting standard, so entities apply general Australian Accounting Standards (International Financial Reporting Standards aligned). The treatment depends mainly on purpose and intent.

   - *Personal Property:* ACCUs are defined by statute as personal property representing one ton of CO_2e avoided or removed under the Carbon Credits (CFI) Act 2011.[79] In parallel, ACCUs are classified as "regulated emissions units" and therefore as "financial products" under the Corporations Act 2001, meaning that financial services involving ACCUs and their derivatives (including dealing, broking, advising, and market-making) are subject to AFSL and market conduct requirements.[80] Ownership, transfer, surrender, and cancellation of ACCUs are recorded in the Australian National Registry of Emissions Units, which was replaced by the Unit and Certificate Registry in November 2025.[81]

   - *Inventory (AASB 102):* If ACCUs are held for resale (e.g., by traders, brokers, or project aggregators) or will be consumed in producing other goods or services, they are usually treated as inventory,[82] measured at lower cost and net realizable value.

   - *Intangible Assets (AASB 138):* If ACCUs are held for the entity's own use to offset its emissions as part of a long-term decarbonization strategy (rather than for trading), they can meet the definition of an intangible asset[83] (identifiable, nonmonetary, without physical substance, from which future economic benefits are expected). These may be measured under the cost model or revaluation model if there is an active market.

   - *Expense (Profit and Loss):* Where ACCUs are purchased and immediately surrendered to offset current-period emissions, some entities recognize them as an expense when surrendered, particularly where they do not meet their own asset recognition thresholds (e.g., immaterial holdings or policy choice).[84]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** The CFI Act 2011 and CER powers provide civil penalties, relinquishment, and suspensions for false reporting and fraud; ASIC enforces market misconduct and misleading conduct under the Corporations Act 2001;[85] CME surveils the ACCUs futures market.

2. **Transparency and Reporting Requirements:** Public data includes the ACCU project and contract register (project, method, location, issuance, contract status),[86] Safeguard facility emissions baselines, and Climate Active public disclosure statements for certified entities.[87] CER publishes QCMR,[88] which includes issuance volumes, trading insights, spot and forward pricing surveys, surrender data, and market trends.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** ASIC refers to ACCUs and SMCs as regulated emissions units, which are financial products under the Corporations Act 2001. This means that if anyone provides a financial service in relation to either ACCUs or SMCs, they may require an AFSL.[89] Taxation depends on the entity's use of ACCUs:[90]

    - When held for sale in a carbon trading business, the income from trading stock is treated as ordinary income.
    - When held for long-term investment or compliance purposes, ACCUs are regarded as capital assets and the resulting profit or loss is subject to capital gains tax rules.
    - When issued to project proponents, the value of ACCUs is generally treated as ordinary income at the time of issuance.

    The AASB S2 mandates disclosure of entity's holdings, entity's planned use of carbon credits to offset GHG emissions to achieve any net GHG emissions target, and climate metrics in sustainability reporting.[91]

2. **Cross-Border Trading Framework:** No international transfer of ACCUs is currently permitted, and at this time, Australia has no intention to engage in international carbon markets to meet its climate commitments.[92]

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** The Unit and Certificate Registry is being rolled out in stages, with the migration of ACCUs and SMCs from ANREU initiated in late 2025, creating a consolidated, API-enabled digital registry to support future interoperability.[93] CER has indicated that third-party API access will be expanded after migration is complete, enabling brokers, exchanges, and corporate systems to integrate directly with registry services. While the government has consulted on the feasibility of a national carbon exchange, no launch or formal policy commitment has been made. The Climate Change Authority's 2023 ACCU review recommended developing a national carbon-data platform[94] integrating ACCU and Safeguard data, which the government is still assessing.

2. **International Cooperation:** The Australian government participates actively in UN Framework Convention on Climate Change Article 6 negotiations. However, Australia currently has no intention to engage in international carbon markets, including Article 6.2 cooperative approaches or the Carbon Offsetting and Reduction Scheme for International Aviation,[95] to meet its climate commitments, and has not authorized ACCUs for international transfer[96] as Internationally Transferred Mitigation Outcomes (ITMOs) or permitted ACCU exports.
3. **Regulatory Evolution:** The launch of physically settled ACCU futures on NYMEX (CME Group) and the expansion of brokered OTC forwards and options have strengthened price discovery and risk-management tools for project developers and Safeguard facilities. In parallel, AASB S2 introduces mandatory climate-related disclosures, including emissions, targets, and offset reliance, bringing carbon units into mainstream corporate reporting.[97]
4. **Enforcement Enhancement:** CER's 2025–2026 priorities emphasize strengthening the ACCU Scheme's integrity and Safeguard Mechanism compliance. ASIC has intensified enforcement against greenwashing, misleading offset claims, and noncompliant climate disclosures using civil penalties, infringement notices, stop orders, and compulsory corrective statements.[98]

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BRAZIL

Overview

On December 11, 2024, the Brazilian government enacted Law 15.042/2024, which introduced a national carbon market system operating under a cap-and-trade system. The Brazilian System for Emission Trading (SBCE) establishes obligations for large emitters, a central registry for measurement, reporting, and verification (MRV), as well as transactions, and oversight mechanisms to ensure transparency, integrity, and market stability.[1] As of April 2026, exact details of market functioning, approved standards and methodologies, their interaction with Article 6, other compliance markets, and the voluntary carbon market (VCM) have yet to be defined. The SBCE does not include the agricultural sector,[2] which currently represents around 30 percent of the country's greenhouse gas (GHG) emissions (around 70 percent, if changes in land use are included).[3]

It is important to note that while the law includes information about the compliance market, guidance on the project-based carbon credit markets (PCCMs) remains limited to defining the legal nature of voluntary carbon markets, jurisdictional REDD+ (Reducing Emissions from Deforestation and Forest Degradation) projects, and those located in indigenous territories. Broader regulations addressing specific supply-, demand-, or market-side aspects of PCCMs remain limited. Nonetheless, a selected number of credits from the voluntary carbon market may eventually be accepted in the compliance mechanism, granted they follow SBCE-approved methodologies (to be determined) and are registered within the SBCE as Verified Emission Reduction or Removal Certificates (CRVEs).[4] In this sense, regulations for the SBCE will apply to project-based credits if they are to be accounted for under the compliance market. Note that only a predetermined portion of compliance requirements may be met with project-based credits. The exact percentage of the credits will be determined under the National Allocation Plan (PNA), which will be launched at a later stage of the market's development.[5] These credits shall then be removed from the VCM to avoid double counting.[6]

The five outlined phases for (compliance) carbon market implementation in Brazil are as follows:[7]

1. **Phase 1** (12–24 months): Creation of the governing body and definition of which sectors will be monitored. Operational details as well as the regulatory foundation for market functioning will be defined.
2. **Phase 2** (12 months): Operationalization of MRV systems. Companies shall report their emissions in a standardized way, creating a database that will allow for market monitoring.

3. **Phase 3** (24 months): Companies will be obliged to present their emissions reduction and monitoring plans, providing the necessary information for creating the first PNA.
4. **Phase 4** (*no allocated timeframe*): First cycle of emission allowance and free distribution of allowances. Launch of the first PNA will determine allowance quotas and VCM quotas.
5. **Phase 5** (*no allocated timeframe*): Full implementation of the market and establishment of a secondary market, which will enable allowance trading and transactions between companies.

Additional next steps include details on integration with Article 6 for the SBCE, as well as details on the CONAREDD+ resolution for jurisdictional REDD+, which will provide further guidance on how the mechanism will work and be accounted for. The necessary methodologies and transparency requirements for the SBCE are still being developed.

Additional initiatives have emerged to try to boost PCCMs in the country, including one led by BNDES and Petrobras to purchase 15 million credits from afforestation, regeneration, and reforestation projects (*ProFloresta+*). The first public call for bids of 5 million high-integrity credits was released in November 2025.[8] Additionally, the Rio de Janeiro (RJ) government launched a program that allows companies to redirect part of their tax service payments toward carbon credit purchases, although further details on how it will function and which activities will be eligible for tax incentives are still pending.[9] The RJ program is methodology-agnostic and requires that projects be registered within Verra, the Gold Standard, or the Clean Development Mechanism.[10] Authorities for the RJ market are not specified.

Other subnational initiatives include a proposal by the Brazilian state of Amazonas with the Norwegian embassy to develop a jurisdictional REDD+ program under the Architecture for REDD+ Transactions, which could be operational by 2027 and yield an estimated total of up to 200 million tons of CO_2 equivalent in credits.[11]

I. Supply-Side Regulations

Available supply-side regulations pertain mostly to the proposed compliance market and thus do not directly apply to PCCMs. Although the overall framework on how the SBCE will function is included in Law 15.042/2024, detailed guidance on further enforcement, methodologies, and other market structures is under development, with binding elements expected once the SBCE becomes fully operational. As of April 2026, no approved methodology or registry for voluntary markets has been released.

A. Regulatory Framework

1. **Market Classification:** Regulations exist for the compliance carbon market. The exact

relationship to the carbon credit market is under development.

2. **Regulatory Status:** Detailed guidance is under development for the compliance market and its relationship with the voluntary market.

3. **Key Authorities:** The SBCE will establish a governing body, housed under the Ministry of Finance, that will oversee the market structure and determine the approved methodologies for market functioning.[12] The governance framework also includes the Interministerial Committee on Climate Change (CIM), which serves as the SBCE's decision-making body, defining high-level policy directions, approving general guidelines, and endorsing the National Allocation Plan, including emissions caps and allocation strategies.[13] Other relevant authorities include the Ministry of Environment (nationally determined contribution [NDC] counting, internationally transferred mitigation outcomes [ITMO] eligibility),[14] the Ministry of Indigenous Peoples (community engagement and compensation),[15] and the Ministry of Science, Technology, and Innovation (annual emissions estimates, Article 6 accounting).[16] The institutional architecture further includes a Permanent Technical Advisory Committee and a Regulatory Affairs Committee, which provide technical, scientific, and regulatory oversight, including formal consultation on measurement, reporting, and verification requirements and other core regulatory instruments.[17]

4. **Sanctions:** The SBCE law mandates due process, penalties, and administrative oversight for noncompliance, including rights of appeal and defense. Infractions can result in warnings, fines (up to 4 percent of gross revenue), suspensions of activities, or restrictions; minor violations may be corrected via notice. The law seeks to protect environmental integrity (avoid double counting, respect for privacy rights, credible measurement methodologies) while ensuring transparent governance and accountability.[18]

B. Credit Generation Standards

1. **Eligible Activities:** Exact activities are still to be determined. Jurisdictional REDD+ is specifically permitted as long as it follows preapproved methodologies by the National Commission on REDD+ (not yet released).[19]

2. **Methodology Framework:** Methodologies are to be approved by the SBCE governing body as the market evolves. An additional Brazilian-based certification system, called the Ecora Standard, has been created by BNDES, Bradesco, and the São Paulo–based EcoGreen fund to address the current dependencies on international registries, whose methodologies might not fully reflect the Brazilian context (these are mostly conservation and agriculture methodologies).[20] Whether these will be accepted by the SBCE governing body remains to be seen. Also, who will control the new standard is yet to be determined.[21]

3. **MRV Requirements:** Third-party verification and annual review of projects and methodologies will be required for the SBCE (exact MRV requirements have not yet been determined).[22]
4. **Registry System:** The national SBCE registry, which will be linked to property registries for project sites, is under development.

C. Integrity Principles

1. **Additionality Tests:** There is no direct mention of additionality tests or methodologies. It is therefore implicit within robust MRV and third-party validation.
2. **Permanence Safeguards:** There is no direct mention of permanence requirements or specific timelines. It is therefore implicit within the MRV and certification standards.
3. **Quantification Standards:** Standardized reporting, robust quantification, and third-party verification are required.[23]
4. **Double-Counting Prevention:** There is an explicit prohibition of double counting under the SBCE. VCM and compliance credits cannot be used simultaneously.[24]

D. Sustainable Development

1. **Co-benefits:** Five percent of the SBCE's revenue shall be dedicated to indigenous communities and the conservation of native vegetation. VCM credits are thus likely to follow a similar approach as they are eventually included.[25] Moreover, 50 to 70 percent of the revenue from credits generated in indigenous territories shall be reverted to the local community.[26]
2. **Net-Zero Compatibility:** SBCE law references Paris Agreement targets ("well below 2°C") and Brazil's NDC,[27] but no specific details are provided.

II. Demand-Side Regulations

Law No. 15.042/2024 does not provide details regarding demand-side requirements. There is no guidance for project-based carbon credit markets. For the compliance market under the SBCE, demand-side guidance states that entities within the covered sectors—which are yet to be defined—should report their emissions if above 10,000 tons of carbon dioxide equivalent (tCO_2e)/year.[28]

Article 56 of the law requires participants of the national insurance, capitalization, and private pension system to devote over 0.5 percent of their technical reserves (funds that insurance companies are legally required to set aside to ensure they can pay future claims and fulfill all obligations to policyholders) to carbon credits or funds investing in carbon credits. This article is

still under revision, and therefore, its exact implementation has not yet been defined.[29] The lead secretary of the SBCE's interim governing body has identified advancing this piece of legislation as a priority.[30]

A. Use Authorization Framework

1. **Applications Allowed:** Both voluntary and compliance use, pending the National Allocation Plan to determine what percentage of VCM credits will be allowed.[31]
2. **Regulatory Status:** There is limited guidance on the demand side.
3. **Oversight Bodies:** The SBCE governing body oversees and approves supply-side rules and eligible methodologies. A Technical Permanent Committee supports this process by providing technical and methodological assessments.[32]
4. **Standards Integration:** These have not yet been specified for PCCM.
5. **Enforcement Mechanisms:** These are under development for the compliance cap-and-trade system, but have not been specified for PCCM..

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** This has not been specified..
2. **Scope Coverage:** This has not been specified.
3. **Quality Standards:** These have not been specified yet, but are expected to be aligned with SBCE-approved methodologies.
4. **Accounting Treatment:** Compliance and PCCM credits are treated differently. Both are equal to 1 tCO_2e. Compliance credits are considered Brazilian Emission Quotas (CBE) and follow a cap-and-trade (i.e., allowance) model. Credits from the voluntary carbon market may be considered for the SBCE once the credit is registered as a CRVE. The exact quota of VCM credits to be allowed will be determined in the National Allocation Plan.[33] There is no disclosure on different accounting treatments for the demand side at this stage. Annual disclosure and reconciliation are required for the compliance market once emissions exceed 25,000 tCO_2e.[34]

C. Transparency and Assurance

1. **Public Reporting:** Eligible compliance market companies must submit a yearly monitoring plan, according to predefined rules by the SBCE.[35] Project-based credits transformed into CRVEs will thus be reported in this plan.

2. **Third-Party Verification:** This is under development. PCCM credits to be traded in the SBCE shall follow SBCE-approved methodologies (to be released), undergo independent third-party verification, and be registered in the SBCE.[36]

3. **Science-Based Targets:** None have been specified.

4. **Policy Advocacy:** For the SBCE, there is an acknowledgment of the Paris Agreement for ITMO compliance.[37]

D. Market Integrity Protection

1. **Anti-greenwashing:** No explicit framework has been disclosed. Buyers cannot be held legally responsible for defects related to the underlying project or land in which the project is developed.[38]

2. **Co-benefits Delivery:** None have been specified for the demand side.

III. Market-Side Regulations

Law No. 15.042/2024 provides only high-level guidance on the institutional and infrastructural elements of Brazil's carbon market and does not establish detailed market-side rules for PCCMs. While the law lays the foundation for a government-managed compliance market under the SBCE, including the creation of a central registry and oversight structures, key aspects of trading infrastructure, price formation, settlement mechanisms, and secondary market operations remain under development. Participation of carbon credits on the market side is conditional upon their potential recognition as CRVEs and their registration within the SBCE, subject to future methodological approval and quantitative limits to be defined under the National Allocation Plan. As a result, current market-side activity for PCCMs in Brazil is largely shaped by pilot initiatives, financial market actors, and subnational or voluntary platforms operating alongside the emerging compliance framework, pending further clarification from SBCE regulations and the Brazilian Securities and Exchange Commission (CVM).

A. Infrastructure Framework

1. **Market Structure:** The government-administered cap-and-trade system (SBCE) is expected to be supportive of VCM credits if they are registered on eligible platforms. The national stock exchange, B3, has also partnered with ACX (AirCarbon Exchange) to provide a platform on which project developers and other credit issuers will be able to sell their credits to companies that wish to voluntarily offset their emissions.[39] The pilot project for the B3-ACX initiative was launched at New York Climate Week 2025. As of April 2026, it only includes credits traded

under the PSA Carbonflor methodology, created by ECCON Soluções Ambientais and Reservas Votorantim.[40]

An additional initiative by the state-owned bank Banco do Brasil was launched during the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP 30) in November 2025 to establish a carbon-trading desk that serves both domestic and international clients.[41] The state-owned bank's initiative aims to connect projects funded by the bank to national and international buyers who wish to voluntarily offset their emissions.[42] No further details on how the trading desk will operate have been disclosed.

2. **Registry Operations:** Project developers are responsible for registering the projects in the SBCE. No specific requirements for buyers have been provided. The recording of ownership transfers and credit cancellations happens in the Central Registry, managed by the SBCE, but the obligation to register and report lies with project developers and operators.[43]

3. **Data Standards:** None yet disclosed for SBCE. If it is established that CRVEs are considered financial assets within a company's balance sheet, or traded in capital markets, they shall follow the data requirements applied by the CVM to ensure adequate regulation, transparency, supervision, and oversight of these assets.[44]

B. Trading and Participation

1. **Eligibility Rules:** These are under development.

2. **Trading Mechanisms:** Credits from the compliance market will be registered in the SBCE platform. VCM credits are recognized as CRVEs if methodologies are approved and if within the approved quota. A partnership between ACX and B3 has been established to support voluntary interactions between credit issuers and potential buyers.[45] The B3-ACX platform will function under auctions, negotiations, and spot-selling systems.[46]

3. **Settlement Systems:** These are under development.

4. **Price Discovery:** The SBCE management body is responsible for defining and implementing price stabilization mechanisms for CBEs to manage market price volatility.[47] In carrying out this mandate, the management body may consider measures to support international competitiveness, including border adjustment mechanisms.[48] The specific design, management, and operationalization of price stabilization mechanisms for SBCE assets will be established within each National Allocation Plan.[49]

5. **Oversight Authority:** The SBCE governing body is responsible for the oversight of SBCE-

approved credits.[50] The CVM establishes requirements for credits traded under the B3-ACX platform that are considered financial assets.[51]

6. **Legal Classification:** When traded in the financial market, credits are considered financial securities and will be regulated by CVM.[52] Under the SBCE, carbon credits are legally tradable assets ("civil fruits"), equal to 1 tCO_2e, from verified projects or programs, recognized under credible methodologies preapproved by the SBCE governing body.[53]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** There will be detailed reporting of credit issuance in the SBCE, including registration identification.[54] Exact fraud-prevention provisions have not yet been established by the CVM.[55]

2. **Transparency and Reporting Requirements:** These are under development.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** CVM oversight for credits treated as financial assets ensures securities law integration.[56]

2. **Cross-Border Trading Framework:** Although not currently covered in the regulation, compatibility with Article 6.2 is anticipated.[57]

E. Development Road Map

1. **Infrastructure Plans:** The SBCE registration regulation, as well as how exactly it will relate to the voluntary carbon market, has not yet been defined.[58] The B3-ACX platform is expected to include other methodologies, although the exact timeline remains unclear.[59]

2. **International Cooperation:** The B3-ACX platform is expected to support credit trading for international buyers.[60] No regulation on how SBCE-traded credits will relate to Article 6 mechanisms has been included thus far.

3. **Regulatory Evolution:** Integration with broader financial markets remains under discussion, but will fall under the jurisdiction of CVM.[61]

4. **Enforcement Enhancement:** No specification of next steps as of yet. Broader regulations for both SBCE and CVM-overseen markets are under development. It is expected that further information on enforcement will thus be available.

Notes

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CANADA

Overview

Canada's compliance carbon market framework is defined at the federal level through a comprehensive set of legislative and regulatory measures designed to price greenhouse gas (GHG) emissions and create a credible offset mechanism to support compliance and voluntary mitigation. The cornerstone of this system is the Greenhouse Gas Pollution Pricing Act, which established both a fuel charge and an output-based pricing system (OBPS) for industrial emitters.[1] Within this broader policy architecture, Canada's Greenhouse Gas Offset Credit System Regulations (SOR/2022-111)—hereafter referred to as the federal offset regulation—provide the legal foundation for the creation, issuance, and use of offset credits by the federal Canadian government.[2] The system is administered by the Environment and Climate Change Canada (ECCC) federal department[3] and functions in parallel with the federal OBPS to ensure that regulated entities and voluntary participants can access high-integrity credits that represent verified emission reductions or removals.[4]

Under the federal framework, offset credits are tradable instruments representing one ton of carbon dioxide equivalent (tCO_2e) reduced or removed from the atmosphere.[5] The credits are generated by project proponents that undertake eligible activities according to ECCC-approved methodologies, referred to as federal offset protocols.[6] Each project must undergo independent third-party verification and must register in the federal Credit and Tracking System (CATS), which records the issuance, transfer, and retirement of offset credits.[7]

While this study focuses exclusively on Canada's federal system, it is worth noting that certain provinces and territories operate their own regulatory carbon markets that include offset systems—notably Québec, British Columbia, and Alberta. Québec participates in the Western Climate Initiative alongside California, operating a linked cap-and-trade program with joint auctions. British Columbia maintains an independent provincial output-based pricing system and offset regime, while Alberta administers the Technology Innovation and Emissions Reduction Regulation system, which includes its own compliance-grade offset credits. These systems coexist with the federal framework: In provinces with systems assessed as meeting the carbon pricing benchmark, the federal OBPS does not apply, whereas in others it serves as the backstop system. The federal offset regulation, however, functions independently and applies nationally, except where provincial offset protocols already apply.[8]

Canada's federal offset system regulations are already legally binding, with clearly articulated measurement, reporting, and verification (MRV); additionality; and permanence requirements.

It does not limit its scope and includes reduction and sequestration projects, although the offset credits traded are primarily focused on agriculture, forestry, waste, and technology-based project types that meet ECCC-approved protocols.[9] Landfill methane recovery and destruction, reducing GHG emissions from refrigeration systems, reducing methane emissions from beef cattle, and improving forest management on private land are among the earliest eligible activities.[10] Future expansions are planned to include agriculture, forestry, and direct air capture projects, as referenced in ECCC's regulatory road map and related ministerial statements.[11]

The federal offset regulation complements Canada's existing carbon pricing system and seeks to provide a lower-cost compliance option for covered facilities, while maintaining the environmental integrity of Canada's national GHG reduction targets. At the same time, the system allows voluntary market participants—such as corporations seeking to meet internal net-zero targets—to purchase and retire federal offsets.[12] Canada encourages voluntary corporate use of high-integrity offset credits and points companies toward frameworks such as the Net-Zero Challenge and Voluntary Carbon Markets Integrity Initiative (VCMI) for guidance on how to do so credibly. At the 2025 United Nations Climate Change Conference in Belém, Brazil, Canada joined the Coalition to Grow Carbon Markets and endorsed the *Shared Principles for Growing High-Integrity Use of Carbon Credits by Companies and Other Buyers*.[13]

I. Supply-Side Regulations

Available supply-side regulations under the federal system are established in the federal offset regulation and corresponding ECCC offset protocols. Together, they define the processes for offset credit generation, verification, and issuance, and set the integrity standards for Canada's project-based offset credit market.

A. Regulatory Framework

1. **Market Classification:** Canada's framework combines compliance-grade and voluntary-eligible offset credit generation. Federal credits can be used by regulated facilities for compliance purposes or purchased voluntarily by non-regulated entities.

2. **Regulatory Status:** The system is fully operational and legally binding at the federal level, though it is designed to complement existing provincial and territorial systems. It supports voluntary use of offset credits for companies that are not under the compliance umbrella but wish to address the impact of their emissions through the use of compliance-grade offset credits.[14]

3. **Key Authorities:** Oversight lies with ECCC, under the authority of the Minister of Environment.[15] The Standards Council of Canada (SCC) is also referenced as the accrediting authority

for verification bodies, while the American National Standards Institute (ANSI) National Accreditation Board is recognized under the verification framework.[16]

4. **Sanctions:** The Minister of Environment may suspend or revoke offset credits in cases of non-compliance, misrepresentation, or double counting. The regulation also provides for administrative monetary penalties under the Greenhouse Gas Pollution Pricing Act enforcement regime.[17]

B. Credit Generation Standards

1. **Eligible Activities:** Canada's approved federal offset protocols cover a broad range of activities, including the following:[18]
    - Landfill methane recovery and destruction;
    - Reductions of GHG emissions from refrigeration systems;
    - Improved forest management on private land;
    - Reducing enteric methane emissions from beef cattle;
    - Direct air capture and geological storage (preliminary draft protocol);
    - Reducing manure methane emissions (draft protocol);
    - Enhancing soil organic carbon (under development);
    - Improved forest management on public land (under development); and
    - Bioenergy with carbon dioxide capture and geological storage (under consideration for development).[19]

These activities collectively aim to mobilize mitigation across industrial, waste, and land-based sectors.

For federal OBPS-regulated entities, offset credits must be issued under the federal offset regulation, serialized and retired in CATS, and verified by third parties accredited under ISO 14065 (the international standard for bodies that validate and verify GHG information).[20]

2. **Methodology Framework:** Each protocol defines quantification, monitoring, and verification procedures specific to the project type. Methodologies must comply with the federal offset regulation and are published by ECCC.[21]

3. **MRV Requirements:** All projects must submit detailed measurement and verification reports verified by accredited third parties, with conservative quantification of emission reductions and

robust data management. Verification bodies must be accredited under ISO 14065 and must conduct their work in accordance with ISO 14064-3 (the international standard specifying how verification and validation of GHG statements should be carried out).[22]

4. **Registry System:** CATS serves as Canada's central registry, recording project registration, offset credit issuance, transfers, and retirements. The system ensures traceability, transparency, and protection against double counting.[23]

C. Integrity Principles

1. **Additionality Tests:** Projects must demonstrate that the emission reductions or removals are beyond regulatory requirements and common practice. ECCC applies a "regulatory additionality" test.[24]

2. **Permanence Safeguards:** To be considered permanent, each ton of CO_2e removed from the atmosphere must stay removed for at least 100 years. The regulations establish an environmental integrity account into which the Minister of Environment deposits a percentage of the offset credits generated by a project for each calendar year. This account comprises a pool of credits acting as a form of insurance for the environmental integrity of the federal offset system. When there is a reversal of GHG reductions determined to be out of the proponent's control (i.e., an involuntary reversal), the Minister of Environment will revoke a corresponding number of offset credits deposited by the minister into the environmental integrity account. Acknowledging implementation challenges, the mechanism also allows for ton-year and hybrid ton-year quantification methods, which quantify the climate benefit of withholding carbon from the atmosphere annually over a reporting period. As these methods credit partial rather than permanent removal, projects using them would generate fewer credits than projects meeting the full 100-year permanence standard.[25]

3. **Quantification Standards:** Projects must apply federal GHG offset protocols that contain conservative estimation methods, account for leakage and uncertainty, and use the global warming potentials consistent with Canada's national inventory.

4. **Double-Counting Prevention:** Credits are serialized uniquely within CATS and cannot be used by multiple entities or under more than one jurisdictional target.[26]

D. Sustainable Development

1. **Co-Benefits:** The federal offset regulation supports projects that contribute to ecosystem integrity, biodiversity conservation, and sustainable land use. Many protocols explicitly reference co-benefits such as soil health improvement and renewable energy deployment.[27]

2. **Net-Zero Compatibility:** No requirement for credit generators to be net-zero compatible has been established.

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:** Federal offset credits may be used for compliance by regulated facilities under the OBPS (surplus credits and offset credits may be used to meet up to 75 percent of the compliance obligation), used for compliance under the Clean Electricity Regulations, or purchased voluntarily by entities seeking to offset emissions.[28]
2. **Regulatory Status:** The use of federal offsets is authorized for regulated entities and permitted for voluntary use without additional approval.[29]
3. **Oversight Bodies:** The Minister of Environment, through ECCC, oversees the issuance, use, and retirement of federal offset credits under the federal offset regulation. Verification bodies involved in credit validation verification must be accredited under ISO 14065 by an accreditation body recognized under the International Accreditation Forum—in Canada, the SCC, and in the United States, the ANSI National Accreditation Board. There is no separate governing authority for voluntary buyers, who operate within the same registry and integrity framework.[30]
4. **Standards Integration:** There is no explicit requirement for alignment with external frameworks such as the Science Based Targets initiative or VCMI; however, integrity standards derive from the supply-side MRV and verification rules.
5. **Enforcement Mechanisms:** The Minister of Environment retains powers under the Greenhouse Gas Pollution Pricing Act to revoke credits or impose penalties for misuse, fraud, or non-compliance.[31]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** These have not been formally defined.
2. **Scope Coverage:** These have not been specified.
3. **Quality Standards:** These have not been specified.
4. **Accounting Treatment:** Credits are recorded in CATS; voluntary retirement is publicly visible, ensuring transparency.

C. Transparency and Assurance

1. **Public Reporting:** The public registry provides information on parties that hold offset credits

and retire offset credits for regulatory compliance or for voluntary purposes.

2. **Third-Party Verification:** Verification is mandatory at the supply side; corporate claims are not independently audited.
3. **Science-Based Targets:** These are not required at the federal level.
4. **Policy Advocacy:** None is specified in the data provided.

D. Market Integrity Protection

1. **Anti-Greenwashing:** The concept of greenwashing is alluded to as "engagement . . . for the purpose of promoting directly or indirectly in a way that is false or misleading." Persons or companies engaging in this behavior shall face a fee determined by the commissioner, tribunal, or federal court. The fee shall not exceed CAD 1,000,000 (approximately USD 730,000) for individuals or CAD 15,000,000 (approximately USD 11,000,000) for corporations.[32] Integrity assurance is achieved through MRV and registry transparency.
2. **Co-Benefits Delivery:** Co-benefits must be addressed within project design, not through separate demand-side mechanisms.

III. Market-Side Regulations

The federal offset market infrastructure is built around registry operations and ministerial oversight. Trading remains bilateral, with no centralized exchange.

A. Infrastructure Framework

1. **Market Structure:** The federal offset system issues offset credits under the authority of the federal offset regulation; these offset credits can be traded bilaterally between entities. There is no federal marketplace or exchange mechanism.[33]
2. **Registry Operations:** CATS is the sole registry used for issuance and tracking. Future updates are expected to allow broader participant access and improved transparency.[34]
3. **Data Standards:** All project and credit data must be submitted electronically and comply with federal IT and data retention requirements.[35]

B. Trading and Participation

1. **Eligibility Rules:** Only entities meeting the definition of "project proponent" under sections 4–8 of the federal offset regulation (i.e., corporations, partnerships, associations, or individuals

designated as project proponents) may register and manage projects.[36] Facilities in the federal OBPS may acquire credits through private trading. Trade in offsets is negotiated between proponents, and the terms of credit trade are agreed between buyers and sellers. Brokerage services for facilitated transactions and reducing transaction costs are permitted.[37]

2. **Trading Mechanisms:** Transfers occur through bilateral agreements, logged in CATS. No federal auction or exchange mechanism exists.[38]
3. **Settlement Systems:** None are specified.
4. **Price Discovery:** No formal mechanism exists; prices remain confidential between parties.
5. **Oversight Authority:** The Minister of Environment through ECCC is the authority.[39]
6. **Legal Classification:** The Canada Revenue Agency classifies offsets within existing tax and accounting concepts, primarily as "emission allowances" or "intangible property used in a business." Under the Excise Act, an emission allowance is "a tradable instrument issued under a regulatory framework that represents a quantity of greenhouse gas emissions."[40] For tax purposes, emission allowances are valued at acquisition cost and any gains may be treated as business income.[41]

   Federal offset credits are tradeable units issued under the federal offset regulation, each representing one ton of verified GHG reduction or removal achieved according to an approved federal protocol. Credits are serialized and recorded in CATS, which serves as the official tracking system.[42]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** Integrity safeguards rely on verification, serial number tracking, and ministerial enforcement powers.
2. **Transparency and Reporting Requirements:** The registry provides project and credit details to prevent duplication and ensure accountability.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** Canada has not integrated carbon offsets into its securities-law framework at a federal level because securities regulations fall under provincial jurisdiction. Offset credits are governed under federal environmental legislation and administered through environmental regulatory processes. Securities law applies only on a contingent basis where an offset-related product independently meets the statutory definition of a security or derivative.[43]

No formal regulatory harmonization exists between environmental authorities and provincial securities regulators for carbon offset markets.

2. **Cross-Border Trading Framework:** None has been formally established; exports of federal credits are not explicitly permitted but may occur through private arrangements, provided no double counting occurs.

E. Development Road Map

1. **Infrastructure Plans:** Continued expansion of protocols and registry functionality is planned.
2. **International Cooperation:** Although not specified, Canada participates in Article 6 negotiations under the Paris Agreement.
3. **Regulatory Evolution:** The federal government intends to expand eligible project types and improve alignment with other domestic systems.
4. **Enforcement Enhancement:** There have been no disclosures of future market-side enforcement enhancements.

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CHINA

Overview

China operates two interlinked carbon markets: a compliance-based emissions trading system (ETS) and a voluntary offset program known as the China Certified Emission Reduction (CCER) scheme, with the ETS serving as the primary channel through which offsets are used.

Launched in 2021, the national ETS is the world's largest carbon market in terms of covered emissions.[1] Although the system is currently based on government-set industry carbon intensity benchmarks (allocating allowances per unit of output) that decline over time, it is expected to shift toward absolute caps on emissions by 2027, following an expansion of coverage beyond the power sector under the 2024–2025 emissions allocation framework released in November 2025 to include steel, cement, and aluminum sectors.[2] With the expansion, the national ETS covers around 60 percent of emissions.[3] Under the ETS, regulated emitters can use CCER credits to offset up to 5 percent of their compliance obligation,[4] creating structured demand for domestic offsets. The system's design includes measurement, reporting, and verification (MRV), gradual tightening of benchmarks, and progressive sectoral expansion to drive emissions reduction in line with China's goal of reaching peak emissions before 2030.

The CCER 2.0 framework, relaunched in 2024 after a six-year suspension, allows projects such as renewables, methane capture, and afforestation to generate tradable credits under stricter methodologies. The first batch, 9.5 million tons of CO_2-equivalent from nine offshore wind and solar-thermal projects, was issued in March 2025.[5]

Together, the ETS and CCER systems underpin China's evolving carbon-market architecture, combining regulatory emissions control with project-based mitigation incentives aligned with the country's goal of peaking emissions before 2030.

China is developing domestic administrative measures for cross-border carbon trading under Article 6 of the Paris Agreement, but with its own priorities and approach factored in. The Ministry of Ecology and Environment (MEE) has begun drafting rules to govern such transactions "in line with China's national circumstances" to facilitate bilateral crediting arrangements and converting some credits from existing voluntary or Kyoto-era mechanisms into Article 6–compliant units. It signaled plans to adopt international trading rules as early as 2026 and to pilot a bilateral credit program with another country in the medium term. Engagement with Thailand, Singapore, Malaysia, Vietnam, Turkey, and Brazil to exchange views on institutional design and data quality

has already begun.[6] As of January 2026, project methodologies have been expanded, with 17 new methodologies approved between 2024 and 2025.[7]

I. Supply-Side Regulations

China has accelerated the expansion of project-based methodologies under CCER 2.0, which functions as a regulated compliance-offset mechanism within China's national ETS. Although project developers voluntarily generate credits, CCERs are issued, verified, and approved under MEE rules and may be used by ETS-covered companies to meet some of their compliance obligations.

A. Regulatory Framework

1. **Market Classification:** China allows the use of carbon credits in its compliance market as part of the CCER scheme.

2. **Regulatory Status:** China's carbon credit supply is governed by two core regulations: the Interim Regulations on the Administration of Carbon Emissions Trading[8] and the Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Trading.[9] The State Council's Interim Regulations establish the national legal framework for the ETS, assigning the MEE as regulator, mandating a unified registry, authorizing "other approved trading products," and providing the legal basis for CCER integration. The Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Trading revived the CCER program, defining project eligibility, credit issuance, and transfer rules. The government issued other supporting rules in late 2023 to govern registration, trading, and verification. This collectively ensures a unified, transparent, and regulated framework for carbon credit generation called the Rules for Voluntary Greenhouse Gas Emission Reduction Registration (Trial), which set procedures for project registration, account setup, and credit issuance.[10]

3. **Key Authorities:** The MEE is the primary regulator; provincial and municipal Ecology and Environment Bureaus (EEBs) carry out inspections and penalties on the ground; the State Administration for Market Regulation (SAMR) licenses and audits third-party validators and verifiers; and independent institutions authorized by the MEE to run the national registry and trading platform jointly safeguard market integrity.

4. **Sanctions:** Penalties include monetary fines (RMB 10,000–200,000, approximately USD 1,410–28,160),[11] revocation or suspension of project or verification licenses, credit cancellation, temporary bans on participation, public naming or criticism, and potential criminal referral.[12]

B. Credit Generation Standards

1. **Eligible Activities:** Seventeen methodologies have been approved thus far under China's CCER 2.0 framework. These additions mark a shift from traditional renewables and land-use activities toward industrial decarbonization and technology-based mitigation. The methodologies were approved in waves:[13]

    - On October 24, 2023, the first batch was issued, comprising afforestation carbon sequestration, mangrove restoration, grid-connected solar thermal power generation, and grid-connected offshore wind power generation.
    - On December 27, 2024, two additional methodologies were approved: energy saving in highway tunnel lighting systems and coal mine low-concentration gas and air exhaust gas utilization.
    - On November 21, 2025, three oil and gas methodologies were released: recovery and utilization of associated gas from offshore oil fields, onshore gas field test gas release and jet recovery and utilization, and recovery and utilization of low-volume associated gas from onshore oil fields.
    - On December 2, 2025, coastal salt marsh vegetation restoration and seagrass bed vegetation restoration were issued, followed on December 3, 2025, by recovery and purification of sulfur hexafluoride from electrical equipment.
    - On December 17, 2025, large-scale pig farm manure biogas recycling projects and centralized treatment of agricultural waste were approved.
    - On December 23, 2025, energy efficiency improvement methodologies for existing public building envelopes and heating, ventilation, and air conditioning systems were released.
    - On December 26, 2025, two additional methodologies were issued: medium-deep geothermal well heat-exchanger systems and electrolysis-based green hydrogen production.

2. **Methodology Framework:** The regulation does not reference any international frameworks.

3. **MRV Requirements:** These requirements establish strict third-party validation and verification requirements for project-based crediting. Independent Validation and Verification Bodies (VVBs) must approve a project's design prior to registration and verify each monitoring report before certified emission reductions are issued. To ensure impartiality, the same VVB may not conduct both validation and verification for the same issuance cycle. All VVBs are required to hold, or are encouraged to obtain, national accreditation recognized by the SAMR and the MEE.[14]

4. **Registry System:** CCERs are tracked through a national voluntary emission-reduction trading registry system, established by the MEE, that designates a registry institution to operate the system. The National Center for Climate Change Strategy and International Cooperation (NCSC) currently serves as the registration institution responsible for operating and maintaining the registry.[15] Through the National Greenhouse Gas Voluntary Emission Reduction Registration System and Information Platform,[16] the registration institution receives project and emission-reduction registration and cancellation applications, and records all project documentation, issuance records, ownership changes, and cancellations to ensure full traceability and prevent double counting. It is also required to publish comprehensive project-level information, including project design documents, validation reports, and monitoring and verification documentation, along with all registration, issuance, and cancellation notices, making project-level data publicly accessible.[17]

C. Integrity Principles

1. **Additionality Tests:** Projects are required to demonstrate "additionality, authenticity, and uniqueness." A project is considered "additional" if it would not be the optimal choice based on internal rate of return or other financial indicators compared with alternatives providing the same products or services, it faces financing or technological barriers, and it—when implemented as a voluntary emission-reduction activity—overcomes those barriers to achieve reductions beyond the baseline scenario.[18]

2. **Permanence Safeguards:** These safeguards do not explicitly set an overarching permanence or reversal-risk rule within the broader regulations governing the CCERs.

3. **Quantification Standards:** Projects must follow a MEE-approved methodology that defines the project boundary, baseline scenario, and emission-factor parameters and requires the use of conservative calculation methods. Each project must also meet the general test of being "measurable, traceable, and verifiable" and retain all source data for a minimum of 10 years. After each monitoring period, project owners are required to submit a monitoring report prepared in accordance with the approved methodology, which a VVB must independently audit before the registry can issue CCER credits.[19]

4. **Double-Counting Prevention:** The prevention of double counting is tracked through three linked provisions. First, the eligibility criteria require every credit to be "unique," ensuring that each ton of emission reduction can be issued only once. Second, a single national registry, managed by the MEE, records all issuances, transfers, holdings, and cancellations, serving as the definitive legal record of ownership. Third, credits are entered into this registry only after independently verified measurement data have been accepted and the issuance decision has been publicly disclosed.[20]

D. Sustainable Development

1. **Co-Benefits:** These include building sustainable development safeguards directly into the project validation process. Independent validators must confirm that each project "meets sustainable-development requirements and causes no adverse impact" before it can be registered. The Project Design Document (PDD) and validation report are then published online for a 20-day public comment period, allowing civil society to raise social or environmental concerns before approval.[21]

2. **Net-Zero Compatibility:** The project approval procedures are aligned with China's net-zero framework, linking voluntary carbon trading to national goals of peaking emissions before 2030 and achieving carbon neutrality by 2060. The regulation's purpose clause explicitly situates the CCER system within these dual-carbon objectives, and during validation, third-party auditors must confirm that each project "meets sustainable-development requirements and does not adversely affect any aspect of sustainable development," reinforcing consistency with China's pathway toward net-zero emissions.[22]

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary claims:* CCER credits are generated by project-based emission reduction or removal activities and can be purchased by corporations or other entities for voluntary offsetting or to support "net-zero" claims.

   - *Compliance integration:* CCER credits are also integrated into the compliance regime—regulated emitters under China's ETS may use CCERs to offset a portion of their surrender obligations (currently up to 5 percent) under national rules.[23]

   - *Nationally determined contribution (NDC) alignment:* By incorporating CCERs and linking them to the ETS and China's broader "dual-carbon" objectives (peaking before 2030 and neutrality by 2060), the government is positioning CCER as a mechanism that contributes to national climate goals, thus indirectly supporting NDC achievement. While China has not explicitly stated that each CCER credit is counted toward the NDC, the regulatory architecture creates the potential for credits to feed into domestic mitigation pathways aligned with NDC targets.

2. **Regulatory Status:** The "Carbon Emissions Trading Management Measures (Trial

Implementation)" (2021) allow key emitters to use CCERs to offset up to 5 percent of their verified annual emissions. The "Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Trading (Trial Implementation)" (2023) set the framework for voluntary project-based credits, but they do not appear to include strong, detailed rules specifying how the credits must be used on the demand side (e.g., clear rules around retirement by third-party buyers, or tracking of usage toward national targets).

3. **Oversight Bodies:**
    - *MEE* is responsible for ETS compliance use (e.g., setting the quantitative limit and registry recording).
    - *SAMR* is responsible for consumer-protection enforcement if misrepresentation occurs, though it is unclear if current consumer protection laws extend to credit use and claims.
4. **Standards Integration:** No other international standards were explicitly referenced in the regulations.
5. **Enforcement Mechanisms:**
    - The MEE and its provincial branches are responsible for verifying whether entities correctly apply offsets and meet the 5 percent limit. If an entity fails to surrender sufficient allowances or misuses credits, enforcement mechanisms include correction orders, fines of up to RMB 30,000–50,000 or approximately USD 4,240–7,070[24] (for late or falsified reporting), and public disclosure of non-compliance. Enforcement is thus administrative and compliance-driven, ensuring entities don't overuse or misreport CCERs in their ETS submissions. However, there is no separate liability regime for the quality or claims integrity of the CCERs they use. This exists only for exceeding usage caps or misreporting data.[25]
    - Enforcement applies to project owners, verifiers, and traders on the supply side (e.g., falsification of project data) but not to buyers' or corporates' use or public representation of CCERs. There are no penalties or compliance checks for incorrect use, double claiming, or greenwashing in voluntary applications. Oversight bodies the MEE and the SAMR may theoretically intervene if there's fraud or misrepresentation, but this would occur under general consumer-protection or anti-fraud laws, not carbon-specific enforcement.[26]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** This is not explicitly addressed in the regulations.
2. **Scope Coverage:** This is not explicitly addressed in the regulations.

3. **Quality Standards:** This is not explicitly addressed in the regulations.
4. **Accounting Treatment:** The regulation designates a national registry that manages registration, transfers, and cancellations of every carbon emission trading product, and states that cancellation is the official ledger entry for compliance surrender.[27]

C. Transparency and Assurance

1. **Public Reporting:** Cancellations or retirements must be recorded. When a CCER is used for ETS offsetting, Corporate Social Responsibility (CSR), or other approved purposes, the unit must be canceled in the national registry. The registry "records, stores, and maintains" every CCER's registration, ownership changes, and cancellations. The internal reporting to the MEE, however, is not public: The registry and exchange must file periodic activity reports with the MEE; however, no article states that these data must be published (this is only a requirement on the supply side for cancellations). There is currently no article that mandates public reporting of CCER retirements or users' progress toward voluntary or mandatory targets. The regulation does not require, but encourages, the retirement to be used for public welfare purposes.[28]
2. **Third-Party Verification:** There is no external assurance of credit use and cancellation of CCERs.
3. **Science-Based Targets:** This is not explicitly addressed in the regulations.
4. **Policy Advocacy:** This is not explicitly addressed in the regulations.

D. Market Integrity Protection

1. **Anti-Greenwashing:** Although not explicitly stated, the rules include safeguards against double claiming, but only limited measures address greenwashing risks. All issuances, transfers, and cancellations are recorded in a single national registry, whose records serve as the final legal basis for credit ownership and status. Once CCERs are used for ETS compliance, carbon-neutral events, or other approved purposes, the registry must cancel those units to prevent them from being claimed again. The framework also embeds supply-side integrity requirements, though these remain partial—for example, there is no explicit permanence obligation for project-based credits.[29]
2. **Co-Benefits Delivery:** The framework sets no requirement for project owners or credit users to demonstrate that CCER retirements deliver community, biodiversity, or other sustainable-development co-benefits. It only specifies that CCERs may be canceled for ETS compliance, carbon-neutral events, or other approved purposes, and encourages participants, for public-welfare purposes, to cancel their credits voluntarily.[30]

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** The primary government-operated platform in China's carbon market is the China Beijing Green Exchange, which has been designated for trading project-based credits under the CCER program. Its operations are closely regulated by the MEE in terms of project registration, issuance, transfer, and cancellation of credits.
    - Market-side rules:
        - The Interim Regulations on the Administration of Carbon Emissions Trading, effective May 1, 2024, provide a legal framework for China's national carbon emissions trading system.[31]
        - Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Trading (Trial), which form the legal foundation for the CCER program, cover governance, eligibility, and enforcement.[32]
        - Rules for Voluntary Greenhouse Gas Emission Reduction Registration (Trial) set procedures for project registration, account setup, and credit issuance.[33]
        - Rules for Voluntary Greenhouse Gas Emission Reduction Trading and Settlement (Trial Implementation) govern trading modes, account requirements, and settlement processes for CCER credits.[34]
2. **Registry Operations:** China's regulations establish centralized registry systems for both CCERs and allowances, enabling life cycle tracking of issuance, transfer, and cancellation. However, public transparency and serial-level traceability remain limited. While the registration rules and trading and settlement rules for voluntary greenhouse gas emission reduction methods require detailed supply-side record keeping, they do not mandate full public disclosure of individual credit cancellations (retirements) or user-level usage data.[35]
3. **Data Standards:** Overall, the existing rules are foundational, but the detailed, machine-readable data standards and life cycle traceability remain underdeveloped.

B. Trading and Participation

1. **Eligibility Rules:** Trading participants are required to meet the access conditions set by the trading institution, open a real-name trading account, and sign a trader access agreement. Each participant must also hold a real-name registry account in the national CCER registry, and is limited to one trading account, though multiple operator roles may be assigned.[36] The

rules further define eligible market participants as legal entities established in China or qualified individuals based in China. Cross-border participation is not addressed but is expected to be governed by future rules.[37]

All CCER transactions must occur through designated, unified trading systems using approved order types—such as listing agreements, block trades, or single-direction auctions—and within authorized trading venues. The registry and trading institutions are empowered to limit or suspend participation in cases of compliance breaches, effectively linking eligibility to adherence with market conduct rules.[38]

2. **Trading Mechanisms:** CCER trading in China is structured around exchange trading mechanisms, with over-the-counter (OTC) or standalone bilateral trades outside the exchange system not clearly permitted under the current rules.

3. **Settlement Systems:** A transaction is deemed established once a buy or sell order is executed within the trading system, becoming immediately effective upon execution. Following each trading day's close, the exchange performs net clearing on a per-entity, per-transaction basis. Once the clearing results are confirmed, each transaction is settled by delivering CCERs to the buyer's registry account and issuing payment to the seller's account. Settlement outcomes are distributed through the trading system; if a participant disputes these results, they must submit a written objection before the next trading day, otherwise the results are considered final. Participants are prohibited from repurchasing or reselling the same CCER product within five trading days. The China Beijing Green Exchange is designated as the sole eligible trading venue for CCER transactions under the national framework.[39]

4. **Price Discovery:** Trading formats, including listing, block trades, and unilateral bidding, are designed to facilitate transparent price formation within China's regulated exchange system.[40]

5. **Oversight Authority:** The MEE serves as the primary regulatory authority for China's national voluntary carbon market, responsible for rule-making, system oversight, and enforcement. The China Beijing Green Exchange functions as the centralized trading venue for CCER transactions, charged with maintaining market integrity, enforcing trading conduct and compliance, and ensuring adherence to authorized transaction formats and rules.[41]

6. **Legal Classification:** There is no publicly available Chinese government regulation that explicitly defines the legal nature of carbon credits. Under the current guidance from the State Taxation Administration, emission permits traded in China's national compliance market and CCERs traded in the voluntary market are classified as "quotas" falling within the value-added tax category of "other intangible assets."[42]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** This is not explicitly stated; however, the rules require trading entities to satisfy the eligibility conditions established by the trading institution. This includes creating a real-name account in the national CCER registry and opening a corresponding trading account with the exchange. Entities must also ensure that account information remains accurate and up to date.[43]

2. **Transparency and Reporting Requirements:** Trading information is required to be published by the trading institution, ensuring market participants have access to relevant transaction data disclosed through official channels.[44]

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** Though not stated explicitly, the project-based carbon credit market rules specify that "trading, settlement, and related activities shall comply with relevant national regulations and follow the principles of fairness, justice, openness, integrity, voluntariness, safety, and efficiency," which could include financial regulation.[45] Separately, the MEE has issued a notice encouraging banking and insurance institutions to support the development of national carbon trading markets and to develop carbon finance businesses, particularly those linked to emission allowances and CCERs. The notice also encourages the use of carbon-related data (e.g., corporate carbon accounts) to expand green financial services. This signals policy support for financial-sector participation in carbon markets, though without formally reclassifying carbon credits as financial securities.[46]

2. **Cross-Border Trading Framework:** This is under development. For now, under the eligibility rules, only entities or legal persons established within China may participate in voluntary carbon trading activities, which implies that cross-border trading is not currently permitted.[47]

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** China is reinforcing its market infrastructure to expand the capabilities of the designated exchange (China Beijing Green Exchange) and to offload non-core functions of the exchange away from Beijing.[48]

2. **International Cooperation:** China is preparing to link its CCER market with international carbon-trading frameworks under the Paris Agreement Article 6. The government has articulated plans to draft "cross-border carbon-trading administrative measures in line with China's national circumstances," signaling upcoming bilateral agreements and registry interoperability with other jurisdictions.[49]

3. **Regulatory Evolution:** Integration with broader financial markets appears limited at present: CCER trading is confined to the designated exchange, with OTC transactions not permitted yet (block trades or auctions pending future rollout).
4. **Enforcement Enhancement:** Enforcement mechanisms are expected to be strengthened, with increased regulatory scrutiny of misuse, misreporting, and trading irregularities in the CCER market. China is reportedly elevating penalties, improving market-conduct supervision, and tightening rules around validation, verification, cancellation, and claim integrity.

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EUROPEAN UNION

Overview

In December 2024, the European Union (EU) adopted the Carbon Removals and Carbon Farming Regulation (CRCF), creating the first EU-wide voluntary certification framework for carbon removals, carbon farming (practices that increase soil carbon stocks or reduce soil emissions), and carbon storage in products.[1] This regulation sets out criteria and rules for verifying and certifying carbon-removal activities, including nature-based removals (e.g., soil carbon, forestry) and technological removals (e.g., direct air capture and storage, bioenergy with carbon capture and storage). The EU published the first implementing regulation under the CRCF in November 2025, moving the framework toward practical operation and enabling the issuance of certified removal units once methodologies are in place.[2] The first set of methodologies for permanent carbon removals, which are direct air capture with carbon storage, biogenic emissions capture with carbon storage, and biochar carbon removal, has been adopted.[3]

The EU currently does not create compliance demand for project-based carbon credit markets (PCCMs) under the EU Emissions Trading System (ETS). From 2013 to 2020, EU ETS participants could use international project-based carbon credits generated under the Clean Development Mechanism (CDM) and Joint Implementation, subject to quantitative and qualitative limits; however, from 2021 onward, such credits were no longer permitted for EU ETS compliance, reflecting EU concerns over environmental integrity, additionality, uneven credit quality, and the need to ensure that emissions reductions occur within the ETS cap through domestic mitigation.[4]

Demand for PCCMs, therefore, arises outside compliance markets and is primarily voluntary. Demand is driven by corporate net-zero and climate claims, but has been increasingly shaped by EU sustainability and green-claims regulation—notably the Corporate Sustainability Reporting Directive (CSRD) and the Green Claims Directive (GCD)—which constrain how credits can be used and marketed, pushing buyers toward higher-integrity units, particularly carbon removals. However, these signals have recently become more fragmented. In December 2025, the provisional agreement Omnibus I simplification package proposed to narrow and delay the CSRD, reducing the number of companies subject to detailed climate and emissions disclosures and potentially weakening transparency around corporate use of PCCMs. Negotiations on the GCD stalled in mid-2025, leaving uncertainty around future requirements for substantiating climate claims involving carbon credits, even as supply-side integrity rules under the CRCF advance.[5]

The EU has recently signaled a potential reintroduction of the use of international carbon credits under Article 6 of the Paris Agreement toward meeting its 2040 climate target, marking a shift toward complementing domestic mitigation with internationally sourced credits. Under the EU Climate Law amendment, the EU could use high-quality international credits to make an "adequate contribution" to the 2040 target, beginning in 2036. The volume of such credits would be capped at up to 5 percent of 1990 EU net greenhouse gas emissions, alongside a domestic emissions reduction of at least 85 percent by 2040 compared to 1990 levels. Any use of international credits would be subject to strict safeguards designed to complement Article 6.4 rules, ensure environmental integrity, and include consideration of a pilot phase during 2031–2035 to test implementation.[6]

I. Supply-Side Regulations

A. Regulatory Framework

1. **Market Classification:** The CRCF applies as a regulation for the voluntary carbon market, and not to the EU ETS compliance market. It establishes an EU-wide certification framework for permanent carbon removals, carbon farming, and carbon storage in products, while explicitly excluding CRCF-certified units from use in EU ETS compliance, third-party nationally determined contributions (NDCs) accounting, or international compliance schemes. The framework governs certification, issuance, registry recording, and integrity rules for carbon-removal units, but does not mandate their use for compliance purposes.[7]

2. **Regulatory Status:** The CRCF is governed by two regulations. Regulation (EU) 2024/3012[8] establishes the EU certification framework for permanent carbon removals, carbon farming, and carbon storage in products. The Commission Implementing Regulation (EU) 2025/2358[9] operationalizes the framework by setting detailed rules on certification schemes, certification bodies, auditing procedures, registries, non-conformities, and sanctions. Regulation (EU) 2024/3012 establishes the legal framework and eligibility criteria for supply-side activities, while Implementing Regulation (EU) 2025/2358 provides harmonized operational requirements for project certification and unit issuance throughout the EU.

3. **Key Authorities:** These authorities are led by the European Commission (Commission), which adopts certification methodologies and recognizes certification schemes.[10] Certification schemes recognized by the Commission administer project certification, apply approved methodologies, operate certification registries, and ensure compliance with governance and integrity requirements.[11] Certification bodies conduct certification, recertification, and monitoring audits and must be accredited or recognized by national authorities,[12] while member states supervise certification bodies through national accreditation systems and do not issue certified units.[13]

4. **Sanctions:** The CRCF establishes enforceable sanctions through a classification of critical, major, and minor non-conformities. Sanctions include denial of certification, suspension or withdrawal of certificates, cancellation of certified units, and exclusion from certification schemes with additional safeguards to prevent fraud and "scheme hopping," whereby an operator (equivalent to a project developer) who has failed an audit under one scheme immediately applies for certification under another scheme.[14]

B. Credit Generation Standards

1. **Eligible Activities:** The CRCF covers permanent carbon removals, carbon farming, and carbon storage in products, including activities that remove carbon from the atmosphere and store it in geological, terrestrial, marine, or product-based reservoirs. Eligible activities include industrial carbon removals (such as direct air capture with storage and bioenergy with carbon capture and storage), carbon farming practices that increase soil or biomass carbon stocks or reduce soil emissions, and storage of carbon in long-lasting products.[15] Activities that do not result in net carbon removals or net soil emission reductions—such as avoided deforestation or renewable energy projects—are explicitly excluded from the framework.[16] The EU adopted the first set of methodologies for permanent carbon removals in 2026, which are direct air capture with carbon storage, biogenic emissions capture with carbon storage, and biochar carbon removal.[17]

2. **Methodology Framework:** Certification under the CRCF is based on EU-level certification methodologies to be adopted by the Commission through delegated acts, tailored to specific activity types and grounded in the best available scientific evidence. The regulation allows methodologies to build upon existing public and private standards and relevant international rules, but does not formally incorporate or reference any international carbon-crediting frameworks as governing standards.[18]

3. **Measurement, Reporting, and Verification (MRV) Requirements:** These requirements establish third-party validation, verification, and measurement. All activities must undergo an initial certification audit before implementation and periodic re-certification and monitoring audits thereafter, conducted by independent certification bodies at a reasonable level of assurance.[19] Certification bodies must be accredited or recognized by national authorities, must be independent from operators, and cannot have any conflicts of interest. The CRCF framework spells out how audits are conducted, including the depth of checks required, simplified group audits for carbon-farming projects, how problems or errors are classified and corrected, and the confidence level auditors must have before approving a project or issuing units.[20]

4. **Registry System:** CRCF-certified units must be recorded in certification registries operated by recognized certification schemes and, once established by 2028, in a central EU registry

managed by the Commission. Registries must ensure full traceability; public transparency of key project and certification information; and safeguards against double issuance, double use, and fraud. Certified units may only be issued after verified net carbon removal or net soil emission reduction benefits are achieved.[21]

C. Integrity Principles

1. **Additionality Tests:** Activities must demonstrate additionality, meaning they go beyond statutory requirements and common practice and would not occur without the incentive effect of certification. Additionality is assessed primarily through standardized baselines that reflect prevailing regulatory and market conditions; an activity that delivers removals or soil emission reductions above such a baseline is presumed additional. Where standardized baselines are not feasible, activity-specific baselines may be used, and certification methodologies must ensure that credited outcomes exceed the baseline scenario.[22]

2. **Permanence Safeguards:** These safeguards do not impose a single uniform permanence rule across all activities; instead, permanence and reversal risk are addressed through activity-specific monitoring periods, validity periods for certified units, and liability mechanisms defined in certification methodologies. Permanent carbon removals are expected to ensure storage over centuries, while carbon farming and carbon storage in products are subject to expiry of units at the end of the monitoring period—set at a minimum of 35 years for carbon storage in products—unless monitoring is extended, reflecting their higher reversal risk.[23]

3. **Quantification Standards:** Carbon removals and soil emission reductions must be quantified using accurate, conservative, transparent, and comparable methods, in accordance with EU-level certification methodologies adopted by the Commission. Quantification follows a two-step approach: first, calculating removals or reductions relative to a baseline; second, subtracting all associated direct and indirect life cycle emissions. Uncertainty must be addressed conservatively, and monitoring reports must be independently audited before certification and re-certification.[24]

4. **Double-Counting Prevention:** This addresses double counting through a combination of unique issuance, registry-based accounting, and audit-linked issuance rules. Certified units may be issued only once, only after a valid recertification audit confirms the generation of net benefits, and must be recorded in certification registries or, once operational, the EU registry, which serves as the authoritative record. Units are explicitly excluded from EU ETS compliance and third-party NDC use, and safeguards are in place to prevent double issuance, double use, and fraud.[25]

D. Sustainable Development

1. **Co-Benefits:** The CRCF requires every certified activity to generate at least one sustainability co-benefit aligned with the regulation's sustainability objectives: (a) climate change mitigation; (b) climate change adaptation; (c) sustainable use and protection of water and marine resources; (d) transition to a circular economy; (e) pollution prevention and control; and (f) protection and restoration of biodiversity and ecosystems, including soil health and avoidance of land degradation. Carbon farming is held to a stricter standard and must, at a minimum, deliver co-benefits for objective (f). These co-benefits must be achieved in line with minimum sustainability requirements, including the "Do No Significant Harm" and sustainable biomass criteria—and must be transparently monitored and reported.[26]

2. **Net-Zero Compatibility:** The CRCF requires that all carbon removals and soil-emission reductions certified under the framework contribute exclusively to the EU's NDC, and cannot be used toward any third-party NDCs or international compliance schemes. This rule is established to avoid double counting and ensure that CRCF-certified units support the EU's own climate neutrality pathway.[27]

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary claims:* CRCF units are certified under a voluntary EU certification framework and are not eligible for use in EU ETS compliance or other regulatory obligations. While the regulation does not prescribe specific end uses, CRCF units are intended to support the voluntary uptake of high-quality carbon removals as a complement to emissions reductions, provided that their use is transparent.[28]

   - *Compliance integration:* CRCF units are voluntary only, have no compliance value, and cannot be used under the EU ETS or other binding climate obligations; any future compliance use would require new EU legislation.[29]

   - *NDC alignment:* CRCF units are intended to support the EU's climate-neutrality objective by scaling high-quality carbon removals, but they may not be used toward third-party NDCs or international compliance mechanisms, to avoid double counting. The framework is explicitly voluntary and does not classify CRCF units as compliance- or NDC-usable mitigation outcomes, keeping them within a EU-level certification system consistent with EU climate law.[30]

2. **Regulatory Status:** The CRCF establishes a voluntary certification framework but does not permit the use of carbon credits for EU ETS compliance or for meeting any other binding EU mitigation obligation. Compliance under the EU ETS is limited strictly to EU allowances (EUAs). EU demand-side governance of voluntary carbon credits is indirect and fragmented. The Empowering Consumers for the Green Transition (ECGT) Directive, adopted in 2024, restricts how credits can be used in consumer-facing climate claims, particularly banning neutrality claims based solely on offsetting.[31] The CSRD, though recently weakened under the Omnibus I reforms, continues to require disclosure of carbon credit use in corporate transition plans,[32] while the Sustainable Finance Disclosure Regulation (SFDR) shapes investor-facing claims by discouraging offset-dependent sustainability strategies.[33] Together, these regulations govern claims and require transparency, but do not assign voluntary carbon credits any formal accounting value under EU climate law.

3. **Oversight Bodies:**

    - The European Commission sets the overarching legal framework governing carbon markets, certification, consumer protection, and corporate disclosure, and oversees certification schemes and registries under the CRCF.[34]

    - National consumer-protection authorities designated by each member state are responsible for enforcing EU rules on misleading environmental and climate claims. Their enforcement powers derive from the Unfair Commercial Practices Directive (UCPD), particularly its provisions on enforcement and penalties, which empower national authorities to investigate and sanction unfair commercial practices.[35] The ECGT Directive does not create new authorities but instead amends the UCPD by expanding articles to explicitly cover misleading environmental and climate claims, including claims based on carbon offsetting.[36]

4. **Standards Integration:** EU demand-side law does not formally reference international carbon-market standards (e.g., Integrity Council for the Voluntary Carbon Market, Voluntary Carbon Markets Integrity Initiative, International Organization for Standardization) as binding requirements. Any alignment with international standards occurs voluntarily or indirectly, for example, through corporate reporting practices or certification schemes, rather than through EU demand-side regulation.

5. **Enforcement Mechanisms:** Consumer-protection enforcement allows national authorities to sanction misleading environmental or climate claims, including those based on carbon credits, under the UCPD as amended by the ECGT Directive. Penalties are set at the national level and may include fines, corrective orders, or injunctions, with higher maximum fines available only in cases of widespread or cross-border infringements under EU consumer-law cooperation rules.[37]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** This is not explicitly addressed in the regulations.
2. **Scope Coverage:** This is not explicitly addressed in the regulations.
3. **Quality Standards:** This is not explicitly addressed in the regulations, aside from the supply-side quality criteria.
4. **Accounting Treatment:** EU rules require disclosure of carbon credit use, but do not permit netting or offsetting within company emissions accounting. Under CSRD and SFDR, companies must report their gross emissions and separately disclose any use of carbon credits; credits cannot be deducted from Scope 1, Scope 2, or Scope 3 emissions, nor treated as emissions reductions for accounting or target-setting purposes.[38]

C. Transparency and Assurance

1. **Public Reporting:** Under the CRCF, issuance, transfer, and cancellation of certified units must be recorded in certification registries and, once operational, the EU registry, which serves as the authoritative ledger for certified units. Cancellation is the formal registry action indicating that a unit has been retired or used within the voluntary framework.[39] EU law does not require public disclosure of who retires or uses carbon credits for voluntary purposes, nor publication of progress toward voluntary climate targets. While the CRCF requires transparency sufficient to prevent double counting, it stops short of mandating entity-level disclosure of retirement or use. Where companies fall within the scope of CSRD, they must disclose their use of carbon credits in sustainability reporting, but this occurs through corporate reports, not registries, and does not constitute public carbon-market accounting.[40]
2. **Third-Party Verification:** There is no requirement for third-party verification of credit use or cancellation on the demand side. Independent verification is mandatory only for the issuance and re-certification of CRCF units on the supply side.
3. **Science-Based Targets:** This is not explicitly addressed in the regulations.
4. **Policy Advocacy:** The CRCF is Paris-aligned in objective and contribution, as certified removals are intended to support the EU's own NDC and climate-neutrality pathway. However, CRCF units are not Article 6 aligned: They are not authorized for international transfer, are not so-called Internationally Transferred Mitigation Outcomes (ITMOs), and may not be counted toward third-party NDCs or international compliance schemes, to avoid double counting.[41]

D. Market Integrity Protection

1. **Anti-Greenwashing:** Greenwashing risks on the demand side are addressed through general consumer-protection law, under which national authorities may sanction misleading environmental or climate claims, including offset-based neutrality claims. There is no carbon-specific anti-greenwashing regime governing voluntary credit use, and there is no requirement to verify the integrity of claims beyond general consumer-law standards.[42]
2. **Co-Benefits Delivery:** There is no requirement for users to demonstrate co-benefits from credit retirement.

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** This structure does not operate a single government trading platform for PCCMs. Under the CRCF, the EU establishes a certification and registry architecture, not a trading venue. Trading of CRCF-certified units—if it occurs—is expected to take place through private or decentralized platforms subject to general EU market, consumer-protection, and financial rules rather than a designated state-run exchange.[43]
    - Market-side rules:
        - Regulation (EU) 2024/3012 (CRCF) establishes the EU-level legal framework for certifying carbon removals, carbon farming, and carbon storage in products, including rules on certification, registries, issuance, transfer, and cancellation of certified units.[44]
        - Commission Implementing Regulation (EU) 2025/2358 sets operational rules for certification schemes, audits, registries, and information disclosure under the CRCF.[45]

    There are no EU rules governing trading modalities, price formation, settlement, or exchange membership for voluntary carbon credits; these remain outside carbon-specific regulation and fall under general EU law where applicable.
2. **Registry Operations:** CRCF units are first issued and recorded in registries operated by approved certification schemes. Once the centralized EU-level registry is set up, it will record the issuance, transfer, holding, and cancellation of certified units, ensuring life cycle tracking and prevention of double counting.

    However, while registries must ensure transparency sufficient to safeguard integrity, EU law does not mandate public disclosure of user-level retirements, claim purposes, or progress

toward voluntary targets. Public transparency focuses on unit validity and status, not on end-user behavior.[46]

3. **Data Standards:** EU rules do not yet establish detailed, machine-readable, market-side data standards for CRCF units. While the Commission plans to establish an EU Carbon Farming Database to harmonize MRV inputs (e.g., models, emission factors, remote sensing, benchmarks) and to support certification and inventories, this initiative would improve methodological consistency rather than unit-level traceability or public market transparency.[47]

B. Trading and Participation

1. **Eligibility Rules:** EU law does not establish eligibility requirements for participation in voluntary carbon credit trading.
2. **Trading Mechanisms:** EU law does not prescribe trading formats or transaction mechanisms for voluntary carbon credits. The CRCF establishes certification and registry rules but leaves trading to bilateral contracts or private platforms. There are no EU-mandated rules on order types, auctions, and exchange trading, nor over-the-counter restrictions.
3. **Settlement Systems:** There is no EU-level framework for settlement or clearing of voluntary carbon credits.
4. **Price Discovery:** EU law imposes no requirements on price formation or disclosure for voluntary carbon credits. Prices are determined through market interactions on private platforms or via bilateral transactions.
5. **Oversight Authority:** The European Commission oversees the CRCF by approving and supervising certification schemes and registry requirements. It does not regulate trading conduct, pricing, or market participation. National authorities may intervene only under general consumer protection, financial, or competition law, as applicable.
6. **Legal Classification:** CRCF units are defined as certified mitigation outcomes, not emission allowances or financial instruments.[48] Their accounting and tax treatment are not harmonized at the EU level. For sustainability reporting purposes, companies must disclose carbon credit use separately from emissions.

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** EU carbon credit regulation does not establish carbon-market-specific anti-manipulation or anti-fraud rules for voluntary credit trading. The CRCF regulates certification integrity and registry controls but does not impose conduct rules

on trading behavior, account access, or transaction practices. Fraud and manipulation risks are addressed only indirectly, through general EU law, including consumer protection.

2. **Transparency and Reporting Requirements:** EU law requires registry-level transparency, not market-level trade transparency. Under the CRCF, issuance, transfer, and cancellation of certified units must be recorded in approved certification-scheme registries and, subsequently, the EU registry, to ensure traceability and prevent double counting.[49]

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** Voluntary carbon credit trading is not explicitly integrated into EU financial market regulation.

2. **Cross-Border Trading Framework:** A dedicated cross-border trading framework for voluntary carbon credits has not been established under the regulation. CRCF-certified units are not authorized for international transfer under Article 6 of the Paris Agreement and may not be counted toward third-party NDCs or international compliance mechanisms, to avoid double counting.[50]

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** The EU is building certification-led infrastructure rather than a trading exchange. Priority investments focus on approved certification schemes, scheme-level registries, and an EU registry to aggregate data, ensure traceability, and prevent double counting. In parallel, the Commission is developing MRV-support infrastructure, including an EU Carbon Farming Database of models, emission factors, remote-sensing products, and benchmarks to reduce costs and standardize methodologies. There are no plans to establish an EU-operated carbon credit exchange under the CRCF.[51]

2. **International Cooperation:** The EU has explicitly excluded CRCF units from international transfer under Paris Agreement Article 6. Certified removals are intended to support the EU's own NDC and climate-neutrality objectives and therefore may not contribute to third-party NDCs or international compliance mechanisms, to avoid double counting. While the EU continues to engage internationally on carbon-market standards and Article 6 governance, the CRCF is not designed for linkage or registry interoperability with Article 6 markets under current law.[52]

3. **Regulatory Evolution:** Regulatory development is expected to proceed through implementing and delegated acts rather than expansion into market conduct or trading rules. The CRCF framework is likely to be refined via methodology updates, certification criteria, registry interoperability requirements, and MRV guidance. However, the EU has also indicated that it

may once again permit limited use of international credits toward its 2040 climate target, signaling a shift toward complementing domestic action with internationally sourced credits.[53]

4. **Enforcement Enhancement:** Enforcement is expected to strengthen primarily on the supply side, through tighter certification oversight, audits, accreditation of certifiers, and registry controls. On the demand side, enforcement will continue to rely on general EU law—notably consumer-protection rules against misleading environmental claims and corporate reporting obligations—rather than a carbon-specific penalty regime for PCCMs. There is no indication of forthcoming EU legislation establishing market conduct supervision, trading penalties, or misuse sanctions specific to PCCMs.

Notes

1. European Parliament and Council of the European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012.

2. European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union* L 2358 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

3. European Union, "EU Sets World's First Voluntary Standard for Permanent Carbon Removals," European Commission Climate Action, February 3, 2026, https://climate.ec.europa.eu/news-other-reads/news/eu-sets-worlds-first-voluntary-standard-permanent-carbon-removals-2026-02-03_en.

4. Juan Fernando López Hernández, *International Carbon Credits and EU Climate Targets*, European Parliamentary Research Service | At a Glance PE 772.874, June 2025, https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/772874/EPRS_ATA%282025%29772874_EN.pd.

5. Oliver Heinisch and Clélia Jadot, "EU's Omnibus I Package: Major Changes to the Corporate Sustainability Reporting Directive (CSRD)," JDSupra, December 19, 2025, https://www.jdsupra.com/legalnews/eu-s-omnibus-i-package-major-changes-to-7782497/; Dillon Eustace, "Uncertainty Persists on the Future of the Green Claims Directive," December 4, 2025, https://www.dilloneustace.com/insights/uncertainty-persists-on-the-future-of-the-green-claims-directive/.

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8. Ibid.

9. European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union* L 2358 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

10. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012 Articles 8, 13 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012.

11. Ibid., Articles 9–12; European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union* L 2358, Articles 4–5 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

12. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012, Article 11 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012; European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union* L 2358, Articles 5, 11 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

13. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012, Article 11 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012; European Union, "Commission

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14. European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union* L 2358, Articles 6–8 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

15. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012, Articles 1, 2, Recital 9–10 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012.

16. Ibid., Recital 10.

17. European Union, "EU Sets World's First Voluntary Standard for Permanent Carbon Removals," European Commission Climate Action, February 3, 2026, https://climate.ec.europa.eu/news-other-reads/news/eu-sets-worlds-first-voluntary-standard-permanent-carbon-removals-2026-02-03_en.

18. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012, Article 8, Recital 27 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012.

19. Ibid., Articles 9–11, Recital 29.

20. European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union* L 2358, Articles 6–12 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

21. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012, Article 12, Recital 36 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012; European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union*

L 2358, Articles 1(c), 9 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

22. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012, Article 5, Recital 20–21 (November 27, 2024), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012.

23. Ibid., Article 6, Recital 22–23.

24. Ibid., Articles 4–7, Recital 13–19, 29; European Union, "Commission Implementing Regulation (EU) 2025/2358 of 20 November 2025 Laying Down Rules on Certification Schemes, Certification Bodies and Audits," *Official Journal of the European Union* L 2358, Articles 10–11 (November 20, 2025), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502358.

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26. European Union, "Regulation (EU) 2024/3012 Establishing a Union Certification Framework for Permanent Carbon Removals, Carbon Farming and Carbon Storage in Products," *Official Journal of the European Union* L 3012, Article 7, November 27, 2024, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202403012.

27. Ibid., Article 1 (2).

28. Ibid., Recital 3, 7, 12, 36.

29. Ibid., Article 12, Recital 12.

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FRANCE

Overview

France operates a dual-track carbon framework that combines: (i) compliance carbon pricing through the European Union Emissions Trading System (EU ETS), and (ii) a national, state-run, project-based voluntary crediting framework called the Label bas-carbone (LBC). The LBC, established by Décret n° 2018-1043 of November 28, 2018,[1] and enacted by the Arrêté of November 28, 2018, is intended to certify additional greenhouse gas (GHG) reductions or CO_2 sequestration from projects implemented on French territory. In 2025, France overhauled the scheme via Décret n° 2025-917 du 5 septembre 2025[2] and the Arrêté du 5 septembre 2025 définissant le référentiel du Label bas-carbone, which together modernize governance, introduce a dedicated registry, and clarify the rules for credit transfer ("cessions") and retirement ("retraits").[3]

Under the reformed framework,[4] methodologies ("méthodes") are developed and approved by the ministry in charge of ecological transition, through the Direction Générale de l'Énergie et du Climat (DGEC) and its Groupe scientifique et technique (GST), while project-level decisions (label issuance, withdrawal, and recognition of verified emission reductions) are taken by regional prefects, as formalized in the 2025 Arrêté. LBC credits represent verified (or milestone-based ex-ante) reductions or removals relative to a baseline scenario and must comply with detailed integrity criteria set out in the LBC "référentiel" (additionality, measurement, reporting, and verification [MRV], safeguards, and registry recording).[5]

Compliance obligations for large emitters in France are governed by the EU ETS, which applies uniform cap-and-trade rules across all EU member states, including France, for the power, industry, aviation, and maritime sectors. EU ETS rules do not allow the use of offsets or domestic project credits for compliance in the current phase, so LBC credits function entirely outside the compliance system. France's Stratégie nationale bas-carbone (SNBC)[6] is its national low-carbon strategy and carbon-budget framework aimed at net zero by 2050. This strategy identifies domestic project-based action as one lever to support decarbonization, and government materials present the LBC as a tool to channel private finance into high-integrity local mitigation in line with SNBC trajectories, without overlapping with the EU ETS or changing EU-level caps.

As of early 2026, France's project-based carbon market thus rests on the state-certified, state-registered voluntary crediting scheme, the LBC,[7] operating under updated 2025 legislation, while all compliance-grade carbon pricing remains within the EU-level EU ETS. This architecture is intended to minimize double counting, ensure robust MRV and transparency for domestic projects, and align

voluntary finance flows with France's SNBC-driven net-zero pathway rather than with compliance obligations.

I. Supply-Side Regulations

A. Regulatory Framework

1. **Market Classification:** France's project-based carbon market is organized around the LBC, a domestic voluntary crediting scheme created by Decree n°2018-1043 of November 28, 2018, and revised by Decree n°2025-917 of September 5, 2025.[8] It certifies mitigation projects (emission reductions and removals) implemented on French territory that go beyond existing regulations and usual practice. LBC credits are not usable for EU ETS compliance or the Carbon Offsetting and Reduction Scheme for International Aviation but can be used for voluntary climate contribution or carbon offsetting and to satisfy certain law-mandated environmental mitigation requirements (e.g., biodiversity compensatory measures or aviation emissions counterbalancing).[9]
2. **Regulatory Status:** The LBC operates under binding national rules:
    - Decree n°2018-1043 (as amended by Decree n°2025-917) establishes the label, its objectives, core governance, and the principle that projects generate certified "crédits carbone" after verification.
    - The ministerial Arrêté of September 5, 2025, defines the LBC référentiel (rulebook): project eligibility criteria, methodology approval procedures, MRV requirements, labelling steps, and registry credit management (issuance, transfer, and withdrawal).[10]
    - Together, these instruments make LBC a state-run, rules-based certification framework, not a voluntary "industry standard" or self-regulatory scheme.
3. **Key Authorities:**
    - *Ministry for Ecological Transition:* This ministry sets overall policy for the LBC under the SNBC, approves methodologies, and issues and updates the decree and arrêté forming the LBC regulatory core.[11]
    - *Regional prefects and DREALs:* Since March 1, 2022, regional prefects are the competent authorities for project labeling; DREALs (regional directorates for environment, planning, and housing) review applications, check conformity with methods, and prepare labeling and verification decisions.[12]

- *Independent auditors:* External, independent auditors conduct ex-post verification of emission reductions or removals in line with the LBC référentiel and approved methods; their verification reports underpin the decision to issue LBC credits.
- *LBC registry operator (Ministère de la Transition écologique):* This ministry operates the Label bas-carbone registry, which records projects, verified credits, transfers, and withdrawals, and underpins transparency and traceability of units.[13]

4. **Sanctions:** The LBC regime relies primarily on administrative sanctions internal to the scheme, rather than monetary fines specific to the label:
   - The revised decree and arrêté allow withdrawal of the label (délabellisation) for projects that breach their commitments or no longer comply with the methods or the LBC rulebook.
   - Credits associated with non-compliant projects can be canceled or refused (e.g., if verification fails or serious non-conformities are found), preventing further issuance or transfer in the registry.

B. Credit Generation Standards

1. **Eligible Activities:** As of October 2025, approved methods span forestry (afforestation, degraded forest restoration, continuous-stock management, etc.), agriculture (carbon farming, hedgerows, large crops, etc.), livestock feed or methane reduction, urban tree planting, building renovation, bio-sourced new buildings, wetland blue carbon (e.g., posidonia, mangroves),[14] and "tiers-lieux" (telework or coworking mobility). Each method is sector specific, and details project baseline, eligibility, quantitative MRV, and permanence and uncertainty controls.
2. **Methodology Framework:** Methods are approved via scientific concept review, GST consultation, DGEC decision, and formal publication. Methods are valid until revised or abrogated; transitional rules preserve already-certified project accounting unless specified.[15] The methodology process includes (1) pre-submission conformity check against the LBC referential, (2) submission to DGEC, (3) public consultation (minimum of three weeks), (4) GST scientific review, and (5) formal ministerial approval and publication. This is all codified in the 2025 Arrêté and the LBC method portal.
3. **MRV Requirements:** All LBC projects must undergo rigorous, third-party measurement and verification before credits are issued, as codified in the Arrêté of September 5, 2025. Verification is performed by an independent, qualified auditor ("organisme de vérification indépendant"), designated in accordance with national criteria for LBC auditors; these entities must be completely free from conflicts of interest for the relevant project. The LBC does not require

separate entities for different stages of the audit process.[16]

4. **Registry System:** France's Label bas-carbone requires a publicly accessible registry system for full transparency and traceability of project-based carbon credits. Upon project registration, the LBC registry website publishes essential project information, and after each audit or verification round, the monitoring report, verification report, and auditor's report are made publicly available online. This enables any stakeholder or citizen to review project data, safeguards against double counting, and strengthens market integrity.[17]

C. Integrity Principles

1. **Additionality Tests:** These are mandatory for all LBC projects. Additionality is assessed against a regulatory and financial reference scenario, following counterfactual rules defined in the Arrêté of September 5, 2025 and in each approved method (baseline viability, regulatory surplus, usual-practice test).[18]

2. **Permanence Safeguards:** Nature-based and land-use projects must follow long-term monitoring obligations and apply method-specific permanence and uncertainty controls. France has not yet introduced a unified national buffer pool; permanence instruments are defined individually within each methodology and are under review for future harmonization.

3. **Quantification Standards:** Methodological guidelines set sector-specific baselines, project scenarios, leakage, and uncertainty rules published by the Ministry of Energy Transition in 2025.[19]

4. **Double-Counting Prevention:** Exclusive project registration, unique serial numbers, a single national public registry for all credits, and full public disclosure of issuance and retirements ensure the prevention of double counting. As of 2025, the Article 6.2 credit transfer and corresponding adjustment mechanism is not yet operational in the LBC, but future registry provisions are being studied.

D. Sustainable Development

1. **Co-Benefits:** All LBC projects must analyze environmental and social impacts and are subject to risk and benefit screening in the project documentation. The Arrêté requires that projects not cause significant negative impacts, and an assessment by independent auditors and public disclosure (including a public comment period, typically 30 days) ensures integrity and stakeholder input; co-benefits (biodiversity, ecosystem, or social) are documented and can be credited if measured.[20]

2. **Net-Zero Compatibility:** The LBC is formally designed to support France's national decarbonization strategy, the SNBC,[21] which requires that projects be aligned with France's 2050

carbon neutrality objective; fossil fuel incremental projects are not eligible.

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**
    - *Voluntary claims:* Credits certified under the LBC can be purchased and canceled by companies, local authorities, public institutions, or individuals to support voluntary climate action (carbon neutrality; corporate sustainability reporting [CSR]; environmental, social, and governance [ESG]; climate contribution; and compensation). All usage must be transparent and linked to credit retirement in the LBC registry.[22]
    - *Compliance integration:* LBC credits cannot be used for EU ETS compliance (as explicitly codified in Article 3),[23] national carbon-budget obligations, or any binding legal mechanism. Their use is strictly voluntary and is legally separate from both EU-level and national compliance frameworks.
    - *Nationally determined contribution (NDC) alignment:* LBC credits do not contribute to France's NDC accounting. They represent voluntary domestic mitigation and do not alter France's official GHG inventory or carbon-budget targets (SNBC).
2. **Regulatory Status:** Use of LBC credits in France operates under a voluntary framework established by national legislation, primarily the Arrêté of September 5, 2025,[24] which regulates credit issuance, transfer, and retirement. While the regulation contains strict rules around transparency, registry-linked retirement, and prevention of double claims, there is no legal obligation for companies or entities to purchase or surrender LBC credits. The scheme supports voluntary climate action, and all credit cancellations (i.e., retirements) are recorded publicly in the LBC registry to ensure traceability. Retirements for voluntary claims and their related disclosures are enforced to maintain market integrity but are not tied to any compliance requirement, as LBC credits cannot be used in the EU ETS or for NDC accounting.
3. **Oversight Bodies:**
    - *DGEC* is responsible for national oversight, method approval, and regulatory coherence with the SNBC.
    - *Regional prefects* are responsible for project review, project validation, and formal issuance of verified credits.[25]

- *GST* oversees scientific review of the proposed methodologies.

These authorities operate under the Ministry for Ecological Transition.

4. **Standards Integration:** The LBC registry publicly records issuances, transfers, and retirements, supporting transparency and consistency with CSR frameworks (e.g., French ESG reporting and Corporate Sustainability Reporting Directive [CSRD]). The LBC does not impose additional reporting standards, but CSRD-covered[26] entities may report LBC use under EU sustainability-reporting rules.
5. **Enforcement Mechanisms:** All voluntary climate claims and registry retirements are subject to administrative review and published in the registry. Noncompliant projects or false claims can lead to label withdrawal and credit cancellation.[27]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** Companies are strongly encouraged but not legally required by French law to prioritize internal emission reductions (Scope 1, Scope 2, and Scope 3) before offsetting residuals with LBC credits. This hierarchy is codified in the French government's high-integrity charter for voluntary carbon markets,[28] launched in 2025, and aligns with the Voluntary Carbon Markets Integrity Initiative (VCMI) Claims Code of Practice. Charter signatories must report on all three emission scopes, publish time-bound climate action plans, and use offsets only as a complement to authentic reduction pathways.
2. **Scope Coverage:** There are no scope or sector restrictions for voluntary use of LBC credits. These may be used to address Scope 1, Scope 2, or Scope 3 as per company policy, provided claims are transparent and not confused with regulatory compliance.
3. **Quality Standards:** All credits must originate from LBC-approved projects and must be audited independently and validated by a regional prefect. The charter and VCMI guidance require companies to favor credits with the robust additionality, permanence, MRV, and transparency requirements detailed in the Arrêté.
4. **Accounting Treatment:** The LBC registry is the sole authoritative ledger for credit issuance, transfer, and retirement. Voluntary use claims must correspond to retired credits in the registry; company internal tracking and external claims must be reconciled with registry status. The LBC does not impose additional reporting standards, but CSRD-covered[29] entities may report LBC use under EU sustainability-reporting rules.

C. Transparency and Assurance

1. **Public Reporting:** All issuances, transfers, and retirements of LBC credits are published in the national LBC registry as required by the Arrêté of September 5, 2025.[30] For voluntary users, disclosure of credit use in sustainability reports is encouraged but not legally mandated under LBC rules. Any communications must avoid misleading claims under French consumer and environmental laws.
2. **Third-Party Verification:** Project-based LBC credits must be validated by an independent auditor and approved by the regional prefect. While there is no statutory legal requirement for additional corporate-side verification, the French charter encourages (but does not require) extra voluntary assurance for offset-based claims.
3. **Science-Based Targets:** None.
4. **Policy Advocacy:** There are no mandatory buy-side quotas or laws, but the French government's high-integrity carbon credit charter (launched in April 2025) encourages corporate buyers to adhere to high-integrity international standards and best practices, transparently disclosing the use and retirement of LBC credits in sustainability communications.[31]

D. Market Integrity Protection

1. **Anti-Greenwashing:** The LBC system ensures integrity by requiring all credit issuances, retirements, and transfers be entered in a unique, state-run registry with serial numbers. Presence in the registry is mandatory for all claims; only credits retired in this registry can be legitimately claimed, minimizing risks of double counting or greenwashing.[32]
2. **Co-Benefits Delivery:** There is no regulatory requirement for buyers or credit users to independently prove co-benefit delivery at the time credits are used. All social, SDG, or biodiversity co-benefits must be documented and verified during the project registration and audit phase, in accordance with the approved methodology and the Arrêté.

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** France's domestic project credits are issued under the state scheme, the LBC. Since September 5, 2025, LBC credits are transferable ("cessibles") and can subsequently be retired ("retrait"); transfers and retirements are recorded in the LBC registry. There is no central exchange; transactions are over-the-counter (OTC; private contracts)[33] with delivery through

the registry. Scheme governance (methods or issuance rules) sits with the DGEC; the registry handles project and credit life cycle operations.

- *Market-side rules:* The legal basis is the Decree of September 5, 2025 (amending Decree 2018-1043), and the Arrêté of September 5, 2025, setting the LBC reference framework. The ministry summarizes key effects: the LBC is restricted to French territory projects, prefects validate verifications, credits are now transferable, and the 2025 reform strengthens price and project detail transparency and the CSRD compatibility of disclosures.

2. **Registry Operations:** The LBC registry[34] is the operational backbone after a project is labeled. It supports verification, validation, attribution of verified reductions to carbon credit buyers, transfers (cessions), and retirements (retraits). Access is restricted to directly concerned actors (project developers, carbon credit buyers, auditors, and instructing services). A public site provides scheme documentation and method pages, while the operational registry is a secure portal; the ministry publishes a public notice describing user roles and steps.[35]

3. **Data Standards:** The 2025 reform reinforces unique serial numbering, recording of lot attributes, publication of essential project and method documentation, and transparency of issuances, transfers, and retirements. The ministry announced an intention for the LBC to be compatible with CSR (including CSRD requirements) by ensuring traceable, documented climate-contribution claims. However, CSRD[36] alignment is a policy goal, not a statutory obligation of the LBC scheme.

B. Trading and Participation

1. **Eligibility Rules:** Registry participants include demandeurs (project owners), financeurs (credit buyers), auditors, and instructing services (prefectural services). Each actor operates under a specific permission profile. All credit life cycle actions, including recognition of verified reductions, transfers ("cessions"), and retirements ("retraits"), must be executed inside the state registry profiles.[37]

2. **Trading Mechanisms:** LBC credits are exchanged exclusively via OTC contracts between private parties. Delivery occurs through the registry once a bilateral agreement has been signed. There is no state-operated exchange, marketplace, or central counterparty, and the 2025 reform does not establish one. The reform only confirms the transferability of credits and encourages improved transparency.

3. **Settlement Systems:** Legal title and delivery are evidenced by registry entries. As confirmed by the Banque de France[38] and the Haut Comité Juridique de la Place Financière, spot LBC credits

are treated as intangible assets with title deriving from registry records. For derivative markets in LBC credits, further guidance applies.

4. **Price Discovery:** There is no mandated exchange, benchmark, or public price reporting for LBC credits. Prices are determined bilaterally. The 2025 reform identifies greater transparency of information as a policy objective but does not impose price-disclosure obligations.

5. **Oversight Authority:** The DGEC (Ministry for Ecological Transition) supervises overall LBC governance, approves methodologies, and oversees implementation of the Decree and Arrêté. Prefects manage issuance, and the ministry operates the registry. Financial regulators (Financial Markets Authority) intervene only if credit-based derivatives fall under EU financial regulation. Spot LBC credits remain outside the perimeter of "financial instruments".[39]

6. **Legal Classification:** Under the 2025 reform, units generated by LBC projects are explicitly treated as "crédits carbone" recorded in a national registry rather than only as nontransferable "recognized reductions." The revised framework recognizes verified tons of carbon dioxide equivalent as LBC carbon credits in the registry after successful third-party verification and ministerial or prefectural decision. It allows these credits to be ceded and exchanged (with no regulatory limit on the number of transactions) and ultimately withdrawn ("retrait") when a final beneficiary uses them for voluntary contribution or compensation, or to comply with certain specific legal compensation obligations. After withdrawal, credits are no longer tradable. In legal-technical terms, LBC credits are administratively certified units of verified GHG reduction or removal, created and governed by national public law; they are not defined as "quotas" under EU ETS law and are not classified as regulated financial instruments in their own right.

   Under French generally accepted accounting principles and international financial reporting standards (IFRS), LBC credits purchased by companies are generally recognized as intangible assets, reflecting their legal classification under French doctrine as *biens meubles incorporels*. When acquired for future use, they are carried on the balance sheet at acquisition cost; when acquired for resale or intermediation, they may instead be classified as inventory. LBC credits are not treated as financial instruments, and they do not create liabilities unless the buyer has a separate, legally enforceable obligation to retire credits at a later date. Importantly, the LBC framework also limits market circulation: Each credit may be transferred ("cession") a maximum of three times before its final retirement ("retrait"), which must be recorded in the national registry. Upon retirement, when a buyer uses the credit to support a voluntary climate contribution or compensation claim, the asset is expensed to the income statement, as it is consumed and no longer has economic value. This approach aligns with prevailing IFRS practice (IAS 38 or IAS 2) and French Plan Comptable Général accounting principles for intangible assets and inventories.[40]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** None.
2. T**ransparency and Reporting Requirements:** In France, all transparency and reporting requirements for project-based carbon credits are fulfilled through the Label bas-carbone's state registry and official ministry disclosures, not by trading institutions.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** None.
2. **Cross-Border Trading Framework:** LBC credits are designated for use in France only. Credits cannot be used in the EU ETS or to meet France's (or others') NDCs. Any future export or cross-border use would require compliance with Article 6 accounting (corresponding adjustments); as of early 2026,[41] LBC remains a domestic system.

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** There is no established formal exchange or spot trading platform. All LBC trades are OTC and are settled via the official LBC registry.
2. **International Cooperation:** France's LBC is strictly domestic for now; no international registry linkage or Article 6.2 bilateral mechanism is operational as of late 2025. The government has expressed a willingness to align the LBC framework with the forthcoming EU Carbon Removal Certification Framework[42] and to prepare for future cross-border recognition (including possible corresponding adjustments for Article 6), but no technical or legal integration is in place yet.
3. **Regulatory Evolution:** No plans for exchange-based trading, standardized secondary market, or the introduction of more complex carbon contract instruments (such as futures or derivatives) have been announced for LBC; OTC remains the only legal model.
4. **Enforcement Enhancement:** None.

Notes

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GERMANY

Overview

Germany does not operate a federal project-based carbon crediting scheme comparable to the Australian Carbon Credit Unit Scheme or France's Label bas-carbone. The only statutory project-based compliance mechanism was the Upstream Emission Reduction (UER) component under the Upstream Emission Reduction Ordinance, which functioned solely as a compliance tool within Germany's transport greenhouse gas reduction quota (THG-Quote) system. The scheme was narrowly confined to emission reduction projects in the upstream segment of the oil and gas supply chain.[1] It was not designed as a sovereign carbon crediting scheme or a voluntary carbon market framework UER certificates could not be used for voluntary offsetting, were not tradable on voluntary carbon markets, and were restricted to a single compliance application within the fuel quota system. This mechanism has since been formally discontinued. New project applications are no longer accepted as of mid-2024, and the last permissible compliance use of UER certificates occurred in the 2025 obligation year. No active UER issuance or quota-based project mechanism remains in force as of January 2026.[2]

Post-UER, Germany's federal climate policy is shifting toward (1) enabling legal frameworks for carbon dioxide transport and geological storage through the Carbon Dioxide Storage and Transport Act, which entered into force on November 28, 2025;[3] and (2) substantial public funding for carbon dioxide removal, with nearly €500 million allocated through 2033, including dedicated support for soil carbon enhancement.[4] However, neither of these measures constitutes a domestic project-based carbon credit market (PCCM) with statutory credit issuance, registry operations, and compliance or voluntary offsetting mechanisms.

For PCCM classification purposes, Germany is a jurisdiction with a discontinued, time-limited, compliance-only, sector-specific quota-based mechanism (UER, 2020–2025) and no active domestic PCCM in force as of April 2026. German companies participating in voluntary carbon markets rely exclusively on international standards such as Verra's Verified Carbon Standard and the Gold Standard rather than a sovereign German crediting program.[5]

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INDIA

Overview

India has established a comprehensive and ambitious carbon market framework through the Carbon Credit Trading Scheme (CCTS) 2023, creating an integrated approach to carbon pricing that combines mandatory compliance mechanisms with voluntary offset generation under a unified regulatory structure. The Energy Conservation (Amendment) Act, 2022,[1] represents India's strategic response to achieving its enhanced nationally determined contributions (NDCs) under the Paris Agreement, particularly the target of reducing greenhouse gas (GHG) emission intensity by 45 percent by 2030 compared to 2005 levels, and ultimately achieving net-zero emissions by 2070.[2]

The Indian Carbon Market (ICM) architecture is characterized by a dual-track system that operates through two distinct but complementary mechanisms. The compliance mechanism targets obligated entities from nine energy-intensive industrial sectors, including aluminum, cement, iron and steel, paper, chlor-alkali, fertilizer, petroleum refining, petrochemicals, and textiles, and requires them to meet binding GHG emission intensity reduction targets.[3] These sectors, which collectively account for a substantial portion of India's industrial emissions, transitioned from the Perform, Achieve, and Trade (PAT)[4] scheme to the CCTS framework,[5] with the first compliance cycle commencing in fiscal year 2025–2026.

Complementing this compliance approach, the offset mechanism enables non-obligated entities across diverse sectors, including mangrove afforestation and reforestation, renewable energy, industrial energy efficiency, and emerging technologies like green hydrogen, to voluntarily develop projects that reduce, remove, or avoid GHG emissions, thereby generating tradable carbon credit certificates (CCCs).[6] On March 27, 2025, the Bureau of Energy Efficiency (BEE) operationalized this offset mechanism through publication of the *Detailed Procedure for Offset Mechanism Under Carbon Credit Trading Scheme* (Version 1.0), which provides comprehensive guidelines for project registration, methodology development, validation and verification protocols, sustainable-development safeguards, and credit issuance procedures.[7]

Also on March 27, 2025, the Ministry of Power approved eight initial crediting methodologies spanning renewable electricity generation, green hydrogen production, industrial energy efficiency, landfill methane recovery, and nature-based solutions, including mangrove afforestation and reforestation. This approval followed an earlier public consultation process, during which the BEE released 12 draft methodologies in January 2025 across the nine Phase 1 sectors. Since then, India has further expanded its methodology framework, with three additional draft methodologies

published in August 2025 covering biomass electricity generation, compressed biogas production, and enhanced agricultural practices.[8]

India is also actively preparing to integrate Article 6 of the Paris Agreement with its domestic carbon market. The government has notified the National Designated Authority for the Implementation of Article 6 of the Paris Agreement (NDAIAPA)[9] and approved lists of activities eligible under Articles 6.2 and 6.4. A memorandum of cooperation on the Joint Crediting Mechanism with Japan was signed on August 7, 2025 India's first bilateral partnership under Article 6.2. Article 6 modules will be embedded in the ICM portal, allowing certain CCCs to be internationally transferred with corresponding adjustments. As of January 2026, India is finalizing the ICM portal and registry, with government statements indicating that market operations and digital trading infrastructure are expected to become operational by mid-2026.[10]

I. Supply-Side Regulations

India is operationalizing a unified, project-based carbon market under CCTS 2023,[11] notified—i.e., formally published in the official gazette—under the Energy Conservation Act 2001 (as amended in 2022). The scheme establishes a dual-track architecture: a compliance mechanism for large energy-intensive industries with binding GHG emission intensity targets, and an offset mechanism under which non-obligated entities can register mitigation projects and generate tradable CCCs. In 2025, BEE began formal rollout of the offset mechanism by publishing the detailed procedure on March 27, 2025, and approving eight initial crediting methodologies, which followed the release of 12 draft methodologies for consultation in January 2025; three additional drafts were later introduced in August 2025.[12] These methodologies span Phase 1 sectors across energy, industry, waste, agriculture, forestry, and transport, while Phase 2 covers construction, solvent use, fugitive emissions, and carbon capture, utilization, and storage (CCUS).[13]

A. Regulatory Framework

1. **Market Classification:** India's carbon market operates as a hybrid system: While the CCTS allows for CCCs to be generated voluntarily under the offset mechanism, as of April 2026, those cannot be used to meet compliance obligations, under the CCTS, and there is no formal linkage between the offset mechanism and the compliance pillar.[14] The compliance mechanism covers designated energy-intensive sectors with legally binding GHG emission intensity (GEI) targets; obligated entities must buy and surrender CCCs (i.e., submit them to meet their compliance obligation, distinct from permanent retirement) generated under the compliance mechanism to cover any shortfall against their targets in each compliance year. The offset mechanism allows non-obligated entities (e.g., in energy, industry, waste, agriculture, forestry, transport,

construction, solvent use, fugitive emissions, and CCUS) to voluntarily implement mitigation projects and generate CCCs under government-approved methodologies. These CCCs can be traded in the domestic voluntary market or, once authorized, they can be used under Article 6 of the Paris Agreement.

2. **Regulatory Status:** India's project-based carbon credit market (PCCM) operates under a statutory framework with legally binding regulations established through multiple layers of national legislation and administrative procedures:

   - *Primary Legislation (Binding Statutory Authority):* The Energy Conservation (Amendment) Act, 2022, was enacted on December 19, 2022.[15] This act empowers the central government under Section 14(w) to specify a carbon credit trading scheme and authorize CCC issuance. This is the foundational statutory authority for India's carbon market.

   - *Carbon Credit Trading Scheme, 2023:* The CCTS establishes the institutional architecture of ICM, including the National Steering Committee for the Indian Carbon Market (NSCICM); defines "carbon credit certificates;" sets out the compliance and offset mechanisms; assigns roles to BEE and the Grid Controller of India Limited (GCIL); and provides the basic framework for CCC issuance, trading, and surrender.

   - *Operational Procedures (Binding Administrative Rules):* The detailed procedure for the offset mechanism[16] under CCTS (effective March 27, 2025) operationalizes the offset mechanism, specifying the project cycle (design, registration, validation, verification, monitoring, and issuance), sectoral scope, sustainable-development safeguards, additionality tests, and the use of approved methodologies and tools. Project participation is voluntary, but once registered, projects must comply with binding measurement, reporting, and verification (MRV) requirements and issuance procedures.

3. **Government Position:** The two national-level regulations that underpin supply are the Energy Conservation (Amendment) Act, 2022, and the CCTS, 2023. Three operational procedures that implement India's CCTS are as follows:

   - *Detailed Procedure for Compliance Mechanism Under CCTS:* This procedure provides operational rules for the compliance pillar, including target allocation, measurement, reporting and verification, CCC calculation, issuance, banking and borrowing rules, trading arrangements via power exchanges, and penalties for non-compliance. BEE issued the draft and final GEI targets for obligated sectors in 2025, and the Ministry of Power (MoP) formalized these targets under CCTS, making them legally binding for the compliance period FY 2025–2026 to 2026–2027.[17]

- *Detailed Procedure for Offset Mechanism Under CCTS (effective March 27, 2025):* This procedure operationalizes the offset mechanism, specifying the project cycle (design, registration, validation, verification, monitoring, and issuance), sectoral scope, sustainable-development safeguards, additionality tests, and the use of approved methodologies and tools.[18]
- *Greenhouse Gas Emission Intensity Target Rules:* These rules make GEI reduction targets legally binding for an initial set of obligated entities in aluminum, cement, chlor-alkali, and paper and pulp, with targets expressed for FY 2025–2026 and FY 2026–2027.[19] Through the January 2026 Greenhouse Gas Emission Intensity Target (Amendment) Rules, 2025, GEI targets were also notified for petroleum refineries, petrochemicals, textiles, and secondary aluminum, expanding coverage to eight energy-intensive sectors.[20]

4. **Key Authorities:**

- *MoP* is the nodal ministry responsible for implementing CCTS under the Energy Conservation Act.
- *NSCICM*, chaired by the MoP secretary and co-chaired by the environment secretary, serves as the apex decision-making body recommending sector coverage, target-setting parameters, methodology frameworks, and major scheme design revisions.[21]
- *BEE* acts as the scheme administrator—developing methodologies and tools, accrediting verification agencies, managing compliance reporting, validating and issuing CCCs, and operating the ICM portal.
- *GCIL* functions as the national registry operator,[22] maintaining the ICM registry and recording the issuance, transfer, banking, and retirement of CCCs.
- *The Central Electricity Regulatory Commission (CERC)*, under the Central Electricity Regulatory Commission (Terms and Conditions for Purchase and Sale of Carbon Credit Certificates) Regulations, 2026, regulates the trading of CCCs on power exchanges, including approval of business rules, market conduct oversight, and prevention of market manipulation.[23]
- *The Ministry of Environment, Forest, and Climate Change (MoEFCC)* acts as India's National Designated Authority for Article 6 and is responsible for authorizing international mitigation activities and corresponding adjustments and ensuring alignment of CCTS with India's NDC architecture.[24]
- *The Central Pollution Control Board (CPCB)* enforces penalties and environmental

compensation in cases of noncompliance with GEI targets under the compliance mechanism.[25]

5. **Sanctions:** Project developers, validation agencies, and verification bodies face separate sanctions under the offset mechanism:

   - *Credit Cancellation or Revocation:* If a project is found to have violated additionality, permanence, or MRV requirements after issuance, BEE can cancel or revoke issued CCCs and require repayment of any proceeds.[26]
   - *Suspension or Blacklisting:* Project developers and accredited carbon verification agencies (ACVAs)[27] may likewise be suspended or de-accredited for noncompliance with verification protocols. In cases of deliberate fraud or obstruction of verification, actions may be taken under the Energy Conservation Act.[28]

B. Credit Generation Standards

1. **Eligible Activities:** Under the offset mechanism, BEE designates eligible sectors and approves methodologies under which non-obligated entities may generate CCCs. Phase 1 sectors include energy, industries, transport, waste handling and disposal, agriculture, and forestry, and Phase 2 sectors include construction, solvent use, fugitive emissions, and CCUS, as listed in the detailed procedure for the offset mechanism.[29] Approved and draft methodologies span the following:

   - *Energy and Industry:* grid-connected renewables, green hydrogen, biomass energy, industrial energy-efficiency upgrades, and process optimization
   - *Waste and Agriculture:* landfill gas and biogas, compressed biogas, improved agricultural practices, and rice cultivation techniques
   - *Forestry and Land Use:* afforestation, reforestation, and agroforestry
   - *Transport and Emerging Technologies:* electric vehicle integration and other low-carbon transport measures, with methodologies for CCUS and advanced technologies in development

   Activities mandated by existing law, regulation, or policy are excluded to preserve regulatory surplus. Projects must begin on or after January 1, 2025 (the reference start date specified in the detailed procedure for the offset mechanism), to ensure that no reductions occurring before the applicability of the CCTS offset mechanism are credited retroactively.[30]

2. **Methodology Framework:** India's methodologies are adapted from the Clean Development Mechanism (United Nations Framework Convention on Climate Change), refined by BEE, and do not formally reference external standards like the Verified Carbon Standard or

International Organization for Standardization (ISO). They do incorporate Intergovernmental Panel on Climate Change (IPCC) guidelines and ISO 14064 (the international standard for GHG quantification and verification) for GHG quantification and MRV approaches.[31]

3. **MRV Requirements:** Projects must undergo third-party validation and verification by separate ACVAs recognized by BEE,[32] holding ISO 14065:2020 accreditation (the international standard for bodies that validate and verify GHG information). The same agency may not perform validation and verification in a given round. MRV protocols, project documentation, and credit issuance are all subject to centralized review from BEE.

4. **Registry System:** All CCCs, including those issued under the offset mechanism, are recorded in the ICM registry operated by GCIL.[33] The registry serves as the central platform for project registration data, CCC issuance, serial number assignment, transfers, banking, retirement, and cancellation. It incorporates safeguards against double counting through unique digital identifiers, project exclusivity rules, and centralized issuance review by BEE. The registry is expected to support Article 6 authorization and corresponding adjustment tracking as the ICM portal expands in FY 2025–2026.

C. Integrity Principles

1. **Additionality Tests:** Projects under the offset mechanism must demonstrate additionality in accordance with the detailed procedure[34] and the applicable BEE methodology. Additionality is assessed through three required tests:

    - *Regulatory Surplus:* The activity must not be mandated by any existing law, regulation, or government policy.
    - *Financial or Investment Barrier Test:* The project developer must demonstrate that the activity is not financially attractive or viable without carbon credit revenue, based on transparent investment or cost-benefit analysis.
    - *Common Practice Assessment:* The activity must not be widely deployed or standard practice in the applicable sector or region under prevailing circumstances.

2. **Permanence Safeguards:** For nature-based and land-use projects, post-issuance long-term monitoring is required, though no specific monitoring duration is prescribed in the current regulations. As of 2025, specific central buffer or reversal insurance rules are not yet enacted for all project types but are under review, referencing international best practice.

3. **Quantification Standards:** Projects must use conservative, BEE-approved methodologies,

define baselines per sector, deduct uncertainties, address leakage, and retain data for inspection. Project proponents must retain all monitoring and verification data for 10 years for inspection or audit by BEE or GCIL. Quantification must ensure that each CCC represents a real, measurable, permanent, and independently verifiable reduction or removal.

4. **Double-Counting Prevention:** Project exclusivity, serial identity checks, a single national registry for all issuances and cancellations, and public issuance disclosure prevent double counting. Article 6.2 transactions receive explicit adjustments in the registry.

D. Sustainable Development

1. **Co-Benefits:** All offset mechanism projects must comply with the sustainable-development (SD) safeguards defined by BEE. Each project must include an SD risk-benefit assessment in its project design document (PDD), demonstrating that the activity does not result in significant negative environmental or social impacts, as required under the offset procedure. Projects undergo a 30-day public comment period and must be validated by an independent ACVA, which confirms alignment with India's SD criteria and contribution to relevant sustainable development goals (SDGs). Only co-benefits that are demonstrated, documented, and quantifiable under the approved methodology may be reported; co-benefits do not generate additional CCCs but must be transparently disclosed.

2. **Net-Zero Compatibility:** Project eligibility and additionality tests require compatibility with India's 2070 net-zero target; exclusion of fossil fuel incremental projects avoids technology lock-in, aligning with GEI Target Rules.

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary Claims:* CCCs issued under the offset mechanism can be purchased by companies, institutions, and individuals for voluntary climate claims; corporate responsibility; and environmental, social, and governance (ESG) purposes. India has not yet issued a dedicated national framework for voluntary claims (e.g., Voluntary Carbon Markets Integrity Initiative [VCMI]–style rules), but the ICM registry, operated by GCIL under the CCTS, provides the legal infrastructure for account opening, transfer, and retirement of CCCs generated by offset projects across energy, industry, land-use, waste, and other sectors. Use of CCCs for voluntary purposes is currently governed by general company law and disclosure obligations, combined with CCTS registry and issuance rules, rather than a bespoke voluntary use regulation.[35]

- *Compliance Integration:* As of 2025, CCCs issued under the offset mechanism cannot be used by obligated entities to meet their GEI targets under the CCTS compliance mechanism. CCTS treats CCCs from overperformance by obligated entities (compliance pillar) and CCCs issued to non-obligated entities (offset pillar) as legally identical certificates but their permitted uses differ: Only CCCs created under the compliance mechanism can be surrendered against GEI targets.[36] The offset mechanism remains formally separate from the compliance mechanism, and no legal instrument has yet established a linkage allowing offset-generated CCCs to count toward domestic compliance obligations.[37]
- *NDC Alignment:* CCTS is designed as one of the policy instruments supporting India's NDC, particularly the goal of reducing the emissions intensity per unit of economic output and progressing toward net-zero emissions by 2070. Under the compliance mechanism, CCCs surrendered by obligated entities are domestic compliance units and are counted within India's national inventory and NDC accounting.[38] Separately, CCCs issued under the offset mechanism and used domestically for voluntary purposes remain within India's domestic mitigation boundary. The National Designated Authority for the Implementation of Article 6 of the Paris Agreement (NDAIAPA) governs India's participation in international cooperative approaches.[39] Where a project registered under the offset mechanism falls within the MoEFCC-notified list of eligible Article 6 activities and, after issuance of CCCs, seeks international transfer under Article 6.2, the project developer must obtain NDAIAPA authorization. Only after authorization would the internationally transferred mitigation outcomes be subject to corresponding adjustments in the Indian Carbon Market registry, once the Article 6 modules of the ICM portal are operational.

2. **Government Position:**

- India's demand-side rules for the use of CCCs derive from the Energy Conservation (Amendment) Act to establish a carbon credit trading scheme and regulate the issuance, transfer, surrender, and retirement of CCCs. CCTS provides the overarching framework for CCC use, defining the compliance mechanism for obligated entities and the voluntary offset mechanism for nonobligated entities. The detailed procedure for the compliance mechanism and the detailed procedure for the offset mechanism together clarify the conditions under which CCCs may be transferred, surrendered, or retired.
- Under current rules, only CCCs issued through the compliance mechanism may be used toward legally binding GEI targets. Under the compliance mechanism, only obligated entities that fall short of their GEI targets are required to acquire and surrender CCCs equal to the shortfall through their registry accounts, after which GCIL records their retirement in the ICM

registry. Obligated entities that meet their targets have no surrender obligation. Obligated entities that outperform their targets may receive compliance CCCs, which can be banked for future compliance use or traded, subject to applicable market rules. All compliance-related retirements are subject to public disclosure. CCCs issued under the offset mechanism, in contrast, are available exclusively for voluntary domestic use or, when authorized under Article 6, for international transfers. Voluntary cancellations are also logged by GCIL to ensure transparency and prevent double counting.

3. **Oversight Bodies:** Governance of project-based carbon credits under India's offset mechanism is shared across a defined set of institutions:

   - *MoP* is the overall custodian of the CCTS, responsible for formally issuing scheme-level rules, approving methodology frameworks, and enabling the implementation of the offset mechanism across eligible sectors.
   - *BEE* is the central administrator for the offset mechanism. BEE develops methodologies, oversees project registration, reviews validation and verification reports, approves the issuance of offset-CCCs, manages safeguards for sustainable development, and operates the ICM portal for project documentation and MRV review.
   - *GCIL* operates the ICM registry, where all offset-CCCs are issued, assigned unique serial numbers, transferred, canceled, or retired. GCIL ensures registry-level transparency and double-counting prevention and will host Article 6 authorization, first transfer, and corresponding adjustment modules as they come online.
   - *ACVAs* are independent third-party validators and verifiers accredited in accordance with ISO 14065:2020 and ISO 17029 (the conformity assessment standard governing validation and verification bodies). ACVAs conduct validation of the PDD, verify monitored emission reductions or removals, and issue validation and verification statements that form the basis for offset-CCC issuance.
   - *MoEFCC* serves as the National Designated Authority for Article 6, responsible for assessing international eligibility of offset projects, authorizing units for Article 6.2 transfers, and ensuring alignment with India's NDC and sustainable-development requirements. MoEFCC does not govern domestic voluntary use but oversees international use of offset-CCCs.
   - *CERC* is the regulator for exchange-based trading of CCCs under the Central Electricity Regulatory Commission (Terms and Conditions for Purchase and Sale of Carbon Credit Certificates) Regulations, 2026, notified on February 27, 2026.[40] The regulations establish

the market framework for dealing in CCCs on power exchanges, or through other modes that may be separately permitted by the commission, in accordance with the CCTS. CERC approves exchange rules, business rules, and bylaws; oversees price discovery and market conduct; and exercises market oversight in accordance with the MoP market regulations. While the market-side regulatory framework is now in place, actual trading rollout still depends on operationalization through approved procedures, exchange business rules, and registry-exchange integration.

4. **Standards Integration:**

   - Verification and reporting under the offset mechanism follow BEE's sovereign MRV rules but incorporate internationally recognized assurance principles. ACVAs must be accredited by the Quality Council of India and the National Accreditation Board for Certification Bodies in accordance with ISO 14065:2020 and ISO 17029, which govern validation and verification bodies for greenhouse gas–related activities. While the CCTS does not formally adopt ISO 14064 standards or voluntary market protocols, BEE methodologies draw on established quantification principles and use IPCC 2006 (updated in 2019) guidelines for emission factors when national factors are unavailable.
   - Corporate buyers of offset-CCCs may disclose climate actions, including voluntary credit retirement under the Securities and Exchange Board of India's (SEBI's) Business Responsibility and Sustainability Report (BRSR)[41] and BRSR Core assurance requirements for listed entities, although SEBI has not issued a dedicated carbon credit reporting standard. Thus, standards integration occurs through MRV accreditation (ISO-aligned) and voluntary corporate disclosure channels, rather than a unified cross-standard carbon credit rulebook.

5. **Enforcement Mechanisms:**

   - *Offset Mechanism (Project-Based or Offset-CCCs):* Enforcement for project-based carbon credits under the offset mechanism is grounded in CCTS 2023, the detailed procedure for the offset mechanism (2025), and the Greenhouse Gas Emission Intensity Target Rules, 2025,[42] which are issued under the Environment (Protection) Act, 1986. BEE may reject, suspend, or cancel a project's registration, withhold or invalidate CCC issuance, and issue corrective action requests where validation or verification identifies noncompliance with methodologies, MRV rules, or sustainable-development safeguards. ACVAs may be suspended or de-accredited for improper validation or verification conduct. For noncompliance with GEI targets under the CCTS compliance mechanism, the CPCB imposes environmental compensation on obligated entities equal to twice the average price of

CCCs traded in the relevant compliance year, payable within 90 days, with funds held in a dedicated account for use under the CCTS as specified in the GEI rules. Any violation of these rules is dealt with under the Environment (Protection) Act, 1986.[43]

- *Voluntary Use (Corporate Claims):* For voluntary use of offset-CCCs, India does not have a dedicated carbon-claims law. Integrity is maintained through (1) mandatory retirement in the ICM registry for any voluntary claim, and (2) applicable corporate disclosure and consumer-protection frameworks. Listed entities must disclose climate action, including carbon credit use, through SEBI's BRSR[44] and may undergo limited assurance under BRSR Core. Misleading, false, or overstated environmental claims fall under the Consumer Protection Act, 2019, and the relevant Advertising Standards Council of India green-claims guidelines. However, India has not established a specific enforcement mechanism for voluntary carbon claims akin to the European Union or VCMI frameworks.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** India's offset mechanism encourages entities to prioritize direct emissions reductions before purchasing carbon credits, reflecting guidance issued during BEE stakeholder consultations and consistent with international good practice. However, India has no legally binding mitigation hierarchy for voluntary buyers. Companies may use offset-CCCs for residual emissions at their discretion, provided retirements are transparently recorded in the ICM registry and disclosed in corporate sustainability reporting.

2. **Scope Coverage:** There are no sector-specific or Scope 1, Scope 2, or Scope 3 restrictions on the use of offset-CCCs for voluntary claims. Corporations may apply retired credits to any emission source within their climate strategy, subject to disclosure obligations. Scope requirements apply only to the compliance mechanism, which covers facility-level Scope 1 and Scope 2 emissions based on sectoral GEI targets.

3. **Quality Standards:** Offset-CCCs used by corporates must originate from projects validated and verified under BEE-approved methodologies and issued through the ICM registry, which ensures exclusive serialization and prevents double counting. India has no mandatory third-party credit-quality labels (e.g., Integrity Council for the Voluntary Carbon Market and VCMI) for voluntary buyers. Listed companies may be subject to broader ESG expectations through SEBI's BRSR and BRSR Core, but SEBI does not prescribe quality standards for carbon credits.

4. **Accounting Treatment:** The ICM registry, operated by GCIL, is the sole official ledger for offset-CCC issuance, transfer, cancellation, and retirement. A CCC may only be claimed against a corporate climate goal if it has been retired (voluntary use) or canceled for international

transfer. Companies' internal emissions accounting must reconcile with ICM registry records, particularly for listed firms reporting under SEBI's BRSR environmental indicators, where misstatements may attract assurance-level scrutiny under BRSR Core.[45]

C. Transparency and Assurance

1. **Public Reporting:** The ICM registry, operated by GCIL, provides the authoritative digital record of issuance, transfer, cancellation, and retirement of CCCs, including offset-CCCs. For voluntary use, retirement is required for any credible claim of offsetting, and all retirements are logged in the registry. However, public disclosure of the identity of the buyer or user is not mandatory, except where entities elect to disclose this information or are subject to corporate reporting obligations under SEBI's BRSR[46] and BRSR Core for listed companies. India does not currently mandate public reporting of voluntary offset use for unlisted companies. Registry-level data (issuance, serialization, retirement, cancellation) is maintained to ensure traceability and prevent double counting, and Article 6 authorization and corresponding adjustment modules will further enhance transparency as they become operational.
2. **Third-Party Verification:** India does not impose a separate use-side auditor requirement for buyers of offset-CCCs. Assurance for corporate claims instead relies on the BRSR Core assurance framework for listed entities and would also rely on exchange-level surveillance if offset-CCCs are traded on a regulated exchange in the future. Verification of project-level emissions reductions or removals is conducted by ACVAs in accordance with ISO 14065:2020 and ISO 17029 under BEE's offset mechanism rules,[47] but this applies to project issuance, not to corporate users.
3. **Science-Based Targets:** There are none.
4. **Policy Advocacy:** There are no mandatory buy-side requirements for offset volume, sector, or use intentions.

D. Market Integrity Protection

1. **Anti-Greenwashing:** This includes single-registry control with unique serials. Double issuance is mitigated by exclusive registration—there is no dual registration under another scheme, except India's non-GHG Green Credit Programme (GCP), which issues credits for non-GHG environmental benefits rather than GHG reductions and therefore does not constitute double counting. Green credits under GCP are non-tradable and operate under a separate registry (Indian Council of Forestry Research and Education) managed by the MoEFCC. Green credits have fundamentally different uses, primarily for compensatory afforestation and corporate social responsibility compliance under the Environment (Protection) Act, 1986, and cannot be

commercially traded like CCCs.[48] Green credits do not fall under the ambit of PCCMs governed by the CCTS.

2. **Co-Benefits Delivery:** No regulatory requirement has been established for buyers or users to demonstrate co-benefit delivery. All SDG, community, and biodiversity benefits must be documented in the project phase during offset issuance.

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:**

   - Under the CCTS, India is establishing ICM as the national framework for trading CCCs. On February 27, 2026, CERC notified the Central Electricity Regulatory Commission (Terms and Conditions for Purchase and Sale of Carbon Credit Certificates) Regulations, 2026, which came into force upon publication in the official gazette.[49] The regulations provide that CCCs are to be dealt with through power exchanges, with any alternative mode requiring a separate order of CERC under the CCTS. They also provide for two separate market segments: a compliance market for obligated entities and an offset market for non-obligated entities.

   - Once operational, CCC trading is expected to occur on India's recognized power exchanges (currently including the Indian Energy Exchange [IEX], Power Exchange India Limited [PXIL],[50] and Hindustan Power Exchange [HPX]) in separate market segments for obligated entities (compliance CCCs) and non-obligated entities (offset-CCCs). Currently, there is a lack of accredited verifiers in the ecosystem. Also, the final version of market infrastructure and registry systems is still being finalized, and CCC trading has not yet commenced, with first trades anticipated in 2026.

   - *Market-Side Rules:* The CCTS provides the primary legal basis for CCC issuance and trading, while the CERC (Terms and Conditions for Purchase and Sale of Carbon Credit Certificates) Regulations, 2026,[51] provide the market-side framework. Key features include the following: registration and interface procedures to be set out in the detailed transaction procedure formulated by BEE and approved by CERC; dealing in CCCs only through power exchanges unless otherwise specifically permitted by the commission by order; separate compliance and offset market segments; monthly transaction frequency or such other periodicity as approved by the commission; prior CERC approval of exchange rules, business rules, and bylaws, including eligibility criteria and price-discovery mechanisms; prohibition on sale bids

in excess of available CCC holdings in the registry; and reporting of executed transactions to the registry so that seller and buyer accounts can be updated after each successful trade.

2. **Registry Operations:** GCIL is designated as the ICM registry operator for all CCCs under the CCTS. GCIL maintains the electronic ledger for CCC issuance, transfer, cancellation, banking, and retirement, ensuring one-to-one life cycle traceability for each certificate. CERC CCC Regulations, 2026, and BEE's ICM design documents specify that
   - registry accounts must be opened for obligated and non-obligated entities;
   - CCC holdings in the registry are cross-checked against orders placed on power exchanges so that entities cannot sell more CCCs than they hold;
   - after each successful trade, GCIL updates the seller's and buyer's registry accounts accordingly; and
   - under the compliance mechanism,[52] remaining CCCs from a compliance year may be banked for use in subsequent compliance years. Under the offset mechanism,[53] issued CCCs in a non-obligated entity's account may have the status active, retired, or canceled; retirement denotes use in a claim, while cancellation denotes permanent removal from circulation by the administrator. The GCIL central registry records all CCC issuance, transfers, retirements, or cancellations and ensures one-to-one credit life cycle traceability. Registry integration with exchanges ensures that CCC sales and purchase requests are matched against actual holdings.[54] Public access includes credit issuance and trade data, but not always end-user identity or voluntary retirements.
3. **Data Standards:** Registry and exchange data requirements are being refined in the CERC regulations; CCC tracking is serial-numbered and digitally tracked at project or issuance and the retirement levels.

B. Trading and Participation

1. **Eligibility Rules:** Under the notified CERC CCC Regulations, 2026, obligated and non-obligated entities may participate in CCC dealings through the registry-and-exchange framework established under the CCTS and the commission's approved procedures.[55] BEE is required to formulate the detailed procedure for registration of obligated and non-obligated entities with the registry, while power exchanges or other permitted entities must require participant registration under their CERC-approved rules, business rules, and bylaws. There is no separate offset-trading license; offset-CCCs must first be issued under the detailed procedure for the offset mechanism before they may be placed for dealing.

2. **Trading Mechanisms:** The notified CERC CCC Regulations, 2026, establish exchange-based dealing in CCCs as the default rule.[56] Unless otherwise specifically permitted by the commission by order pursuant to the CCTS, CCCs are to be dealt with only through power exchanges (IEX, PXIL, HPX)[57] and not in any other manner. The regulations create two separate market segments, the compliance market and the offset market, and provide that the frequency of transactions shall be monthly or such other periodicity as approved by the commission. The market-side framework is therefore now legally in place, though live trading remains contingent on approved transaction procedures, exchange business rules and bylaws, and operational readiness of the registry-exchange interface.

3. **Settlement Systems:** Because the CCC market is being built on the same chassis as power or renewable energy certificate (REC) markets, settlement mirrors those structures:

    - *Clearing and Settlement:* Trades on exchanges will be cleared through the clearing corporations associated with each exchange (e.g., those already used for REC or power contracts). Financial settlement is expected on T+1 or T+2 terms (i.e., one or two business days after the trade date), with margin requirements similar to existing energy products.[58]

    - *Physical Settlement Is Equivalent to Registry Transfer:* After trade confirmation and financial settlement, the exchange sends a trade file to the GCIL registry; GCIL debits CCCs from the seller's registry account and credits CCCs to the buyer's account, ensuring that no one can sell more CCCs than they actually hold.

    - *For Offset-CCCs:* The same settlement logic applies; the only difference is that these CCCs originate from offset mechanism projects rather than compliance over-performance. For retirement (voluntary use) or cancellation (e.g., Article 6 international transfer), registry procedures under the offset procedure govern how units are extinguished after settlement.

4. **Price Discovery:** Under the notified CERC CCC Regulations, 2026,[59] the market price of CCCs is to be discovered at the respective power exchange, or any other permitted entity, through the process approved by the commission. For CCCs under the compliance mechanism, trading must occur within the price range bounded by a floor price and a price cap specified by CERC on a proposal submitted by BEE. CERC may also issue directions where it observes abnormal increases or decreases in CCC prices, sudden volatility, or sudden high or low dealing volumes. The detailed trading format will therefore be governed through approved exchange rules and business rules rather than fully specified in the regulations themselves.

5. **Oversight Authority:** CERC is the apex trading regulator. It licenses exchanges, sets substantive rules, approves exchange business rules, and can order suspension or investigation of trading.

GCIL manages the registry and linkage with exchanges. BEE is the scheme administrator that oversees scheme design and project-level rules under CCTS. SEBI (indirect role)[60] does not regulate CCC trading but oversees listed companies' disclosures (including any CCC use) under BRSR or BRSR Core.

6. **Legal Classification:** CCCs issued under CCTS are government-issued certificates digitally assigned through the ICM registry, each representing 1 tCO_2e of verified emission reduction, removal, or avoidance. Both compliance-driven CCCs and voluntary-use (project-based) CCCs issued under the offset mechanism derive their legal authority from the Energy Conservation Act, 2001 (as amended in 2022)[61] and the CCTS notification,[62] which formally defines CCCs and authorizes their issuance, transfer, banking, and retirement within the ICM. While both types of CCCs share identical legal status, their permitted uses differ: Offset-CCCs currently operate exclusively in voluntary and Article 6 pathways and are not eligible for compliance use under the CCTS.

   For project-based CCCs (offset-CCCs), entities generally treat credits as inventory when held for sale in the ordinary course of business (aligned with Indian Accounting Standards [Ind AS] 2, which covers inventories), or as intangible assets when held for future strategic use and not intended for resale (aligned with Ind AS 38, which covers intangible assets).[63]

   India currently has no dedicated accounting standard for CCCs under either Ind AS or International Financial Reporting Standards (IFRS). Accounting practice, therefore, follows the earlier Institute of Chartered Accountants of India Guidance Note on Accounting for Self-Generated Certified Emission Reductions and general principles under Ind AS 2, Ind AS 38, Ind AS 115 (Revenue from Contracts with Customers), and their IFRS equivalents.

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** Under the notified CERC CCC Regulations, 2026, obligated and non-obligated entities may not place sale bids in excess of the CCCs held in their registry accounts.[64] The registry must cross-check cumulative sale bids across power exchanges or any permitted entity against available holdings. Where a breach is detected, the entity is treated as a defaulter, and the bid is not considered for price discovery and becomes void if cumulative sale bids exceed available holdings. Entities with more than three such defaults in a quarter are barred from dealing in CCCs for the next six months, and the registry must publish the list of such defaulting entities monthly. More broadly, CERC, assisted by BEE, exercises market oversight over CCC dealing in accordance with the power market regulations.

2. **Transparency and Reporting Requirements:** CCC trading, once operational, must occur on

CERC-approved power exchanges, which are obligated to publish market data in accordance with CERC regulations.[65] These requirements include the disclosure of trading volumes, clearing prices, bid or ask information, market depth, and turnover, as well as periodic reporting of detailed trade data to CERC and the GCIL registry for surveillance and audit. Buyer identity for voluntary use of offset-CCCs is not universally disclosed unless required under SEBI's BRSR or BRSR Core[66] reporting obligations for listed companies or under future Article 6 transparency modules.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** All cash settlement and trading activities must comply with national financial and anti-money-laundering laws. CERC will oversee trading conduct on power exchanges.

2. **Cross-Border Trading Framework:** India has established the institutional basis for international transfers of carbon credits under Article 6.2 of the Paris Agreement through the designation of NDAIAPA[67] within MoEFCC. International transfer of CCCs is permitted only for credits explicitly authorized by MoEFCC and subject to corresponding adjustments to India's NDC. Registry-level operationalization of Article 6.2 requires upgrades to the ICM registry operated by GCIL to include modules for authorization, first transfer, international transfer tracking, and corresponding adjustment accounting. As of early 2026, India's Article 6 framework is institutionally in place, but international transfer of CCCs is not yet fully operationalized. MoEFCC, through NDAIAPA, governs authorization and corresponding adjustments, while BEE administers the relevant ICM portal workflow for eligible projects.

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** India is finalizing registry-exchange integration and digital onboarding systems for rollout under the notified CERC CCC Regulations, 2026.[68] The next implementation steps are approval of detailed transaction procedures, exchange business rules, and bylaws, and completion of operational readiness for live CCC trading.

2. **International Cooperation:** India has established the institutional architecture for participation in Article 6 of the Paris Agreement through the notification of the National Designated Authority for Article 6 (NDAIAPA)[69] and the publication of activity lists eligible for cooperative approaches under Articles 6.2 and 6.4. Registry upgrades for Article 6.2 authorization, first transfer, and corresponding adjustments are underway, supporting future bilateral trading arrangements led by MoEFCC.[70] India's plans going forward include operationalizing authorization procedures, defining corresponding adjustment workflows, and integrating these functions into the ICM portal and registry.[71] The ICM portal is being developed to include technical modules for Article

6.2 authorization, tracking, and reporting, enabling registry-level interoperability for bilateral crediting arrangements such as the India-Japan Joint Crediting Mechanism signed in August 2025 and future cooperative approaches.

3. **Regulatory Evolution:** Additional contract types and limited over-the-counter options may be introduced in later phases, subject to CERC rulemaking and observed market performance.
4. **Enforcement Enhancement:** CERC and GCIL will increase digital market conduct surveillance; new penalties and compliance assurance upgrades are expected in the transition to full national implementation.

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INDONESIA

Overview

Indonesia's project-based carbon credit market (PCCM) framework is mainly governed by Presidential Regulation 110/2025, which structures the national carbon economic value system (NEK) around carbon trading, results-based payments, a carbon levy, and other instruments to support the achievement of nationally determined contributions (NDCs).[1] Carbon trading in Indonesia can occur through the domestic emissions trading scheme (ETS), carbon credit offsetting, and international transfers via the Indonesia Carbon Exchange or direct trading, with the government empowered to set a national carbon-trading road map.[2] The earlier system, established under Presidential Regulation 98/2021, had left gaps in governance, definitions, registry functions, carbon-unit categorization, and the link between domestic and international markets, which have largely been addressed by the updated regulation.[3]

Indonesia's PCCM ecosystem is primarily anchored by the domestic ETS. Launched in 2023, the ETS created the demand for the power generation sector's emissions reductions by assigning emission ceilings and quotas to entities that must then measure, report, and verify their emissions and demonstrate compliance each period.[4] Entities that exceed their emissions ceilings must acquire additional quotas, purchase eligible carbon credit offsets, or face a carbon tax.[5] Another tool in the PCCM ecosystem is results-based payments, where a project gets paid only when it proves it has actually reduced emissions.[6] Operating within this regulatory framework, several project developers are undertaking initiatives in carbon capture, utilization and storage, renewable energy (including geothermal and solar), and nature-based solutions (such as mangrove restoration and REDD+) to support industrial decarbonization programs.[7]

The voluntary carbon market (VCM) is integrated into this regulation through the recognition of domestic and international certification schemes—credits from these schemes qualify as carbon units as long as they undergo measurement, reporting, and verification (MRV) and are registered in Indonesia's Carbon Unit Registry System (SRUK).[8] Carbon units can originate from allowances allocated to entities within the ETS,[9] from project-based emission reductions or removals generated through domestic mitigation actions, or through international certification programs (e.g., Verra, Gold Standard, Plan Vivo, Joint Crediting Mechanism [JCM], and Global Carbon Council [GCC]), provided they meet Indonesia's MRV and registry requirements[10] as well as other carbon market instruments recognized under the NEK.[11] VCM credits may be traded domestically or internationally and may contribute to Indonesia's NDC unless authorized for export by the relevant sectoral ministry,

in which case corresponding adjustments apply, aligning with Article 6 of the Paris Agreement.[12]

All NEK instruments are tracked in two registry systems: the National Registry System for Climate Change (SRN-PPI), which records national climate-mitigation actions, and SRUK, which records every carbon unit issued, sold, transferred, or used. In this regard, records in the SRUK constitute an integral part of the tracking mechanism for monitoring progress toward NDC achievement, as documented in the SRN-PPI, while also serving as a control mechanism to ensure that no carbon credit is double counted or misused.[13] To date, the Ministry of Environment (MoE) has officially signed Mutual Recognition Agreements (MRAs) with five voluntary carbon standards—Verra, the Gold Standard Foundation, JCM, GCC, and the Plan Vivo Foundation—and a letter of intent (LOI) with Puro.earth. The MRAs formally link internationally certified carbon mitigation projects to the SRN-PPI, administered by the MoE, to align international methodologies with Indonesia's reporting and verification rules, and to meet national accounting obligations—including readiness for Article 6 transfers—by ensuring all mitigation outcomes generated in Indonesia are traceable in the national registry.[14] Presidential Regulation No. 139 of 2024 split the previously unified Ministry of Environment and Forestry into two distinct entities, the MoE and the Ministry of Forestry (MoF), to enable them to better focus on their respective mandates.[15]

While the ETS currently covers only the power sector, Presidential Regulation No. 110 of 2025 establishes a broader framework for sectoral ministries to advance decarbonization policies in accordance with their respective mandates and sectoral characteristics. This reflects the ambition of Indonesia's whole-of-government approach to scaling carbon market instruments across the economy. In the industrial sector, plans are underway to expand emission control mechanisms to nine key subsectors—cement, textiles, ceramics and glass, fertilizer, steel, food and beverages, transportation, chemicals, and pulp and paper—beginning in 2027.[16]

The forestry sector, through the MoF, has been strengthening its regulatory framework to support carbon trading, including within the social forestry scheme, by issuing procedures for carbon trading in the forestry sector.[17] The marine and fisheries sector, through the Ministry of Marine Affairs and Fisheries (MMAF), is developing policy instruments to unlock blue carbon potential,[18] while the waste sector is advancing regulatory measures to facilitate emissions reduction from waste management.[19]

I. Supply-Side Regulations

Indonesia's supply-side framework governs how mitigation activities are registered and recognized for credit issuance based on the Ministry of Environment and Forestry (now MoE) Regulation No. 21 of 2022 on the Implementation Procedures for Carbon Economic Value,[20] which requires projects to

be recorded in the SRN-PPI, use approved methodologies, follow national MRV rules, and undergo validation and verification. This regulation will likely be revised to align with the updated 2025 regulations. It specifies two forms of carbon units—project-based reductions are classified as greenhouse gas emission offsets (SPE-GRK),[21] which are recognized as one of two forms of carbon units generated under national methodologies, and non-SPE-GRK units,[22] which are generated under international standards—and establishes SRUK as the registry for issued units.[23] These updates will require harmonizing project documentation pathways, methodological eligibility, and registry flows with the new national carbon market architecture.

The latest regulation has been used as the primary reference in this write-up. Where implementation details are not yet available, it relies on the older regulations to fill operational gaps until they are formally revised to reflect the latest regulations.

A. Regulatory Framework

1. **Market Classification:** The regulations currently apply to the compliance market—governing emission caps, quotas, offsets, and carbon-unit accounting. The voluntary carbon market is not separately regulated and is subject only to the requirement that all carbon units be issued and recorded through the national registries.[24]

2. **Regulatory Status:** The carbon market is governed primarily by Presidential Regulation No. 110/2025 on the Implementation of Carbon Economic Value and National Greenhouse Gas Emission Control,[25] and MoEF (now MoE) Regulation No. 21/2022 on the Implementation Procedures for Carbon Economic Value.[26] Perpres 110/2025 establishes the national legal framework for carbon market instruments. Permen LHK 21/2022 provides operational rules for project registration, methodology approval, MRV, and validation and verification, and will require revision to align with the expanded architecture under Perpres 110/2025. Implementation is further supported by sector-specific regulations—such as the Ministry of Energy and Mineral Resources (MEMR) Regulation No. 16 of 2022 on Carbon Pricing Procedures for the Power-Plant Subsector[27] and the MoEF (now MoF) forestry-sector regulations, including MoEF Regulation No. 7 of 2023 on Procedures for Carbon Trading in the Forestry Sector—that govern technical procedures, sectoral baselines, and carbon-pricing obligations within individual industries.[28] The marine-sector regulations center around MMAF Regulation 1/2025 on Procedures for Implementing Carbon Economic Value in the Marine Sector, which establishes the carbon-pricing framework covering blue carbon ecosystems, fishing, aquaculture, and marine product processing through emission trading and offset mechanisms.[29]

3. **Key Authorities:** Supply-side oversight in Indonesia is centralized under the MoE as the national

regulator and registry operator, while sectoral ministries such as the MEMR and the MoF directorate issue subsector-specific technical regulations that govern mitigation activities and carbon credit generation.[30] The MoE is responsible for administering the national carbon policy by operating the SRUK and setting national rules for project registration, methodologies, and MRV, including accrediting validators and verifiers.[31] The MoE also issues, revises, and cancels mitigation outcomes recorded in the national registries, ensuring national oversight of mitigation-result issuance and reporting.[32] Other sectors—such as industry, transport, agriculture, and waste—will receive their own sector-specific implementing regulations, which will require sectoral ministries and institutions to apply NEK instruments within their respective sectors and subsectors.[33]

4. **Sanctions:** The regulations do not explicitly state the sanctions and penalties for noncompliance.

B. Credit Generation Standards

1. **Eligible Activities:** Indonesia uses a list of sectors and subsectors for its NDC classification and MRV structure, but it does not restrict eligible activities exclusively to those sectors, as the regulatory framework allows additional sectors to be added in line with scientific and technological developments.[34] The regulations do not specifically list eligible activities for offsets (per the older 2022 implementation regulations); instead, they delegate eligible activities to the sectors governed by each relevant ministry.[35] This means that the detailed determination of which mitigation activities qualify as offsets is made through sectoral regulations issued by the responsible ministries.

2. **Methodology Framework:** This framework references United Nations Framework Convention on Climate Change (UNFCCC) Articles 6.2 and 6.4 of the Paris Agreement, which mention other international standards without specifying what they are, and allows linkages to international carbon markets, forming a legal basis for both domestic and foreign carbon trading aligned with international climate frameworks.[36]

3. **MRV Requirements:** The 2025 regulations incorporate project design documents (Action Plan Mitigation Document [DRAM], the project design document for domestic SPE-GRK offset certificates, and Project Planning Document [DPP], the project design document for non–SPE international-standard offset certificates),[37] defining them as the foundational documentation for project-based carbon credit generation. Under the 2022 implementing regulation, MRV deliverables supporting SPE-GRK issuance—such as DRAM validation results, monitoring data, and verification reports—must be submitted through and recorded in the SRN-PPI registry as part of the formal issuance process, with the final SPE-GRK issuance itself also recorded in the SRN-PPI. The regulation further requires that all SPE-GRK-eligible reductions be measurable,

monitored, and reported, reinforcing MRV's central role in determining what enters the registry.[38] This will likely be updated to include recording the issuance of both SPE and non-SPE-GRK offset certificates into the SRUK. The 2022 regulations require that project validation and verification be carried out by accredited third-party validators and verifiers who meet competency and independence requirements and are registered in the SRN-PPI,[39] if accredited bodies are insufficient.[40] Verification must assess the accuracy of monitoring data, confirm that eligibility criteria are met, and ensure the activity "is not registered in another certification mechanism," with a verification report issued within six months of submission.[41]

4. **Registry System:** This system operates a dual-registry system: the national registry (SRN-PPI), which records climate mitigation action data and MRV outputs as the basis for verification, and the carbon unit registry (SRUK), which records the issuance, ownership, transfer, and retirement of carbon units. Project documentation and MRV results flow first into the SRN-PPI, while all approved carbon units—both SPE-GRK and non-SPE—must be issued and tracked through SRUK.[42]

C. Integrity Principles

1. **Additionality Tests:** The regulatory framework does not define "additionality" or establish a formal test for demonstrating that emission reductions go beyond business-as-usual activities in regulations. In practice, this means that additionality assessments continue to rely on methodological standards incorporated through national methodologies recognized by the DRAM or international standards recognized by the DPP, rather than on explicit additionality provisions in Indonesian law. The national registry website lists the approved methodologies that must meet one of the following: (1) determined by the director general, (2) determined by the National Standardization Agency, or (3) approved by the UNFCCC.[43] However, the national SRN methodologies often do not address criteria such as additionality and permanence.[44]

2. **Permanence Safeguards:** Indonesia's PCCM regulatory framework recognizes permanence only at a high level: 2022 regulations specify that domestic SPE-GRK-eligible reductions must be "real, permanent, measurable, monitored, and reported,"[45] but do not provide operational rules such as reversal management, buffer pools, liability periods, or long-term monitoring obligations. Because Indonesia allows both national and internationally derived methodologies (DRAM for national, DPP for international), permanence criteria will be governed by whichever methodology a project uses.

3. **Quantification Standards:** The regulatory framework does not prescribe detailed quantification methodologies in the regulations themselves; instead, they establish the principles and framework under which quantification must occur, with the technical rules embedded in the methodologies approved under the national registry website.[46] The 2022 regulations set the core

quantification requirement by stating that domestic SPE-GRK emission reductions must be "real, permanent, measurable, monitored, and reported."[47]

4. **Double-Counting Prevention:** Neither the 2025 nor the 2022 regulations address the term "double counting." However, the 2022 regulations require that verifiers confirm that mitigation activities are not registered in any other certification platform, and the 2025 regulations require all mitigation data and carbon units to be recorded in the SRN-PPI and the SRUK. These provisions functionally prevent double issuance, double registration, and double claiming, even though the regulations do not state "double counting" explicitly.

D. Sustainable Development

1. **Co-Benefits:** Co-benefits are not explicitly stated in the 2025 or 2022 regulations, but may be incorporated within the approved methodologies applied to individual mitigation activities.

2. **Net-Zero Compatibility:** The 2025 regulations explicitly align offsets with Indonesia's NDC by stating that all emission reductions from the offsets count toward the NDC unless a corresponding adjustment is issued under UNFCCC rules, in which case the reduction is excluded from Indonesia's NDC accounting.[48]

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary claims:* Voluntary use is explicitly recognized in the 2025 regulations and treated separately from compliance use. Voluntary offsets trading that is not used to fulfill NDCs or other international obligations does not require government authorization or corresponding adjustment, and may rely on national, UNFCCC, or other international standards, including voluntary market approaches. Voluntary offsets used to meet international obligations fall under foreign carbon trading that does require authorization and corresponding adjustment, aligning them with Article 6.2 and Article 6.4 mechanisms. This structure allows companies to continue making voluntary claims without triggering NDC accounting.[49] The 2022 regulations did not explicitly recognize voluntary claims.

   - *Compliance integration:* Carbon credits or carbon units, which include offsets, as per the 2025 regulations, can be used to meet the emission-surrender obligations of regulated entities. However, the regulations do not specify a fixed percentage limit on the share of offsets that may be used for compliance.[50]

- *NDC alignment:* The regulatory framework anchors carbon market use to Indonesia's NDC by requiring that any carbon trading used to fulfill NDCs or other international obligations obtain government authorization and apply a corresponding adjustment, ensuring that emission reductions are not double counted toward national targets. Carbon trading not used for NDC fulfillment—including voluntary offset use—does not require authorization or corresponding adjustment, and therefore remains outside NDC accounting.[51]

2. **Regulatory Status:** PCCMs are governed under the national carbon economic value framework established by Presidential Regulation No. 110/2025[52] (building on Presidential Regulation No. 98/2021), with operational procedures for credit issuance and registration set out in MoEF Regulation No. 21/2022,[53] which governs domestic SPE-GRK offsets (but will likely be updated to include international-standards-aligned non-SPE offsets) and the national registry (SRN-PPI), which will also need to be updated to include the carbon unit registry (SRUK). Sector-specific rules further define eligibility and compliance pathways. Indonesia does not yet have detailed, stand-alone rules governing demand-side use or voluntary claims, such as explicit requirements for standardized corporate claims, or safeguards against greenwashing. Oversight of misleading environmental claims relies largely on general consumer-protection and financial-market regulations.

3. **Oversight Bodies:**

   - The MoE oversees carbon units at the system level through the national registry (SRN-PPI) and determines whether credits are authorized for NDC or international use.

   - Relevant sector ministries: One example is the MEMR for the power sector, where they regulate compliance use by covered entities under sector-specific ETS and offset rules.

   - Oversight of voluntary claims and greenwashing risks is not addressed through carbon market–specific rules and instead falls under general consumer-protection and advertising laws, primarily enforced by the Ministry of Trade and competition and consumer-protection authorities, creating a gap in dedicated demand-side PCCM governance.

4. **Standards Integration:** No other international standards were explicitly referenced in the regulations.

5. **Enforcement Mechanisms:**

   - Regulations do not impose explicit penalties specific to the misuse or overuse of offsets; instead, enforcement occurs through general ETS compliance mechanisms. The 2025 regulations stipulate that regulated entities are required to meet their emission obligations

primarily through carbon trading and eligible carbon units, and where emissions are not addressed through carbon trading or offset mechanisms, a carbon levy may apply as part of the carbon economic value instruments. However, it does not set levy rates, calculation methods, or collection procedures; instead, it delegates all fiscal design and implementation to separate tax legislation and implementing regulations.[54]

- Separately, sectoral ministries retain enforcement authority over regulated entities. In the power sector, the MEMR provides that non-compliance with ETS participation or reporting obligations triggers administrative consequences, including written warnings and a reduction of future emission allowance allocations to 75 percent of the normal level for the subsequent trading period, thereby penalizing non-compliance through tighter future caps rather than offset-specific sanctions.[55]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** This is not explicitly addressed in the regulations. This will likely be addressed in sectoral regulations, if any emerge.
2. **Scope Coverage:** This is not explicitly addressed in the regulations. This will likely be addressed in sectoral regulations, if any emerge.
3. **Quality Standards:** While the regulations allow carbon units issued under national, UNFCCC, or other international standards, they do not specifically define minimum quality criteria.
4. **Accounting Treatment:** Registry-based accounting applies; domestic SPE-GRK credit issuance, status, and cancellation are recorded in the SRN-PPI, with cancellation serving as the official accounting process.[56] This process will likely be updated to include the international non-SPE credits and the carbon unit registry, the SRUK.

C. Transparency and Assurance

1. **Public Reporting:** The regulation requires the SRN-PPI registry to publish information at least annually on the implementation of Indonesia's carbon economic value system, including carbon market activities, mitigation planning, NDC achievement, and monitoring reports.[57] However, the regulation does not mandate entities to publicly disclose credit cancellations, retirements, offset use, or the compliance or voluntary claims made on that basis.
2. **Third-Party Verification:** The regulation requires MRV for the generation of carbon units, but does not establish external or third-party assurance requirements for the use or cancellation of credits by buyers. There is no provision requiring independent verification of offset surrender, cancellation for voluntary claims, or post-use auditing on the demand side.

3. **Science-Based Targets:** This is not explicitly addressed in the regulations.

4. **Policy Advocacy:** Indonesia's regulations do not impose requirements linking carbon credit use by companies to advocacy or alignment with the objectives of the Paris Agreement beyond formal accounting rules. While the 2025 regulations explicitly reference Articles 6.2 and 6.4 of the Paris Agreement and require authorization and corresponding adjustment where credits are used toward NDCs or other international obligations, the framework does not regulate how private actors' use of credits should align with Paris-consistent decarbonization strategies or policy positions.

D. Market Integrity Protection

1. **Anti-Greenwashing:** Beyond registry-based controls and MRV requirements on the supply side, the regulations provide limited demand-side safeguards against greenwashing, with no explicit rules governing corporate claims, claim substantiation, or alignment between credit use and emissions-reduction strategies.

2. **Co-Benefits Delivery:** Indonesia's regulations do not require project developers or credit users to demonstrate social, environmental, or sustainable development co-benefits as a condition for credit issuance, use, or cancellation. However, separately, the Financial Services Authority (OJK) requires financial institutions, issuers, and public companies to implement sustainable finance principles and submit sustainability reports under OJK Regulation No. 51/2017, which is under review to align with International Financial Reporting Standards (IFRS) S1 and S2 by January 2027.[58] Under the Indonesia Taxonomy for Sustainable Finance, taxonomy classification is determined by the characteristics of the underlying economic activity rather than the use of carbon credits. Carbon credits, therefore, do not determine taxonomy alignment, though they may be considered in specific financing structures, such as sustainability-linked loans or carbon project finance, as part of lenders' Environmental, Social, and Governance (ESG) risk assessment and disclosure practices.[59]

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** Indonesia's carbon market is organized around a regulated national Carbon Exchange (Bursa Karbon), which operates as the central trading platform for carbon units, including SPE-GRK (project-based credits) and PTBAE-PU (emission allowances). The term PTBAE-PU does not appear in the 2025 regulations, although emissions allowances are referenced. The Carbon Exchange is licensed, regulated, and supervised by the OJK, reflecting

its integration into Indonesia's capital-market infrastructure. All carbon units traded through the exchange must be recorded in the SRN-PPI, which serves as the authoritative system for registration and tracking of units, while the exchange facilitates trading, clearing, settlement, and retirement under OJK oversight, ensuring credits cannot be traded or used again, hence preventing double counting.[60]

- Market-side rules:
  - Presidential Regulation No. 110/2025 provides the overarching legal framework for Indonesia's NEK system, including carbon trading, offsets, and the institutional roles of the registry and trading mechanisms. It authorizes carbon trading through exchanges and direct transactions, while delegating operational details to implementing regulations.[61]
  - OJK Regulation No. 14/2023 on carbon trading through the Carbon Exchange (OJK Regulation 14/2023) establishes the legal foundation for carbon trading via the Bursa Karbon, designating carbon units as a securities instrument (Efek) and setting rules for exchange licensing, governance, supervision, eligible carbon units (PTBAE-PU and SPE-GRK), trading modalities, clearing and settlement, market conduct, reporting, and sanctions. The regulation places carbon trading squarely under capital-market-style regulation and enforcement.[62]
  - MoEF Regulation No. 21/2022 governs the registry and life cycle of carbon units, including SPE-GRK registration, transfer, and cancellation in the SRN-PPI, which underpins market integrity and accounting for traded units.[63]

2. **Registry Operations:** Indonesia's carbon market operates on a centralized national registry architecture that has evolved. Earlier regulations relied solely on the SRN-PPI, while the 2025 regulations formally established the SRUK as the authoritative registry for carbon units. Recording in the SRUK, in the form of a number and/or registry code, serves as proof of emission reduction by businesses and/or activities that have undergone MRV.[64]

   On the market side, all carbon units traded through the Carbon Exchange must be recorded in the national registry (the SRN-PPI at the time of issuance of the OJK rule) and synchronized with exchange records.[65] The OJK supervises the market infrastructure and trading activity, while registry functions (recording, status, and linkage to technical ministries) remain under the MoE. Coordination with relevant ministries is explicitly stated, but there is no provision assigning registry operations, cancellations, or public-disclosure responsibilities to the exchange itself. In practice, this creates a functional separation in which the registry determines what can be traded and the exchange governs how trading occurs.[66]

3. **Data Standards:** The exchange is required to administer, store, and maintain records of all trading activity and transaction data for at least five years, ensure risk management and sufficiency of funds and units before settlement, and report transaction summaries to the OJK and MoE.[67]

B. Trading and Participation

1. **Eligibility Rules:** Participation in carbon trading through the Indonesia Carbon Exchange is subject to access conditions set by the exchange operator and approval by the OJK. Carbon Exchange organizers must establish rules governing eligibility, procedures, rights and obligations, reporting requirements, and sanctions for users.[68] Trading participants must become registered users of the Carbon Exchange, in accordance with exchange rules approved by the OJK. Transactions may only involve carbon units that have been recorded in the national registry and are listed on the exchange.[69]

2. **Trading Mechanisms:** These are conducted through exchange-based mechanisms operated by licensed Carbon Exchange organizers under OJK supervision. The exchange must provide an electronic trading system for order matching, price discovery, and settlement of both funds and carbon units, including clearing arrangements.[70] Transactions may be executed bilaterally or via intermediaries within the exchange system, but the regulation does not authorize off-exchange over-the-counter trading.[71] Detailed trading rules—including order types, trading hours, suspensions, and settlement—are set through exchange rules approved by the OJK.[72]

3. **Settlement Systems:** Carbon-trading transactions are executed through an electronic trading system operated by the Carbon Exchange organizer, with transaction execution occurring when buy and sell orders are matched within the exchange system.[73] Settlement of transactions—covering both the funds and carbon units—is conducted through systems provided by the exchange and may use clearing mechanisms, with or without guarantees, provided by clearing and settlement institutions.[74]

4. **Price Discovery:** Price discovery occurs through exchange-based trading mechanisms designed to ensure orderly, fair, and efficient trading, with prices reflecting market supply and demand.[75] The regulation requires the exchange to provide systems for matching buy and sell orders and disseminating accurate and timely market information, but does not specify particular trading formats (such as auctions, block trades, or listing models), leaving these details to exchange rules approved by the OJK.[76]

5. **Oversight Authority:** The OJK serves as the primary regulatory and supervisory authority for carbon trading through the Carbon Exchange. It is responsible for regulation, licensing,

supervision, and enforcement, covering exchange operators, market infrastructure, users, transactions, settlement, governance, risk management, and consumer protection.[77] The Carbon Exchange organizer functions as the trading venue and market operator, responsible for enforcing exchange rules, monitoring trading activity, and taking action against violations, under OJK oversight.[78] It is required to submit monthly transaction recapitulation reports and an annual activity report to the MoE, creating a formal interagency oversight and information-sharing mechanism.[79]

6. **Legal Classification:** Carbon units are legally classified as securities (Efek) for purposes of exchange trading and OJK supervision.[80]

C. Market Integrity Safeguards

1. A**nti-Manipulation and Fraud Prevention:** These are not explicitly stated; however, the rules require trading entities to satisfy the eligibility conditions established by the trading institution. The Carbon Exchange organizer is required to operate trading in a regular, fair, and efficient manner;[81] establish internal controls and risk management systems; and actively monitor trading activities of users.[82] The exchange must also take action against indications of irregular or unlawful trading, including suspensions or other measures as defined in exchange rules approved by the OJK.[83]

2. **Transparency and Reporting Requirements:** These are addressed primarily through mandatory recordkeeping and regulatory reporting, rather than public disclosure. The Carbon Exchange organizer must administer, store, and maintain records of all user activities and trading data for at least five years.[84] It is also required to submit monthly transaction recapitulation reports and annual activity reports to the OJK and the MoE,[85] and to ensure the availability and dissemination of accurate, up-to-date market information through its trading rules.[86]

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** This is explicitly integrated into the financial regulatory system. POJK No. 14/2023 classifies carbon units as securities and subjects carbon trading, settlement, and exchange operations to capital-market regulation and OJK supervision.[87]

2. **Cross-Border Trading Framework:** Cross-border carbon trading is permitted in principle, but it is tightly controlled. Foreign carbon units not recorded in the national registry may be traded only if they are registered and verified under an accredited international system, meet exchange-trading requirements, and comply with additional conditions set by the OJK, with authorization and corresponding adjustment required where units are used to meet international obligations.[88]

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** Indonesia is formalizing a national carbon-trading infrastructure through a strengthened legal and technical framework anchored in its latest 2025 regulations, which mandate the development of a national carbon-trading road map, the establishment of trading and transaction systems, and the integration of carbon markets into its broader climate strategy.[89] To operationalize trading infrastructure for carbon units, including allowances and offsets, Indonesia launched IDXCarbon in 2023, the first domestic carbon exchange, under the supervision of the Financial Services Authority.[90] In January 2025, Indonesia launched international carbon trading on IDXCarbon, allowing foreign buyers to participate in transactions involving domestically issued carbon credits.[91] IDXCarbon integrates carbon allowances and credits within a single platform and offers four trading mechanisms: auction, negotiation, regular market, and marketplace. It is connected to the SRN-PPI to ensure traceability and registry reconciliation and is being aligned with the 2025 Presidential Regulation concerning SRUK connectivity. The exchange incorporates governance, reporting, and system safeguards, including blockchain-based infrastructure, to reduce the risk of double counting and double claims and support market integrity.[92] Together, these measures support the development of domestic and voluntary carbon markets and align carbon-trading infrastructure with Indonesia's NDC objectives.

2. **International Cooperation:** By enabling international carbon trading subject to government authorization and corresponding adjustment, the 2025 regulations have aligned Indonesia's carbon market framework with Article 6 of the Paris Agreement. In June 2025, Indonesia and Norway signed an implementation agreement under Article 6.2, building on a 2022 memorandum of understanding to support Indonesia's Forestry and Other Land Use (FOLU) Net Sink 2030 plan. Indonesia has also signed bilateral agreements with Singapore, South Korea, and Japan.[93]

3. **Regulatory Evolution:** PCCM regulations reflect significant integration with financial regulation, as carbon units are legally classified as securities (Efek) and trading is confined to OJK-regulated exchange infrastructure.[94]

4. **Enforcement Enhancement:** Enforcement is structured around capital-market supervision mechanisms, with the OJK empowered to supervise trading, impose administrative sanctions, and require internal controls, monitoring, and reporting by the exchange and its users.[95]

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ITALY

Overview

Italy's project-based carbon credit market represents a nascent but rapidly evolving regulatory landscape centered on the National Public Registry of Voluntary Carbon Credits (Registro nazionale dei crediti di carbonio volontari) established through an interministerial decree signed by the Minister of Agriculture, Food Sovereignty, and Forestry (MASAF) and the Minister of Environment and Energy Security (MASE).[1] This landmark initiative[2] establishes Italy as the first European Union country to operationalize a national forestry carbon registry under the framework of the EU's Carbon Removal and Carbon Farming (CRCF) Regulation 2024/3012, which entered into force on December 6, 2024.[3]

As of December 2025, Italy's project-based carbon credit market (PCCM) is characterized by a voluntary, forestry-focused, government-backed crediting standard with no compliance linkage to the EU Emissions Trading System (EU ETS). The registry, assigned to the Council for Agricultural Research and Analysis of Agricultural Economics (Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria [CREA])[4] as the managing authority, is expected to become fully operational by 2026[5] once MASAF finalizes the implementation procedures through a subsequent decree.[6] Credits generated from January 1, 2021, onward may be registered retroactively, provided they comply with the guidelines and are consistent with EU Regulation 2018/841 (LULUCF) and the Paris Agreement.[7]

The Italian framework is explicitly aligned with the European Green Deal, the Paris Agreement, and the EU CRCF Regulation,[8] positioning Italy's voluntary carbon market as a transparent, credible, and nationally regulated system to channel private investment into nature-based climate solutions. The guidelines currently cover only the forestry section, with the agricultural section still under development, reflecting Italy's phased approach to building a comprehensive market infrastructure. As of late 2025, approximately 90 percent of carbon credits purchased in Italy are sourced from abroad,[9] underscoring the significant domestic supply gap the new registry aims to address.

On the demand side, Italy has moved decisively to combat greenwashing through a legislative decree adopted in November 2025[10] that transposes EU Directive 2024/825,[11] making it illegal to use vague environmental claims such as "carbon neutral" or "zero impact" without clear, verifiable evidence. This regulation, enforced by the Italian Competition Authority (Autorità Garante della Concorrenza e del Mercato [AGCM]),[12] grants direct power to impose sanctions for unsubstantiated green claims, including those based on low-quality carbon offsets.

I. Supply-Side Regulations

Italy operates a government-backed, voluntary forestry carbon crediting program through the National Registry, with supply-side rules governed by the Guidelines for the Implementation of the National Public Registry of Voluntary Carbon Credits—Forestry Section, approved via the 2025 Interministerial Decree.[13] These guidelines define eligibility, additionality, quantification, verification, and issuance procedures for forest-based carbon projects in Italy, establishing a foundation for a transparent, high-integrity voluntary carbon market that complements but does not integrate with Italy's participation in the EU ETS.[14]

A. Regulatory Framework

1. **Market Classification:**

- Italy's PCCM supply is classified as a voluntary market for carbon credits generated by non-obligated forest and agricultural landowners, operators, and managers. The national registry is designed exclusively for voluntary carbon credits and is not linked to compliance markets such as the EU ETS or the International Civil Aviation Organization's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).[15]

- Projects registered under the guidelines generate verified forest carbon credits representing one ton of carbon dioxide (CO_2) equivalent sequestered or avoided through eligible forestry activities. These credits may be sold on the national voluntary market to companies, public administrations, and citizens seeking to offset their emissions or support climate action, but they cannot be used for EU ETS compliance or CORSIA offsetting.[16]

- The guidelines currently address only the forestry section, with eligible activities limited to forest management, afforestation, reforestation, agroforestry, timber forestry, and harvested wood products (HWP). The agricultural section is pending technical reviews and will be issued through future regulatory instruments.[17]

2. **Regulatory Status:**

The Italian PCCM operates under a multi-tiered statutory and administrative framework:

- *Primary Legislation/Statutory Authority:* Decree-Law No. 13 of February 24, 2023, converted by Law No. 41 of April 21, 2023, Article 45,[18] provides the statutory basis for the establishment of the National Public Registry of Voluntary Carbon Credits for the agricultural and forestry sectors. This law authorizes the Ministers of Agriculture and Environment to adopt guidelines defining criteria, rules, and procedures for the generation, accounting, certification, and transaction of voluntary carbon credits.

- *Implementing Regulation Binding Guidelines:* The Interministerial Decree of October 15, 2025, signed by MASAF and MASE,[19] adopts the Guidelines for the Implementation of the National Public Registry of Voluntary Carbon Credits—Forestry Section.[20] These guidelines are formally binding on project operators, certification bodies, and registry participants, establishing detailed requirements for project eligibility, additionality, quantification, monitoring, verification, and credit issuance.
- *Operational Procedures/Forthcoming Decree:* The registry will become fully operational only after the publication of procedures and modalities for registration, updating, and control of credits, which are currently being drafted and will be issued through a subsequent decree by MASAF. This decree will specify technical implementation, data management, integration with national forestry information systems, and credit transaction protocols.[21]
- *EU Regulatory Alignment:* The Italian framework is explicitly designed to align with EU CRCF Regulation 2024/3012,[22] which establishes the first EU-wide voluntary framework for certifying carbon removals, carbon farming, and carbon storage in products. The CRCF entered into force on December 6, 2024, and requires member states to implement certification methodologies and recognition procedures by 2026–2028.[23] Italy's guidelines are also consistent with LULUCF and the Paris Agreement.

The regulatory framework is therefore best characterized as a hybrid of statutory law, binding administrative guidelines, and EU-aligned voluntary standards, with legally enforceable obligations once a project is registered.

3. **Key Authorities:** Italy's PCCM is centrally operated by CREA, which manages the public register (referred to as "the register" hereafter) of voluntary agroforestry carbon credits. CREA is responsible for operating the digital platform and online registry system; reviewing and approving project documentation and certification reports; assessing consistency with guidelines; assigning unique serial numbers to credits; coordinating with Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), regional authorities, Sistema Informativo Agricolo Nazionale (SIAN), and Sistema Informativo Nazionale delle Foreste (SINFor); and enforcing sanctions for fraud, misrepresentation, or non-compliance. CREA operates within a coordinated network of national authorities, research institutions, and accreditation bodies:
    - *MASAF:* Co-lead authority for the national registry, responsible for policy design, guidelines approval, and coordination with regional authorities on forest management and carbon projects.
    - *MASE:* Co-lead authority for the registry, responsible for climate policy, environmental

safeguards, alignment with EU CRCF and Paris Agreement frameworks, and potential designation as the national designated authority (NDA) for Article 6 of the Paris Agreement.

- *Accredia (Italian National Accreditation Body):* Accredits independent certification and inspection bodies that validate and verify forest carbon projects under ISO 17029 (validation and verification bodies) and ISO 14065 (requirements for greenhouse gas [GHG] validation and verification bodies). It also defines and publishes the accreditation procedure and related requirements for the certification bodies.[24]
- *The Italian Institute for Environmental Protection and Research (ISPRA):* Provides environmental data, GHG inventory coordination, and technical support for registry integration and national reporting under the United Nations Framework Convention on Climate Change and EU obligations.[25]
- *Italian Competition Authority (AGCM)*[26]*:* Enforces consumer protection law, including provisions against misleading environmental claims and greenwashing under the Italian Consumer Code, as amended by the November 2025 legislative decree, transposing EU Directive 2024/825.

4. **Sanctions:** Italy's Public Registry of Voluntary Carbon Credits, operated by CREA, enforces integrity primarily through registry-based controls and mandatory compensation mechanisms rather than punitive administrative fines. Credits are single-use, non-resalable to third parties, and must be canceled (retired) upon sale; if carbon storage is not maintained at the end of the project or monitoring period, the corresponding credits are canceled from the registry unless new certification demonstrates continued storage.[27] Projects are subject to a mandatory buffer reserve determined by risk analysis (15–40 percent for land-based forestry activities; 5–10 percent for long-lived wood products).[28] When reversals due to natural incidents, such as wildfires, floods, etc., exceed the buffer, the guidelines require a temporary cessation of credit sales until sequestration levels that existed prior to the disorder are restored. In cases of voluntary non-compliance, such as land sale or project discontinuation, the proponent is sanctioned through a mandatory compensation requirement to purchase an equivalent quantity of credits to replace those lost. CREA manages non-conformities and double-counting controls through eligibility checks, verification of certification audits, and registry oversight. Projects automatically lapse if planning instruments are not approved by competent authorities within two years.[29]

B. Credit Generation Standards

1. **Eligible Activities:** Eligible project types are defined by the government-backed National Public Registry of Voluntary Carbon Credits. This registry covers activities that generate removals

through biomass growth and soil carbon pools, including improved forest management (*Gestione Forestale Sostenibile*, generating removals through additional silvicultural commitments that is, practices related to the cultivation and management of forest trees), afforestation and reforestation (restoring cover on temporarily unstocked land or planting on non-forest land), arboriculture for wood (*arboricoltura da legno*), and agroforestry (silvo-arable or silvo-pastoral systems).[30] Uniquely, the scheme also includes HWP derived from national timber with a lifespan exceeding 35 years. While the registry is legally structured to include an agricultural section for soil carbon sequestration, specific guidelines for agricultural practices are pending a subsequent decree. No other project categories (e.g., renewable energy or industrial fugitives) are currently eligible.[31]

2. **Methodology Framework:** The Italian regulations mandate a formal methodology framework rooted in the Intergovernmental Panel on Climate Change (IPCC) 2006 Guidelines (Tier 2 minimum).[32] Projects must demonstrate additionality through a triple test (legal, environmental, and financial) to prove activities go beyond mandatory requirements and economic viability without credit revenue. Baseline determination relies on regional forestry regulations[33] or Forest Europe criteria, setting a business-as-usual (BAU) scenario against which removal is measured. Permanence is secured through minimum project durations (20 years for forestry, 35 years for wood products) and a mandatory risk buffer (15–40 percent for forestry, 5–10 percent for wood products) determined by a specific risk analysis (fire, climate, financial). Leakage is explicitly accounted for in the carbon calculation formula within GHG deduction, which captures all project-related GHG emissions (including CO_2, methane [CH_4], and nitrous oxide [N_2O]), both inside and outside the project boundary from project start to completion.[34]

3. **Measurement, Reporting, and Verification Requirements:** Validation and verification are conducted by an independent external certification body (OCE),[35] which must be independent of the project developer. The Italian code requires OCEs to be accredited by Accredia.[36] For HWP, the carbon footprint must comply with Norma UNI 14067.[37] Verification audits are mandatory within the first two years and subsequently at intervals not exceeding five years.

4. **Registry System:** The National Public Registry of Voluntary Carbon Credits is operated publicly by CREA.[38] It functions within SIAN[39] to ensure alignment with national land data. The registry handles the serialization of credits (assigning a unique digital identification code), prevents double counting by cross-referencing local and private registries, and manages the cancellation of credits upon sale (as credits are single-use and non-resalable).

C. Integrity Principles

1. **Additionality Tests:** The National Public Registry requires projects to demonstrate additionality by passing a formal triple test to ensure activities go beyond standard management and legal obligations.[40] The legal or normative test ensures projects do not involve activities that are mandatory under current regulations, requiring a management approach that is "closer to nature" than legally required. The environmental additionality test mandates that the effective carbon absorption must exceed the baseline scenario, calculated net of any negative externalities. The investment test (financial additionality) requires proof that the project would not be economically sustainable without the financial contribution derived from the sale of carbon credits. For projects receiving public funding, financial additionality is strictly conditional: Public support must not exceed 85 percent of the total cost, or the project must maintain commitments beyond the period required by the public subsidy. These tests are designed to align with the QU.A.L.ITY criteria (quantification, additionality, long-term storage, and sustainability)[41] and IPCC guidelines.

2. **Permanence Safeguards:** The registry mandates strict permanence safeguards to manage reversal risks through minimum duration commitments and a mandatory risk buffer. Land-based forestry and agroforestry projects require a minimum commitment period of 20 years, while HWP requires a minimum life cycle of 35 years. To address non-permanence, projects must set aside a buffer of credits determined by a specific risk analysis (covering fire, pests, climate, and financial risks): 15–40 percent of total credits for forestry activities and 5–10 percent for wood products.[42] In the event of unintentional reversals (natural disturbances) exceeding the buffer, credit sales are suspended until carbon stocks are restored; for voluntary reversals (e.g., land sale or project termination), the proponent must compensate by purchasing an equivalent quantity of credits or realizing a new project.[43]

3. **Quantification Standards:** Project-level removals must be quantified using methodologies consistent with the Guidelines for National Greenhouse Gas Inventories, utilizing at least a Tier 2 approach (specific local data) rather than generic estimates. The registry mandates a specific calculation formula (Crediti di Carbonio Generati [CCG])[44] that nets the total carbon absorption against the baseline scenario (based on regional forestry regulations or BAU) and deducts leakage (GHG emissions) and the mandatory buffer. For wood products, quantification relies on carbon footprint analysis in accordance with ISO 14067 standards. Integrity is ensured through mandatory validation and verification by OCE, which is Accredia-accredited,[45] ensuring compliance with European accreditation standards rather than solely ISO 14065.

4. **Double-Counting Prevention:** The regulations explicitly mandate checks to avoid "double selling, double certification, or double declarations," ensuring that the same carbon absorption

is not counted multiple times within the market. To achieve this, CREA, supported by OCE,[46] conducts cross-checks to verify that credits are not already registered in other public local registries or private registries managed by intermediaries. Furthermore, the registry interacts with SIAN[47] and ISPRA to ensure the consistency of territorial data.

D. Sustainable Development

1. **Co-Benefits:** Italian regulations mandate that projects demonstrate a neutral or positive impact on environmental and economic sustainability to be eligible. The project document[48] requires a specific assessment of impacts on biodiversity (projects must not compromise conservation and should ideally generate a net gain by restoring habitats), water resources (preserving quantity and quality of aquifers), and pollution control. Regarding social and economic outcomes, the regulations include a unique mechanism supporting rural economies: At least 20 percent[49] of the revenue generated from credit sales must be reinvested into the project or used for the general management, protection, and valorization of the local forestry patrimony. Additionally, projects must implement a communication program to engage the local community.

2. **Net-Zero Compatibility:** Italy's PCCM is embedded within EU climate legislation and national climate strategies. Italy is legally committed to: (1) contributing to the EU's 55 percent emissions reduction below 1990 levels by 2030,[50] (2) achieving 43.7 percent emissions reduction in Effort Sharing Regulation sectors by 2030 (relative to 2005 levels),[51] and (3) achieving climate neutrality by 2050 under the European Climate Law (Regulation 2021/1119).[52] Post-2050, the EU must achieve net negative emissions, requiring carbon removals to exceed residual emissions. The regulations explicitly state that while Verified Carbon Credits (VCCs) are for the voluntary market and cannot be used for EU ETS or CORSIA compliance, the carbon removals generated contribute to the achievement of national objectives for GHG absorption. To ensure this alignment, the registry interacts directly with the National Inventory of Forests and Carbon Sinks[53] managed by ISPRA.[54] This ensures that voluntary activities are accounted for within Italy's international climate obligations (the Paris Agreement) and align with the European Climate Law and the National Forestry Strategy to promote carbon farming and negative emissions.

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary Claims:* Italian companies, public administrations, financial institutions, and

individuals may voluntarily purchase and retire forest carbon credits issued under the registry for purposes such as environmental, social, and governance (ESG) reporting and disclosure, corporate social responsibility programs, climate finance contributions to support Italian forestry and rural development, and national reduction target efforts. Credits must be retired in the registry to support any voluntary claim. Retirement is the only mechanism by which a buyer can demonstrate that a credit has been used and is no longer available for sale or reclamation.[55]

- *Compliance Integration:* Italian forest carbon credits cannot be used for EU ETS compliance or CORSIA offsetting.[56]
- *NDC Alignment:* Emission reductions and removals from Italian forestry projects are accounted for within Italy's national GHG inventory and contribute to Italy's nationally determined contribution (NDC) under the Paris Agreement. Italy does not apply corresponding adjustments to voluntary credit purchases or retirements from domestic projects, meaning that the underlying mitigation continues to count toward Italy's NDC rather than being transferred to the private buyer's climate accounting. If Italy operationalizes Article 6 of the Paris Agreement for international transfers, Italian credits could be authorized for export to other countries, with corresponding adjustments applied to prevent double counting across countries' NDCs.[57]

2. **Regulatory Status:**

- *No Compliance Use:* There is no legal requirement for Italian companies to purchase or retire carbon credits. Participation in the voluntary carbon market is entirely discretionary, though companies may choose to use credits as part of their climate strategies, ESG commitments, or science-based targets.
- *Voluntary Use:* Corporate use of voluntary carbon credits is not legally mandated but is governed by the following:
  - *Registry Terms and Conditions:* Credits may only be retired by account holders who have accepted CREA's registry terms and conditions.[58]
  - *Consumer Protection Law:* The Italian Consumer Code (*Codice del Consumo*),[59] as amended by the Legislative Decree of November 2025, transposing EU Directive 2024/825, prohibits misleading environmental claims and requires that claims such as "carbon neutral" or "zero impact" be supported by clear, verifiable evidence.
  - *AGCM Enforcement:* The Italian Competition Authority has direct power to investigate

and sanction companies for greenwashing and misleading environmental marketing.[60]

3. **Oversight Bodies:**
    - *MASAF:* Co-lead authority for the national registry, responsible for policy design, guidelines approval, and coordination with regional authorities on forest management and carbon projects.
    - *MASE:* Co-lead authority for the registry, responsible for climate policy, environmental safeguards, alignment with EU CRCF and Paris Agreement frameworks, and potential designation as the NDA for Article 6 of the Paris Agreement.
    - *CREA:*[61] Designated as the registry operator and managing authority, CREA is responsible for operating the digital platform and online registry system; reviewing and approving project documentation and certification reports; assessing consistency with guidelines; assigning unique serial numbers to credits; coordinating with ISPRA, regional authorities, SIAN, and SINFor; and enforcing sanctions for fraud, misrepresentation, or non-compliance
    - *AGCM:*[62] Enforces consumer protection law, including provisions against misleading environmental claims and greenwashing under the Italian Consumer Code, as amended by the November 2025 Legislative Decree, transposing EU Directive 2024/825.
4. **Standards Integration:** Italy has not formally mandated the adoption of international voluntary carbon market standards such as the Science Based Targets initiative (SBTi), the Voluntary Carbon Markets Integrity Initiative, or the Integrity Council for the Voluntary Carbon Market.
5. **Enforcement Mechanisms:** Credits used for voluntary claims must be permanently retired in the CREA registry and cannot be resold or reclaimed.[63] The Legislative Decree of November 2025, transposing EU Directive 2024/825,[64] makes it illegal to use vague environmental claims such as "carbon neutral" or "zero impact" without clear, verifiable evidence. AGCM enforces these provisions with the power to investigate companies, issue cease-and-desist orders, impose administrative fines (up to several million euros),[65] and require corrective disclosures. Under the Italian Consumer Code, misleading environmental claims are classified as unfair commercial practices, exposing companies to AGCM sanctions, reputational damage, and civil litigation.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** The guidelines impose a strict mitigation hierarchy—the MERC approach (Misurare, Evitare, Ridurre, Compensare, which translates to Measure, Avoid, Reduce, Compensate)[66]—for buyers wishing to purchase and register credits. CREA is required to verify

that the buyer possesses a "coherent system of management and reduction of emissions" certified by an independent body. This verification must confirm adherence to the MERC approach, which dictates the following chronological order of actions:

- Measure (*Misurare*): Quantify the carbon footprint based on IPCC 2006 Guidelines for National Greenhouse Gas Inventories.
- Avoid (*Evitare*): Implement strategies to prevent GHG emissions.
- Reduce (*Ridurre*): Actively reduce existing emissions.
- Compensate (*Compensare*): Use carbon credits only for the residual emissions that could not be reduced or avoided.

2. **Scope Coverage:** While the Italian regulations do not explicitly define eligibility by specific emission scopes (Scope 1, 2, or 3), they strictly regulate coverage through a mandatory mitigation hierarchy and specific market exclusions. The use of voluntary credits is legally restricted to offsetting only residual emissions (*emissioni rimanenti*) that remain after a buyer has rigorously applied the MERC approach. Furthermore, the regulations explicitly prohibit the use of these credits for compliance in mandatory regulatory markets, specifically the EU ETS and CORSIA, ensuring they serve strictly voluntary climate objectives rather than replacing mandatory abatement obligations.
3. **Quality Standards:** Credits must be issued under the national registry operated by CREA and validated and verified by Accredia-accredited bodies under ISO 14065 standards. Credits must represent real, additional, permanent, and verifiable carbon sequestration or emissions reductions as defined in the guidelines. Companies must demonstrate that credits are: (1) registered in the national registry with unique serial numbers, (2) verified by an independent certification body, (3) retired permanently in the registry to support claims, and (4) not double counted or used for multiple purposes. The AGCM has sanctioned companies for using unreliable or low-quality carbon offsets, and companies using credits from unverified sources or unregistered projects, or with non-transparent methodologies, face a high risk of enforcement action.
4. **Accounting Treatment:** The CREA-operated national registry serves as the sole official ledger for Italian forest carbon credits, recording all issuances, transfers, retirements, and cancellations. Italian companies must separately disclose gross emissions and credit use in sustainability reporting; no netting is permitted that obscures actual emissions profiles. Under the EU Corporate Sustainability Reporting Directive (CSRD),[67] Italian-listed companies must disclose climate targets, progress, and the role of carbon credits in achieving targets. Italy has not issued specific accounting guidance for voluntary carbon credits; companies apply Italian

generally accepted accounting principles or International Financial Reporting Standards, treating credits as intangible assets, inventory, or expense, depending on use.

C. Transparency and Assurance

1. **Public Reporting:** The CREA Registry is publicly accessible online, providing visibility into project-level data (location, methodology, certification body), credit issuance (vintage, quantity, serial numbers), transfers, retirements (date, purpose, claimant optional), and cancellations (reason, date, affected parties). Italian companies are not legally required to disclose carbon credit use unless they make environmental claims or are subject to EU CSRD. Under EU CSRD,[68] Italian-listed companies and large companies meeting thresholds must disclose Scope 1, 2, and 3 emissions, climate targets and progress, and the role of carbon credits in achieving targets (if material). Companies making carbon neutrality or net-zero claims must substantiate them with verifiable evidence: registry retirement records, certification reports from Accredia-accredited bodies, and transparent accounting of gross emissions and credits used.

2. **Third-Party Verification:** Italy does not impose a separate mandatory assurance requirement for corporate buyers of voluntary carbon credits. However, companies subject to EU CSRD must obtain limited assurance (progressing to reasonable assurance in later years) on their sustainability reports, including disclosures of carbon credit use. Companies making public environmental claims are subject to AGCM investigation, which may include requests for documentation, expert review, and forensic analysis of offset claims.

3. **Science-Based Targets:** Italy has no legal requirement for companies to receive SBTi validation.

4. **Policy Advocacy:** There are no mandatory buy-side requirements for Italian companies to purchase a minimum volume or type of carbon credits. Demand for voluntary carbon credits is entirely discretionary.

D. Market Integrity Protection

1. **Anti-Greenwashing:** Italy has enacted strict anti-greenwashing regulations through the Legislative Decree of November 2025, transposing EU Directive 2024/825, making it illegal to use vague environmental claims like "carbon neutral," "zero impact," "eco-friendly," "CO_2 impact zero," or claims confusing offsetting with reduction without clear, verifiable evidence. Companies must provide transparent evidence with clear, comparable, verifiable data; transparent disclosure of the carbon credits' role; registry retirement records; and certification by accredited bodies. AGCM enforces the regulations with direct power to investigate, issue cease-and-desist orders, impose administrative fines (up to several million euros), require

corrective disclosures, and refer fraud to criminal authorities.[69]

2. **Co-Benefits Delivery:** Italy has no legal requirement for buyers or users of carbon credits to demonstrate co-benefit delivery. However,
   - Project proponents must document and verify co-benefits (biodiversity, water quality, rural development) during project validation.
   - Buyers may voluntarily disclose co-benefits associated with credits they purchase to enhance the credibility of their climate claims.
   - The EU CRCF Regulation encourages recognition of co-benefits and sustainable development outcomes, which may become a market differentiator for high-quality Italian credits.

III. Market-Side Regulations

Italy's voluntary carbon market operates as a decentralized, over-the-counter (OTC) market with no central exchange for forestry carbon credits. Market infrastructure is centered on the CREA-operated national registry, which serves as the authoritative ledger for all credit transactions.

A. Infrastructure Framework

1. **Market Structure:**

   Decentralized OTC market:

   - Italian forest carbon credits are traded bilaterally between sellers (project proponents) and buyers (companies, public administrations, individuals) through private negotiations.
   - There is no centralized exchange or trading platform for voluntary carbon credits in Italy.
   - Price discovery occurs through bilateral agreements; however, the seller must inform CREA when its credits are available for sale and at what price.

   No derivatives market: As of April 2026, there is no derivatives market (futures, options, swaps) for Italian forest carbon credits. The market is entirely spot-based, with credits delivered immediately upon payment.

   Separation from EU ETS: Italy participates in the EU ETS, which operates as a separate compliance market for allowances (EUAs) covering power generation, industrial sectors, and aviation. Italian forest carbon credits cannot be used for EU ETS compliance, and the two markets do not interact.

2. **Registry Operations:** The national registry will function as the mandatory infrastructure for all market transactions and claims validation once operational in 2026. Registry account holders will be legally required to retire (withdraw) credits in the registry only after their sale to support any voluntary climate claims, with retirement serving as the sole mechanism for demonstrating legitimate credit use. The registry's publicly accessible online platform will enable third-party verification of corporate climate claims, allowing regulators (particularly AGCM),[70] consumers, and civil society to verify that retired credits correspond to public environmental claims, thereby preventing greenwashing.

3. **Data Standards:** Italy has not yet established dedicated cross-market data standards or governance frameworks from a market-side regulatory perspective.

B. Trading and Participation

1. **Eligibility Rules:** From a market-side regulatory perspective, Italy's voluntary carbon market currently has minimal formal eligibility or participation restrictions codified in binding regulations. The national registry guidelines require only that account holders accept registry terms and conditions and comply with Know Your Customer and Anti-Money Laundering requirements. Eligible participants include project proponents (forest and agricultural landowners, public and private managers, municipalities, aggregators), corporate buyers (Italian and international companies), public administrations, financial institutions, and individuals.

2. **Trading Mechanisms:** As of April 2026, Italian forest carbon credits issued under the national registry could not be actively traded because the registry was not yet fully operational. Implementation procedures are still being finalized and will be completed through a forthcoming decree by MASAF in 2026. However, the regulatory framework anticipates that once operational, trading will occur through bilateral OTC transactions between sellers (project proponents, credit owners) and buyers, with no standardized contract, central trading platform, or organized exchange.[71]

3. **Settlement Systems:** Once the registry becomes fully operational in 2026,[72] settlement of Italian forest carbon credit transactions will be completed through electronic transfer of units within the registry, which will function as a serialized ledger rather than a trading venue or central counterparty. The registry will record issuance, transfers, buffer allocations, cancellations, and retirements, with each credit carrying a unique serial number and project vintage linkage. Both parties must maintain active registry accounts to complete electronic settlement.

4. **Price Discovery:** Italy has no mandatory transaction-level price reporting for forest carbon credits and has not established indicative national price benchmarks. Price discovery will rely

entirely on bilateral OTC negotiations between project proponents, buyers, and aggregators once the market becomes operational in 2026. As of December 2025, no official reference prices for Italian forest carbon credits had been published. While the market currently relies on bilateral OTC negotiations for price discovery, CREA produces an annual market monitoring report detailing average sales prices to provide market transparency.[73]

5. **Oversight Authority:**

   - *CREA:*[74] Designated as the registry operator and managing authority.
   - *AGCM:*[75] Enforces consumer protection law, including provisions against misleading environmental claims and greenwashing under the Italian Consumer Code, as amended by the November 2025 Legislative Decree, transposing EU Directive 2024/825.

6. **Legal Classification:** Carbon credits issued under the Italian national registry are electronic, registry-based instruments with no physical form. Their legal status is grounded in registry terms, program rules, and international guidance rather than a dedicated statutory definition under Italian law.

   Italy has not issued specific accounting or VAT guidance for voluntary carbon credits.

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** The national registry guidelines[76] codify controls to prevent double issuance and double counting: unique serial numbers for each credit, project exclusivity rules (one program only), and public disclosure of all transactions. Accredia accreditation standards (ISO 17029, ISO 14065)[77] are binding requirements for all certification bodies; CREA has statutory authority to suspend or delist bodies for inadequate verification.[78] Fraudulent documentation, false verification reports, and deliberate misrepresentation are prohibited under the guidelines and trigger mandatory sanctions: credit cancellation, account suspension, de-registration, criminal liability under the Italian Criminal Code, and civil restitution.

2. **Transparency and Reporting Requirements:** The national public registry is a mandatory, open-access digital platform designed to ensure full market visibility by displaying project georeferencing, credit issuance, and retirement records to prevent double counting. Unlike markets with optional disclosure, the Italian regulations strictly enforce price transparency: Proponents are legally required to declare listing prices to the registry operator and must submit full financial transaction details, including the specific monetary quantification, upon the conclusion of any sale. Corporate claims must be substantiated through these registry records, the validity of which is conditional upon CREA's verification that the buyer has satisfied the

mandatory MERC[79] approach.[80]

D. Financial and Cross-border Integration

1. **Financial Regulation Integration:**
    - Italian forest carbon credits (VCCs)[81] are not classified as financial products by default under Italian law. They are best understood as intangible assets or registry-based instruments.
    - If the VCCs are structured as investment products or collective investment schemes, the activity may fall under Italian Companies and Exchange Commission (Commissione Nazionale per le Società e la Borsa) oversight and require authorization.
    - Financial intermediaries offering carbon credit–linked investment products must comply with Italian and EU financial services regulations.
    - Recent legislation, notably Legislative Decree No. 192/2024 (Agricultural Tax Reform), integrates carbon credits into the framework of agricultural activities, offering tax advantages for companies generating credits through carbon farming. As of 2025, revenue from the sale of certified carbon credits derived from cultivation, livestock, or forestry activities may be included in agricultural income (assessed on a cadastral basis) up to the limit of the consideration received.[82]
2. **Cross-Border Trading Framework:**
    - As of April 2026, VCCs are exclusively for use in the national voluntary market. These VCCs cannot be exported to other countries or used for either international compliance obligations or for EU ETS compliance or CORSIA offsetting.
    - Italy has not yet operationalized Article 6 of the Paris Agreement for international transfers of voluntary carbon credits.
    - In June 2025, Italy joined France and other EU countries in urging the European Union to recognize international carbon credits under Article 6 of the Paris Agreement.[83]

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** CREA is finalizing implementation procedures for the national registry, with full operational launch expected in 2026 once MASAF issues a decree specifying registration, updating, and control modalities.[84] CREA's online digital platform will integrate with SIAN, SINFor, ISPRA, and regional forestry databases to enable project registration, credit issuance, transaction management, georeferencing, and double-registration prevention.[85] Italy has

not announced plans to establish a centralized exchange or trading platform; the market is expected to remain decentralized and OTC-based.

2. **International Cooperation:** Italy is exploring Article 6 operationalization to enable international transfers of carbon credits with corresponding adjustments, with MASE expected to serve as the NDA for Article 6. The European Commission must assess CRCF–Article 6 alignment by July 31, 2026.[86] If alignment is achieved, Italian credits could become eligible for international transfer under Article 6. Italy is participating in a Mediterranean Carbon Capture and Storage Strategic Plan with France and Greece,[87] including ratification of amendments to Article 6 of the London Protocol to enable transboundary transport of CO_2.

3. **Regulatory Evolution:** The agricultural section of the national registry is under development, with methodologies for soil carbon sequestration, improved agricultural practices, and carbon farming pending technical reviews by CREA.[88] The EU Commission is expected to adopt carbon farming methodologies by April 2026, following public consultation in January and February 2026; Italy will update its guidelines to incorporate these methodologies once adopted. The EU CRCF Regulation requires the European Commission to establish EU certification methodologies through delegated acts; permanent removal methodologies (e.g., biochar, enhanced weathering, direct air carbon capture) are under development with formal adoption expected in early 2026. Italy's guidelines are designed to be forward-compatible with these EU methodologies. The AGCM is expected to continue and intensify enforcement against unsubstantiated environmental claims involving carbon offsets.[89] Such enforcement will be further strengthened by Italy's Legislative Decree of November 2025, which fully transposes EU Directive 2024/825 into national law a directive that will become applicable across all EU member states by September 27, 2026.[90]

4. **Enforcement Enhancement:** CREA is developing enhanced surveillance and compliance auditing procedures, including real-time transaction monitoring, automated cross-checks with national databases to prevent double registration, and public dashboards for market transparency.[91] The AGCM is expected to issue additional guidance on carbon-neutral and net-zero claims, with increased civil penalties and public sanctions anticipated as investigations into greenwashing intensify.[92] Italy is coordinating with the European Commission and other member states to harmonize enforcement approaches and share best practices on greenwashing, CRCF implementation, and Article 6 integration.[93]

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JAPAN

Overview

Japan's project-based carbon credit market (PCCM) is characterized by a sophisticated, multitiered regulatory structure supporting its climate ambitions and net-zero by 2050 commitment. Grounded in the GX Promotion Act[1]— passed in May 2023 and revised in May 2025—and the Act on Promotion of Global Warming Countermeasures,[2] Japan's system integrates mandatory and voluntary components,[3] robust supply standards, and market infrastructure, with full international cooperation under Article 6 of the Paris Agreement.

Japan's PCCM integrates three principal components:

- *GX-ETS (Green Transformation Emissions Trading Scheme)*, which began as voluntary in 2023, became mandatory in April 2026 for large emitters—exceeding 100,000 tons of carbon dioxide equivalent (tCO_2e) per year—and is enforced for 300–400 entities;
- *J-Credit Scheme*, which covers domestic offset credits for voluntary and compliance use jointly managed by the Ministry of Economy, Trade and Industry (METI), Ministry of Environment (MOE), and Ministry of Agriculture, Forestry and Fisheries (MAFF), covering renewable energy, energy efficiency, waste management, agriculture, forestry, mineralization, and biochar;[4] and
- *Joint Crediting Mechanism (JCM)*, which is a bilateral international crediting program, with 31 partner nations, that is Article 6.2 compliant.[5]

These mechanisms are supported by a national registry infrastructure; mandatory third-party measurement, reporting, and verification (MRV) standards (ISO 14064 and 14065); and public transparency through the Japan Exchange Group (JPX) Carbon Credit Market, which launched in October 2023 to facilitate spot trading of J-Credits and JCM credits.

The GX Promotion Act also introduced GX economy transition bonds worth ¥20 trillion (approximately US$130 billion)[6] over 10 years[7] to mobilize ¥150 trillion (approximately US$960 billion) in green investment by 2032,[8] integrating carbon markets with national fiscal policy. The bond proceeds fund infrastructure for domestic J-Credit projects and bilateral JCM programs, including technology development in hydrogen, ammonia, carbon capture and storage (CCUS), direct air capture (DAC), and other emerging decarbonization pathways. This creates the supply of carbon credits that will circulate through the market.[9]

The legal framework is based on statutory requirements and entails binding compliance from 2026 onward for high-emission sectors, supported by mandatory third-party verification, public registries, and robust enforcement protocols.

I. Supply-Side Regulations

Japan operates a multitiered, statute-anchored PCCM comprising a national emissions trading scheme (GX-ETS), a domestic crediting system (J-Credit), and the bilateral JCM, all embedded in Japan's broader net-zero strategy and Article 6 cooperation. The GX Promotion Act provides the legal backbone for carbon pricing mechanisms (ETS and related surcharges) and financing instruments (GX transition bonds), while implementation details are carried through METI and MOE ordinances, covering program rules, registry, and market infrastructure.

A. Regulatory Framework

1. **Market Classification:** Hybrid (compliance and voluntary):
    - *Compliance:* GX-ETS[10] transitioned from a voluntary phase to mandatory coverage in April 2026 for large emitters; regulated entities may use approved credits (J-Credit and JCM credits) to offset up to 10 percent of their annual emissions for compliance purposes.
    - *Voluntary:* The J-Credit Scheme[11] issues domestic credits for emission reductions and removals across energy, industrial, and land-use sectors; credits can be voluntarily retired or used (within limits) for GX-ETS compliance.
    - *International (Article 6.2):* JCM[12] generates credits from bilateral projects with 31 partner countries as of August 2025. JCM credits are tracked with corresponding adjustments under Article 6.2 of the Paris Agreement and can be used toward both Japan's and partner countries' nationally determined contributions (NDCs).
2. **Regulatory Status:** The GX Promotion Act[13] provides statutory authority for GX-ETS, carbon pricing, and the legal mandate to link compliance with voluntary carbon credits. The Act on Promotion of Global Warming Countermeasures[14] sets obligations for government climate planning, monitoring, and reporting. The J-Credit Scheme is jointly administered by METI, MOE, and MAFF,[15] while JCM is governed by MOE, METI, the Ministry of Foreign Affairs (MOFA), MAFF, and the Ministry of Land, Infrastructure, Transport and Tourism through the JCM Promotion and Utilization Council.[16] Binding compliance for GX-ETS begins April 2026.
3. **Key Authorities:**
    - *METI:* Leads overall GX strategy and GX-ETS design, co-administers J-Credit, and

coordinates JCM implementation.[17]

- *MOE:* Co-administers J-Credit and JCM, and oversees climate planning and environmental policy.[18]
- *MAFF:* Co-administers J-Credit for forestry and land-use sectors.[19]
- *Ministry of Land, Infrastructure, Transport and Tourism:* Supports JCM projects in the transport and infrastructure sectors.[20]
- *MOFA:* Manages bilateral negotiations and agreements for JCM partner countries.[21]
- *JCM Promotion and Utilization Council:* Consists of METI, MOE, MOFA, MAFF, and MLTI.[22]

4. **Sanctions:** In the J-Credit and JCM schemes, fraud, double counting, or non-conformance with MRV requirements can lead to credit cancellation or revocation and public notification in the relevant registries under the applicable ministerial rules.[23]

B. Credit Generation Standards

1. **Eligible Activities:**

   a. *J-Credit:* Activities include renewable power generation (solar, wind, hydro, geothermal, and biomass), energy efficiency improvements (in industries and buildings), fuel switching where applicable, methane abatement and waste management, forestry and land-use activities (afforestation and improved forest management), and emerging carbon dioxide removal (CDR) pathways as methodologies are updated.

      - Biochar application to agricultural soils: Japan's first biochar-based J-Credit was certified in June 2022.[24]
      - Concrete mineralization (CO_2-absorbing concrete): This is a process in which CO_2 is chemically captured and permanently stored within concrete materials during production. The J-Credit methodology IN-006 was approved in August 2025 for this purpose.[25]
      - Direct air capture: As of late 2024, a methodology for DAC projects is under development for the J-Credit Scheme.[26]

   b. *JCM:* This includes technology-transfer projects across 32 partner countries (as of April 2026)[27] spanning electricity supply; industrial efficiency; transport; waste; agriculture, forestry, and other land use (AFOLU); and process emissions.

2. **Methodology Framework:**

   a. *J-Credit:* Methodologies are developed and approved by the J-Credit Scheme Committee

under the joint administration of METI, MOE, and MAFF. Methodologies are periodically revised to strengthen environmental integrity, including revisions in 2025 to tighten baselines, emission factors, and monitoring requirements.

b. *JCM:* Methodologies are developed and approved by each bilateral joint committee, which consists of representatives from Japan and the partner country. All methodologies must be aligned with Article 6.2 of the Paris Agreement, incorporating principles such as additionality verification, conservative baselines, leakage treatment, and corresponding adjustment requirements to prevent double counting.[28]

3. **MRV Requirements:** Independent validation and verification are mandatory (ISO 14064 or 14065 aligned) and must be performed by third-party entities designated by the bilateral joint committee. JCM and J-Credit suppliers must use accredited designated operational entities (e.g., Japan Quality Assurance Organization[29]) under published validation and verification guidelines. Verification frequency and data-quality tests are specified at the methodology level.

4. **Registry System:** J-Credit and JCM maintain publicly searchable life cycle registries[30] tracking issuance, transfer, retirement, and cancellation of each uniquely serialized credit.[31] JCM registries implement Article 6.2 corresponding adjustments to prevent double counting across countries' NDCs.

C. Integrity Principles

1. **Additionality Tests:** Projects must demonstrate that emission reductions or removals exceed the business-as-usual baseline scenario and that the activity would not occur in the absence of carbon credit revenue. J-Credit methodologies specify project-specific additionality tests that may include assessment of financial viability, regulatory barriers, or common practice analysis.[32] JCM projects must pass additionality tests aligned with Article 6.2 requirements,[33] including demonstration that the activity is not legally required, meets financial or technical barrier tests, and involves multi-year financial projections reviewed during validation.

2. **Permanence Safeguards:**

   - *J-Credit and JCM AFOLU:* Forest and land-use projects require ongoing monitoring and reversal compensation. The specific permanence monitoring period is not uniformly specified in J-Credit program rules; however, JCM AFOLU projects typically follow Clean Development Mechanism–equivalent standards with monitoring requirements every two to five years. Reversal risk is managed through project-specific risk assessments and buffer account contributions at the methodology level.

- *GX-ETS CDR eligibility:* For CDR credits to be eligible in GX-ETS compliance, projects must demonstrate permanence typically over 100 years and robust MRV processes. Eligible CDR project types include direct air capture and storage, bioenergy with carbon capture and storage, coastal blue carbon, and CCUS. Buffer and reversal mechanisms are embedded in the respective CDR methodology standards.[34]

3. **Quantification Standards:** Quantification uses conservative baselines below business-as-usual scenarios, with documented leakage accounting and uncertainty management through sampling plans and confidence intervals. Transparent emission factors follow Intergovernmental Panel on Climate Change guidelines. JCM methodologies are publicly posted and approved by bilateral joint committees. J-Credit methodologies are periodically refined, with multiple updates in 2024 and 2025 to strengthen baseline rigor and monitoring.[35]

4. **Double-Counting Prevention:** Unique serialization and single-program registration rules apply. For Article 6.2, corresponding adjustments are applied on international transfers (Japan filed its initial report in October 2025 detailing accounting).

D. Sustainable Development

1. **Co-Benefits:** J-Credit and JCM projects often demonstrate sustainable development goals co-benefits (energy access, air quality, biodiversity, local jobs, tech transfer); while encouraged and reported, co-benefit delivery is not a universal eligibility precondition outside AFOLU safeguards.

2. **Net-Zero Compatibility:** The market is explicitly aligned with 2050 net-zero target, 2030 NDC (46 percent lower emissions vs. 2013, efforts toward 50 percent), and new interim milestones (60 percent emission reduction by 2035; 73 percent by 2040); durable CDR pathways are being integrated for long-term balancing.

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

- *Voluntary claims:* Japan allows project-based credits (J-Credit,[36] JCM credits) to be purchased and retired by corporations, municipalities, and individuals for purposes such as voluntary carbon neutrality; environmental, social, and governance (ESG); corporate social responsibility (CSR) reporting; and other sustainability goals. These claims are supported by the public J-Credit registry and the JCM registry.

- *Compliance integration:* Covered entities in the national GX-ETS must surrender GX allowances for Scope 1 emissions. Up to 10 percent of obligations may be met using approved project-based credits (J-Credit, JCM, and removals), with mandatory compliance starting in April 2026.[37]
- *NDC alignment:* JCM credits (used by Japan and partner countries) and J-Credits officially count toward Japan's Paris Agreement NDC targets. International transfers are only permitted with corresponding adjustments under Article 6 rules.[38]

2. **Regulatory Status:** Legal authorization for credit use stems from the GX Promotion Act and the Act on Promotion of Global Warming Countermeasures. The GX-ETS operational guidelines and ministerial rules define surrender limits, registry procedures, and verification cycles for compliance use. Covered entities may use approved credits (J-Credit and JCM) to offset up to 10 percent of their annual Scope 1 emissions. For voluntary credits, usage is governed by J-Credit and JCM program manuals.
3. **Oversight Bodies:**
   - *METI* leads overall GX strategy and GX-ETS design, co-administers J-Credit, and coordinates JCM implementation.[39]
   - *MOE* co-administers J-Credit and JCM, co-administers NDC alignment, and oversees climate planning and environmental policy.[40]
   - *GX Acceleration Agency (GXA)* oversees GX-ETS registry operation, allowance allocation, enforcement of compliance obligations, and administration of the GX surcharge (from FY2028).[41]
4. **Standards Integration:** For compliance use under the GX-ETS, credits must be issued under government-approved systems (J-Credit or JCM) and must comply with each program's government-issued MRV guidelines. J-Credit and JCM methodologies incorporate principles consistent with ISO 14064-1 (greenhouse gas [GHG] quantification) and ISO 14065 (verification and validation), although these ISO standards are not legally mandated for all credit users.[3] Japan has not formally adopted the Integrity Council for the Voluntary Carbon Market's Core Carbon Principles for compliance or voluntary use; instead, credit quality is determined by national program rules. For internationally transferred JCM credits, accounting follows Article 6.2 requirements, including authorization, corresponding adjustments, and reporting under Japan's initial report and biennial transparency reports.[42]

5. **Enforcement Mechanisms:**

   - *Compliance:* Under the GX-ETS, non-compliance is governed by the amended GX Promotion Act (revised May 2025). Covered entities must surrender allowances equal to their verified emissions. If allowances are insufficient, METI cancels available allowances and imposes a statutory unredeemed-equivalent charge on the remaining shortfall.[43]

   - *Voluntary:* Retirement of credits is recorded in public registries with unique identification numbers and publicly available transaction records, ensuring transparency and preventing double counting. Marketing claims related to voluntary carbon offsets are subject to the Act Against Unjustifiable Premiums and Misleading Representations enforced by the Consumer Affairs Agency. False, unsubstantiated, or materially misleading offset claims may trigger administrative cease-and-desist orders under the Consumer Affairs Agency's authority.[44]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** Japan's official guidelines on the approach to carbon offsetting[45] set out a clear "measure-reduce-offset" sequence for all actors undertaking carbon offsetting. Entities are expected first to recognize their own GHG emissions and implement emission-reduction measures to the greatest extent possible, and the guidelines explicitly state that carbon offsetting must not be used to justify not reducing one's own emissions. For carbon-neutral claims, entities must set targets and plans to minimize emissions and continuously reduce them, and only then use credits to compensate for the remaining, hard-to-abate portion. These principles shape Japan's broader guidance on voluntary credit use and inform the policy context for how credits complement, rather than substitute for, real-economy decarbonization.

2. **Scope Coverage:** The GX-ETS mandates coverage of Scope 1 emissions only for companies emitting more than 100,000 tCO_2e per year (April 2026 onward).[46] Scope 2 and Scope 3 emissions are not covered under mandatory GX-ETS compliance. However, companies may voluntarily report and offset Scope 2 and Scope 3 emissions using J-Credits and JCM credits as part of voluntary climate commitments, ESG reporting, or science-based targets (SBTs) frameworks, with restrictions on credit-usage ratios per SBT guidelines.

3. **Quality Standards:** Only government-approved credits (J-Credit, JCM, removals, concrete mineralization) can be surrendered; credits must meet system MRV and verification requirements.

4. **Accounting Treatment:** Credit use is officially tracked in public registries operated by the Ministry of the Environment (J-Credit registry),[47] the Global Environment Centre Foundation

(JCM registry), and the Japan Exchange Group (JPX Carbon Credit Market registry).[48] All retirements and cancellations are recorded with unique serial numbers and made publicly available. Companies using credits must align their internal accounting records with registry records to ensure accuracy and prevent double counting. For GX-ETS compliance, covered entities must submit verified annual emissions reports to the GX Acceleration Agency, documenting allowance holdings, surrenders, and any credits used to meet compliance obligations of up to 10 percent of annual Scope 1 emissions.

C. Transparency and Assurance

1. **Public Reporting:** GX-ETS participants must publicly disclose annual Scope 1 emissions, allowance holdings, compliance status, and any credits used toward the 10 percent offset limit. GX League members must report emission-reduction targets and progress through the GX League platform. J-Credit[49] and JCM registries[50] publish project-level data, including methodology, issuance volume, retirement records, and project participants, accessible via public databases. The JPX Carbon Credit Market publishes real-time trading data, including daily price movements and transaction volumes.[51]

2. **Third-Party Verification:** J-Credit and JCM credits must undergo independent validation and verification by government-approved third-party entities accredited under each program's MRV guidelines—for example, Japan Quality Assurance Organization and other accredited validators or verifiers designated by MOE and METI. Under the GX-ETS, corporate emissions reports must be verified by accredited GHG verification bodies, while voluntary corporate offset disclosures may be subject to external assurance in line with GX League or corporate ESG reporting practices.

3. **Science-Based Targets:** Adoption of SBTs and alignment with Japan's national net-zero pathway are encouraged under the voluntary GX League framework but not required by law. Participation in GX League involves setting medium- to long-term emissions-reduction targets consistent with Japan's 2050 net-zero goal, and many Japanese corporations voluntarily adopt SBTs or equivalent decarbonization pathways, although this remains outside formal GX-ETS compliance obligations.

4. **Policy Advocacy:** Corporate buyers are expected to disclose voluntary offset use and engage in policy dialogues through the GX League and Japan Climate Leaders' Partnership.

D. Market Integrity Protection

1. **Anti-Greenwashing:** Registry serialization and public retirement data prevent double claims.

Misrepresentation may trigger revocation or consumer protection scrutiny.

2. **Co-Benefits Delivery:** While not a legal requirement for buyers, J-Credit and JCM projects must document sustainable development goals co-benefits during validation, which buyers can reference in voluntary claims.

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** Japan operates an exchange-based spot market for carbon credits as non-financial environmental instruments through the JPX Carbon Credit Market launched on October 11, 2023.[52] JPX lists eligible units, primarily J-Credits, as non-security commodities, with trades executed via call auctions and settled on a T+5 basis (five business days after trade date) through registry-linked delivery.[53] Regional ETS programs (Tokyo and Saitama) continue to operate in parallel and interact with national crediting systems where permitted.

    - *Market-side rules:* Market rules govern participant eligibility (corporations, governments, local governments, and voluntary organizations meeting financial stability and creditworthiness criteria), registry integration for trade settlement (linking J-Credit and GX registries to the JPX trading system for T+5 delivery),[54] price discovery through call auction mechanisms,[55] price limits (plus or minus 90 percent from base price), order types, compliance monitoring, and trade reporting transparency. Block trades are not currently available on the JPX Carbon Credit Market, though they may be introduced in future phases. Spot trading is governed by JPX operating protocols, Tokyo Stock Exchange Carbon Credit Market Participation Terms and Conditions, and oversight from the Financial Services Agency (FSA), METI, and MOE.

2. **Registry Operations:** Japan operates public life cycle registries for its two major project-based crediting systems: the J-Credit registry for domestic credits and the JCM registry System, which is jointly managed by Japan and each partner country for bilateral credits. The JCM registry assigns unique identifiers to all units and records issuance, authorization for Article 6 use, first transfer, subsequent transfers, acquisition, cancellation, and retirement. Japan's Article 6.2 initial report sets out how corresponding adjustments and international transfer records are tracked to ensure compliance with Paris Agreement rules.

3. **Data Standards:** Market and registry documentation requires unique serialization of each credit unit (with distinct serial numbers preventing double issuance), publicly searchable credit records in government-operated registries (J-Credit registry, JCM registry), and registry-based

settlement and retirement with permanent electronic recording. METI's GX League framework and related GX-ETS design documents (developed through the Legal Issues Study Group and GX Implementation Council) establish how credits circulate through the GX Dashboard (for GX League member disclosure), the JPX Carbon Credit Market (for spot trading and price discovery), and integrated registries, ensuring data integrity and transparency.[56]

B. Trading and Participation

1. **Eligibility Rules:** Participation in the JPX Carbon Credit Market requires registration with JPX and compliance with JPX participation terms and conditions.[57] Eligible participants include corporations, financial institutions, government agencies, local governments, and qualified voluntary organizations meeting JPX creditworthiness and financial stability standards.[58] Project-based credits must be issued under an eligible scheme (J-Credit or JCM) and recorded in the respective registry (J-Credit registry or JCM registry) before they can be traded on JPX. Credits must be in the registry participant's account to be offered for sale. Covered entities participating in mandatory compliance programs, the national GX-ETS (mandatory from April 2026 for emitters exceeding 100,000 tCO_2e annually), and regional schemes (Tokyo Metropolitan Government, Saitama Prefecture) must transact in accordance with their respective participation rules, reporting requirements, and surrender deadlines. GX League participants (voluntary corporate coalitions) may also purchase and retire credits on the JPX market, provided they comply with GX League disclosure standards and data-reporting requirements.

2. **Trading Mechanisms:** JPX operates the Carbon Credit Market using a call-auction system with two daily sessions: morning session (8:00 a.m. to 11:30 a.m., with auction execution at 11:30 a.m.) and afternoon session (12:30 p.m. to 3:00 p.m., with auction execution at 3:00 p.m.).[59] Trading follows order-book matching rules with a standardized tick size (minimum price increment) and price-limit bands of plus or minus 90 percent from the reference price to prevent excessive volatility. Settlement occurs on a T+5 basis, with simultaneous registry-linked delivery: Credits are transferred from the seller's J-Credit or GX registry account to the buyer's account upon payment confirmation, ensuring settlement and preventing delivery failure.[60] JCM credits are managed through bilateral registry systems (Japan registry and partner-country registries) and are traded internationally with corresponding adjustment recording to comply with Article 6.2 requirements. Direct JPX trading of JCM credits is not available; instead, JCM credits are used for international offsetting or converted to domestic instruments under specific bilateral agreements.

3. **Settlement Systems:** Trades executed on JPX settle on the sixth business day (T+5)[61] with registry-linked delivery to ensure that only credited units change hands and that retirements or

cancellations are reflected in the registry of record.

4. **Price Discovery:** Price discovery is through exchange auctions and continuous quotes per market rules; the government strategy documents emphasize public price discovery to improve transparency of carbon signals across the economy.

5. **Oversight Authority:** The national GX-ETS is administered by the government through METI and the GX decarbonization promotion agency, which oversee target-setting, compliance, credit-use rules, and reporting. The JPX Carbon Credit Market is operated by the Tokyo Stock Exchange group under its own exchange rules, with market conduct and operational oversight falling under JPX and, at the regulatory perimeter level, the FSA's guidelines for non-securities environmental instruments.

6. **Legal Classification:**

   - *Assigned emission allowances:* Under Japanese law, GX-ETS allowances and most project-based credits (J-Credits and JCM credits) fall within the statutory category of "assigned emission allowances" as defined in Article 2(7)[62] of the Act on Promotion of Global Warming Countermeasures and referenced in the Cabinet Office Ordinance on Financial Instruments Business.[63] These units exist only as electronic entries in government-operated registries (GX , J-Credit, and JCM), each corresponding to 1 tCO_2e of permitted emission (GX allowances) or certified emission reduction or removal (J-Credits and JCM credits).[64] Rights and obligations for allocation, holding, transfer, cancellation, retirement, and compliance use are established under the GX Promotion Act, the Act on Promotion of Global Warming Countermeasures, and ministerial scheme rules.[65] Credits do not become "financial securities" under the Financial Instruments and Exchange Act (FIEA); instead, under FSA guidance,[66] J-Credits, JCM credits, and certain high-integrity voluntary credits are treated as "assigned emission allowances or similar instruments" for the limited purpose of allowing financial institutions to broker or intermediate them.[67] Notably, there is no comprehensive legislation in Japan that specifically regulates carbon credit transactions; in principle, carbon credits can be freely traded within Japan.[68] The Tokyo Stock Exchange's Carbon Credit Market operates as a market separate from its financial instruments markets, even though assigned emission allowances are recognized as a specific category under financial sector regulations.[69]

   - *Inventory:* If J-Credits, JCM credits, or GX-ETS allowances are held for resale (e.g., by traders, brokers, or project aggregators) or to be consumed in producing other goods or services, they are treated as inventory and measured at the lower of cost or net-realizable value.[70]

   - *Intangible assets or other fixed assets:* If J-Credits, JCM credits, or GX-ETS allowances are held

for the entity's own use to offset its emissions as part of a long-term decarbonization strategy (rather than for trading), they meet the definition of an intangible asset or other fixed asset (identifiable, nonmonetary, without physical substance, from which future economic benefits are expected). These are measured at cost, subject to review for impairment.[71]

- *Expense recognition:* When credits or allowances are purchased and immediately surrendered to offset current-period emissions, entities may recognize them as an expense when surrendered, particularly where they do not meet asset-recognition thresholds due to immateriality or where they are acquired solely for immediate compliance use.[72]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** JPX exchange rules prohibit short selling of credits entirely; participants may only sell credits they hold in their registry accounts, preventing naked short positions.[73] Serial-numbered issuance and publicly searchable J-Credit and JCM registries reduce the risk of double counting or double selling. FSA investigates market manipulation and insider trading under securities law; the JPX conducts surveillance of trading conduct and can impose trading halts or participant sanctions; MOE oversees credit scheme integrity and can revoke credit validation or cancel credits for fraudulent project documentation or verification failure; and GXA enforces GX-ETS compliance with statutory penalties for non-compliance.

2. **Transparency and Reporting Requirements:** JPX publishes market information and specifications; JCM and government Article 6 filings show public project information and transfers, retirements, and corresponding adjustment accounting.[74]

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** The JPX Carbon Credit Market operates within the Tokyo Stock Exchange group's established market infrastructure and regulatory framework, including standardized trading rules, participant eligibility vetting, real-time market surveillance, and public disclosure requirements. However, carbon credits are not classified as financial securities under the FIEA; instead, they are treated as "assigned emission allowances"[75] under FSA guidance, subject to exchange rules rather than securities law.

2. **Cross-Border Trading Framework:** The JCM is implemented as a bilateral crediting mechanism under Article 6.2 of the Paris Agreement, establishing cooperative approaches between Japan and 31 partner countries[76] for international transfer of mitigation outcomes. Under Article 6.2, both Japan and the partner country authorize JCM credits and apply corresponding adjustments, an accounting mechanism that adds emissions to the partner country's NDC

inventory and subtracts equivalent emissions from Japan's NDC inventory to prevent double counting when credits are transferred internationally and used toward Japan's NDC. These procedures are detailed in Japan's initial report and the official JCM program documentation issued by MOE, METI, and MOFA.[77]

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** Government road maps for GX-ETS and METI's carbon credit system call for continued registry upgrades, digital MRV experimentation, and expansion of JPX credit products as the market develops.
2. **International Cooperation:** Japan expands JCM partner countries and operationalizes Article 6 through reporting and bilateral committees anchoring cross-border project crediting and transfers.[78]
3. **Regulatory Evolution:** JPX and regulators (FSA, METI, and MOE) are considering future enhancements to the Carbon Credit Market, including potential derivatives products (futures, options), expanded auction mechanisms, and standardized over-the-counter trading infrastructure; however, no official timeline or confirmed road map has been published as of November 2025.
4. **Enforcement Enhancement:** METI, MOE, and JPX are strengthening surveillance, compliance auditing, and market integrity measures in line with global best practice.

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MEXICO

Overview

For nearly two decades, Mexico has hosted carbon projects registered with independent crediting standards and the Clean Development Mechanism (CDM). Most of the credits issued to these projects have been used abroad for voluntary emissions compensation and compliance with Kyoto Protocol targets. With the launch of Mexico's Emissions Trading System (ETS), the role of these projects could change, but this remains to be seen.

Over the last five years, Mexico has established early institutional foundations for carbon market activity through the implementation of a pilot phase for its ETS and the assessment of voluntary carbon market (VCM) potential. The ETS pilot phase, launched in 2020, caps CO_2 emissions from selected sectors and is overseen by the Ministry of Environment and Natural Resources (SEMARNAT) and the Emissions Trading System Committee (COCOSCE). The use of offset credits is expected to be permitted in the operational phase of the ETS as a flexibility option to facilitate compliance. However, detailed rules governing offset eligibility, quality criteria, and use in the operational phase have not been published. As of early 2026, Mexico's ETS remains in a transitional implementation stage following its pilot and transition phases, with regulators and stakeholders anticipating the full operational (compliance) phase and accompanying rules to be finalized and launched later in 2026.

In the meantime, VCM activity exists outside the ETS. A government-commissioned study completed in 2024 by the National Institute of Economy and Climate Change assessed the carbon market's potential in the country, but did not issue formal regulatory recommendations. Additional analytical work is underway, including a study to identify strategic pathways for the agricultural sector's participation in the VCM.[1] Mexico previously maintained national procedures for approving CDM projects under the Kyoto Protocol;[2] however, these frameworks are no longer operational following the wind-down of the CDM and have not been formally repurposed for domestic or voluntary carbon crediting.

Current provisions focus primarily on emissions reporting and verification within the ETS framework, while supply-side, demand-side, and market-side regulations for project-based carbon credit markets (PCCMs) remain largely undeveloped. If the ETS operational phase were to allow limited use of carbon credits for compliance, as contemplated in earlier draft regulations,[3] comprehensive rules—such as eligible activities, methodologies, and carbon crediting standards —would be required to define how credits issued under voluntary registries could be eligible and used for that purpose. As of yet, no binding requirements have been established that govern credit issuance

standards, credit use, accounting treatment, market conduct, or transparency in VCMs. Mexican authorities have acknowledged risks related to double counting and the importance of traceability, including in the context of potential future alignment with Article 6 of the Paris Agreement; however, regulations addressing host country authorization, corresponding adjustments, or the treatment of internationally transferred mitigation outcomes have not been published.

I. Supply-Side Regulations

Mexico's supply-side PCCM framework is informed by the country's engagement with VCMs, the ETS pilot phase regulation signaling the possibility of emissions compensation in the first phase, the carbon tax compensation rules issued by the Ministry of Finance in 2017, and a government-issued study on VCMs. As of April 2026, no binding regulations governing carbon credit issuance were established. The ETS pilot phase applies to mining and extractive activities, industry, and the power sector, with the use of offset credits expected in the operational phase under rules that have not yet been published. The VCM study identifies a broad range of potential credit-issuing activities, including renewable energy, land use, waste management, agriculture, transport, and energy efficiency, but does not establish eligibility criteria or mandatory methodologies. While additionality, permanence, quantification, and double-counting risks are discussed at a conceptual level in government analysis, no official standards, permanence requirements, registry rules, or procedures governing host country authorization and corresponding adjustments under Article 6 have been adopted.

A. Regulatory Framework

1. **Market Classification:** Hybrid (i.e., ETS with planned offset use and voluntary market activity).
2. **Regulatory Status:** Mexico was the first country in Latin America to commence an ETS pilot phase, which occurred in 2020.[4] The use of offset credits is expected to be allowed in the operational phase.[5] A study on VCMs was conducted in 2024, although no formal recommendations were made.[6]
3. **Key Authorities:** Mexico's SEMARNAT and COCOSCE, a dedicated committee within the Mexican federal government, are responsible for drafting regulations for the Mexican ETS,[7] which could eventually determine further guidelines regarding acceptance of carbon credits.
4. **Sanctions:** No penalties have yet been mandated. Further information is expected in the operational phase of the ETS.[8]

B. Credit Generation Standards

1. **Eligible Activities:** Currently, the Mexican ETS pilot phase covers mining and extractive activities

as well as the industry and power sectors.[9] The government study highlights renewable energy, land use, waste management, home and community, chemical processes and manufacturing, energy efficiency, agriculture, and transport as credit-issuing activities in VCM,[10] although there is no official regulation yet on whether all of those will be accepted.

2. **Methodology Framework:** No specific standards are referenced as mandatory or preferred. The government study on VCM outlines where Mexico's current domestic project-based credits are issued and highlights Climate Action Reserve (CAR), Gold Standard, Plan Vivo, and Verra's Verified Carbon Standard (VCS).[11]

3. **MRV Requirements:** Credits traded on the national ETS shall follow an annual self-reporting cadence and be verified by a third party.[12] Eventual offset participation in the market is expected to follow the same rules. The governmental study on VCM reinforces the need to disclose "quality data" with independent verification processes, where the data provided is confirmed to be accurate and meets pre-determined requirements. Verifying organizations are accredited under international standards and approved by the registries where the credits are issued, rather than by Mexican authorities.[13]

4. **Registry System:** Although no official requirements have been established, the government recognizes the need for appropriate tracking, registration, and transparency requirements for carbon credits. These include the appropriate identification, recording, and tracking of mitigation activities, issued credits, and final use, which registries shall conduct.[14] These shall also provide complete and transparent information about accredited mitigation activities in an electronic format accessible to the general public.[15]

C. Integrity Principles

1. **Additionality Tests:** To ensure that additionality principles are met, the government states that the project must not be legally required or part of routine practice; the project must demonstrate that credit revenues are necessary to close financial gaps and enable implementation; and the project description must demonstrate additional benefits that would not occur without the intervention. The implementer may use recognized tools or guidelines to prove additionality, identify alternative scenarios, or analyze barriers, as outlined by the selected methodology and selected standard.[16]

2. **Permanence Safeguards:** There is no official requirement regarding permanence. The governmental study recognizes permanence standards when the generated credits have a similar duration or permanence to the emissions they offset, thereby ensuring their compensatory function. Due to the nature of carbon projects, protocols require all initiatives to

account for the permanence of emission reductions or removals.[17]

3. **Quantification Standards:** No quantification methodologies are officially mandated. The government study emphasizes the role of verification bodies in quantifying reduced or avoided emissions, but does not prescribe specific scientific methods.[18]

4. **Double-Counting Prevention:** The study warns against double counting, describing it as a situation where a greenhouse gas emissions reduction unit is used more than once, either unintentionally or deliberately. This could involve the following: (a) being included in a regulated market inventory and/or (b) being sold to third parties for voluntary or regulated offsetting. This poses risks to national accounting systems under the Paris Agreement as well as voluntary market registries. Preventing double counting requires avoiding any overlap in credit use.[19]

D. Sustainable Development

1. **Co-Benefits:** There are currently no co-benefit requirements.

2. **Net-Zero Compatibility:** There is no mention of net-zero compatibility.

II. Demand-Side Regulations

Draft ETS regulations published for public consultation in 2018 contemplated the use of carbon credits as a flexibility option to meet a portion of compliance obligations (often referenced as up to 10 percent),[20] with indicative limits discussed during the consultation process. However, this flexibility mechanism was not operationalized during the pilot phase, given the design of allowance issuance and allocation, and no implementing rules were adopted. As of April 2026, there were no published requirements addressing mitigation hierarchy, scope eligibility, quality standards, accounting treatment, public disclosure, or alignment with science-based targets, and no government authority has been designated to oversee demand-side credit use. Although the government has indicated that guidance on offset use within the ETS will be provided in the operational phase and has recognized in its VCM study the importance of tracing credit use to national climate objectives, no binding rules or disclosure obligations have been issued.

A. Use Authorization Framework

1. **Applications Allowed:** There is no official guidance for PCCMs at the moment. The government has stated that further guidance on offset use for the Mexican ETS will come once the operational regulations are released.[21]

2. **Regulatory Status:** No official demand-side guidelines or regulations have been released. The government-issued study on VCM potential in Mexico touches upon demand-side applications

for credits, but does not provide any guidance, binding or otherwise.[22]

3. **Oversight Bodies:** There are no predetermined government authorities for demand-side regulations.
4. **Standards Integration:** Guidelines for the integration of credit purchase with standards are not present.
5. **Enforcement Mechanisms:** No enforcement mechanisms are disclosed.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** No regulations on mitigation hierarchy disclosure for credits have been released.
2. **Scope Coverage:** There is no disclosure on restrictions for the scope coverage of offsets.
3. **Quality Standards:** There is no disclosure on quality standards to be followed for credit use. The study conducted by the Mexican government highlights the importance of avoiding double counting and ensuring permanence, additionality, and the purchase of verifiable emissions.[23]
4. **Accounting Treatment:** None related to the demand side has been specified.

C. Transparency and Assurance

1. **Public Reporting:** There is no requirement for demand-side transparency and public disclosure.
2. **Third-Party Verification:** No requirements for the demand side related to third-party verification have been released.
3. **Science-Based Targets:** There is no requirement for the demand side to align with the Science Based Targets initiative.
4. **Policy Advocacy:** There are currently no requirements to link credit use to policy. However, the government recognizes in its VCM study the importance of eventually being able to trace credit use to its nationally determined contribution.[24]

D. Market Integrity Protection

1. **Anti-Greenwashing:** There is no mention of anti-greenwashing measures.
2. **Co-Benefits Delivery:** There is no mention of assurance of co-benefit delivery from the demand side.

III. Market-Side Regulations

Mexico's market-side carbon market infrastructure remains under development, with the government establishing a registry and institutional arrangements for ETS allowance auctions and a private-sector platform, MexiCO2, operating under the Mexican Stock Exchange to facilitate voluntary carbon credit transactions. MexiCO2 supports the trading of credits registered under international standards, such as the UNFCCC's (United Nations Framework Convention on Climate Change) Clean Development Mechanism (CDM), Verra's VCS, CAR, Gold Standard, and Plan Vivo, and is application programming interface (API)–enabled to allow integration with private-sector systems. However, no government-led initiative or regulatory framework has been disclosed to support API-based integration between national registries, ETS infrastructure, or international carbon market systems. No specific regulations govern trading mechanisms, settlement systems, accounting treatment, market supervision, market conduct, or cross-border transfers, including those related to Article 6 of the Paris Agreement.

A. Infrastructure Framework

1. **Market Structure:** The government is developing its registry system and institutional arrangements to permit ETS allowance auctions.[25] An additional private-sector initiative (MexiCO2)[26] under the Mexican Stock Exchange is available to provide a platform for voluntary transitions between private players.
2. **Registry Operations:** MexiCO2 allows for an integrated inventory system that categorizes credits by their status (bought, sold, offset, etc.). The platform is API-enabled, allowing credits to be accessible to buyers worldwide.[27]
3. **Data Standards:** No formats or interoperability measures are required.

B. Trading and Participation

1. **Eligibility Rules:** Credits traded in MexiCO2 must be registered under UNFCCC's CDM, VCS, CAR, Gold Standard, or Plan Vivo.[28] To date, no designated authority has been defined to manage PCCM transactions in the ETS.
2. **Trading Mechanisms:** There are no specific regulations on how offsets will be traded.
3. **Settlement Systems:** There is no specific guidance from the government on settlement systems.
4. **Price Discovery:** The Mexican ETS allowances will be sold through an auction system. It is unclear whether the offsets will follow the same scheme once allowed into the ETS.

5. **Oversight Authority:** Market supervision for PCCM transactions is unclear.
6. **Legal Classification:** There is currently no guidance on the appropriate accounting treatment for carbon credits. SEMARNAT equates a carbon credit to one ton of carbon dioxide equivalent captured, reduced, or avoided.[29]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** There are currently no anti-manipulation or fraud prevention safeguards.
2. **Transparency and Reporting Requirements:** No mandatory disclosure of market data or trading information is required.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** There is currently no integration with securities law or planned regulatory harmonization.
2. **Cross-Border Trading Framework:** There are currently no guidelines for cross-border trading, including potential harmonization with Article 6 transactions.

E. Regulatory Advancement Road Map

1. **Infrastructure Plans:** The MexiCO2 platform is API-enabled and allows for integration with private-sector systems to facilitate carbon credit transactions; however, no government-led initiative or regulatory framework has been disclosed to support API-based integration between national registries, the ETS infrastructure, or international carbon market systems.
2. **International Cooperation:** There are no established bilateral agreements or connections with other registries.
3. **Regulatory Evolution:** There is no disclosure on integration with broader financial markets.
4. **Enforcement Enhancement:** There is no disclosure on market conduct and penalty frameworks.

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RUSSIA

Overview

Russia's project-based carbon credit market (PCCM) has taken shape as a state-anchored but operationally flexible voluntary crediting system under Federal Law No. 296. The legal framework establishes the institutional architecture for carbon credit issuance—defining climate projects and assigning responsibilities for methodology approval, validation, verification, and registry administration—while leaving many market functions to develop through practice and guidance rather than prescriptive regulation. Carbon units are issued following verified project results and recorded in a centralized national registry, which serves as the backbone of the system. This structure provides clarity and legal certainty on the supply side, even as the framework remains intentionally open-ended with respect to eligible activities and methodological evolution.[1]

Alongside the voluntary market, Russia is piloting a regional emissions regulation system in Sakhalin, which—although outside the scope of a national emissions trading system—plays an important signaling role for market design. The Sakhalin system allows regulated entities to use carbon units generated under Law 296 to meet regional quota obligations, and, crucially, both systems rely on the same carbon unit registry for issuance, tracking, and offsetting. This shared infrastructure links voluntary supply with limited compliance demand and demonstrates how the registry is intended to function as a unifying platform across different policy instruments.[2] In parallel, market-side activity is emerging organically, with private infrastructure such as the Saint Petersburg International Mercantile Exchange (SPIMEX) developing auction and over-the-counter (OTC) trading formats for carbon units, suggesting growing transactional confidence despite the absence of detailed statutory trading rules.[3]

Where the framework is least developed is on the demand side. While current rules allow carbon units to be used voluntarily for corporate climate objectives, there is little formal guidance on claims, mitigation hierarchy, scope coverage, or disclosure practices. As participation broadens and secondary trading grows, clearer expectations around how credits may be used and communicated, and how they relate to broader decarbonization pathways, would strengthen market credibility. Looking ahead, publicly stated policy discussions point toward methodology expansion, continued registry and market infrastructure development, and gradual international engagement, including dialogue on Article 6, though no operational authorization or accounting framework has yet been disclosed.[4] The near-term opportunity for supporting the growth of the domestic PCCM lies in consolidating the existing institutional base while progressively adding

demand-side guardrails and international interoperability as the market matures.

I. Supply-Side Regulations

Russia's voluntary carbon market under Law 296 establishes a nationally governed, project-based crediting framework focused on the issuance of carbon units resulting from verified climate projects. Supply-side regulation is centered on methodology approval by the Ministry of Natural Resources and Environment, procedural management by the Ministry of Economic Development, and mandatory third-party validation and verification by bodies accredited through RusAccreditation. Carbon units are issued only following verification of a climate project implementation report and are recorded in a centralized carbon units registry operated by a government-authorized entity. While core measurement, reporting, and verification (MRV) and registry controls are disclosed, the framework does not explicitly codify additionality tests, permanence safeguards, uncertainty management, or conservative crediting rules, nor does it reference international voluntary carbon standards.

A. Regulatory Framework

1. **Market Classification:** Nationally governed voluntary carbon market.
2. **Regulatory Status:** Law 296 introduces elements of a national voluntary offset market resulting from the voluntary implementation of carbon projects. The law details basic requirements for the generation of credits.[5]
3. **Key Authorities:**[6]
    - *Government of the Russian Federation:* Establishes the main directions and regulatory framework for the voluntary crediting mechanism.
    - *Ministry of Economic Development of the Russian Federation:* Carries out operational management of the voluntary crediting mechanism, including approving detailed rules and procedures and setting criteria for climate projects.
    - *Ministry of Natural Resources and Environment of the Russian Federation:* Approves methodologies, including those for the quantitative measurement of greenhouse gas (GHG) emissions.
    - *Federal Service for the Supervision of Natural Resources:* Reviews and verifies certain GHG information submitted by participants in the voluntary crediting mechanism and takes enforcement actions in cases of non-compliance with applicable legislation.

- *Federal Accreditation Service (RusAccreditation):* Accredits validation and verification bodies.
- *Validation bodies:* Independent expert organizations accredited by RusAccreditation perform validation required to qualify projects as a climate project.
- *Federal Service for Supervision of Natural Resources (Rosprirodnadzor):* Acts as the environmental compliance and enforcement body, with authority derived from broader environmental law, not from a carbon market–specific penalty regime.

4. **Sanctions:** In the case of project eligibility refusal, the respective entity that submitted the application may resubmit a revised application within 20 days of its receipt of notice.[7] The Federal Service for Supervision of Natural Resources will "take measures" in response to detected violations,[8] although there is no disclosure of what the penalties are.

B. Credit Generation Standards

1. **Eligible Activities:** The law does not specify a list of eligible activities for credit generation. A methodology developed by Gazprombank (GPB) and Yu. A. Izrael Institute of Global Climate and Ecology (IGCE) has been said to encompass renewable energy and sustainable forest management activities.[9]

2. **Methodology Framework:** No specific methodology is detailed in the law. GPB has signed a deal with IGCE to develop methodologies for Russian carbon credits. Not much detail has been disclosed. Methodologies have been said to encompass renewable energy and sustainable forest management activities.[10] Quantification of emission reductions or removals must follow methodologies approved by the Ministry of Natural Resources and Environment of the Russian Federation.[11] No international standards are referenced.

3. **MRV Requirements:** Project developers must prepare a climate project implementation report, which includes information on achieved emission reduction or removals, and the data used to quantify those results. The form and submission procedure of the report are established by the Ministry of Economic Development of the Russian Federation.[12] Verification of project results is mandatory prior to issuing carbon units. Verification must be conducted by validation and verification bodies accredited under the national accreditation system, overseen by RusAccreditation.[13]

4. **Registry System:** Verified reports, together with a positive verification opinion, must be submitted to the Carbon Units Registry operator, JSC Kontur, which was appointed by the government in 2022. The registry records the climate project, verification status, and issued carbon units.[14] Accounting for carbon units and transactions is carried out in the "carbon units

registry."[15] The operator maintains the registry at its own expense and charges fees to users. The government sets maximum fees, and the operator sets tariffs within those limits and publishes them on the registry website. Opening an account is capped (not more than RUB 18,000, roughly equivalent to USD 240),[16] and transaction participants must sign an agreement with the registry operator before opening an account.[17]

C. Integrity Principles

1. **Additionality Tests:** The regulatory framework does not disclose explicit additionality tests or criteria. Climate projects are validated against approved methodologies and criteria, but the existence or structure of additionality assessments is not specified in the publicly available documentation.

2. **Permanence Safeguards:** The framework does not disclose permanence requirements or reversal risk management measures (e.g., buffer pools, liability rules, or long-term monitoring). Carbon units are issued based on verified project results for a defined reporting period, with no explicit safeguards addressing durability of emission reductions or removals.

3. **Quantification Standards:** The framework requires use of approved national methodologies and third-party verification of quantified results.[18] However, it does not disclose explicit requirements for conservative assumptions or for the treatment and discounting of uncertainty.

4. **Double-Counting Prevention:** Carbon units are issued, transferred, and offset exclusively through a centralized national carbon units registry operated by a government-authorized entity, providing transactional controls against double issuance and double use.[19] The framework does not address double counting directly, nor discloses additional audit mechanisms or provisions addressing international double claiming or corresponding adjustments.

D. Sustainable Development

1. **Co-Benefits:** The framework does not disclose mandatory or encouraged requirements for UN Sustainable Development Goals (SDG) alignment or the identification, monitoring, or verification of co-benefits. Climate projects are assessed solely on their greenhouse gas mitigation outcomes.

2. **Net-Zero Compatibility:** Russia's official climate strategy includes a goal to achieve net-zero GHG emissions by 2060 and an intermediate aim to reduce emissions by 80 percent below 1990 levels by 2050, largely relying on enhanced carbon sinks in forests and land use sectors rather than on the reduction of fossil fuel emissions. Partly because it's not very large and is voluntary in nature, Russia's carbon market itself is not a central mechanism that can drive near-term

decarbonization and does not officially constitute a part of the country's net-zero strategy.[20]

II. Demand-Side Regulations

At the national level, Russia's voluntary carbon market framework imposes no demand-side regulations governing how carbon units may be used or claimed by buyers. Carbon units may be held, transferred, or voluntarily used for corporate climate objectives, but the documents disclose no binding or guiding rules on mitigation hierarchy, scope-based offsetting restrictions, claims substantiation, accounting treatment, or alignment with frameworks such as the Voluntary Carbon Markets Integrity Initiative (VCMI) or Integrity Council for the Voluntary Carbon Market (ICVCM). There are also no explicit anti-greenwashing provisions, disclosure mandates for retirement or claims, or penalties tied to misuse of credits. As a result, demand-side integrity relies primarily on voluntary corporate practices rather than regulatory oversight.

A. Use Authorization Framework

1. **Applications Allowed:** Voluntary claims may be used by corporations for "achieving corporate climate targets and other purposes" and may be used for offsetting.[21] There is no mention of nationally determined contribution (NDC) accounting, Article 6 authorization, or corresponding adjustments in the context of carbon unit use.
2. **Regulatory Status:** The framework describes issuance, verification, and registry operations, but does not set buyer-side claim rules.
3. **Oversight Bodies:** While regulators exist for the mechanism (e.g., Ministry of Economic Development, Ministry of Natural Resources and Environment, Rosprirodnadzor, RusAccreditation), their roles are described mainly for system governance, methodologies, and checks, not demand-side claims oversight.
4. **Standards Integration:** No VCMI, ICVCM, or other standard integration requirements are referenced.
5. **Enforcement Mechanisms:** The documents do not describe penalties for misleading corporate claims using carbon units.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** There are no "reduce-first" or mitigation hierarchy requirements.
2. **Scope Coverage:** No restrictions by scope are mentioned.
3. **Quality Standards:** No quality standards have been specified. The framework does not

reference ICVCM, VCMI, or other recognized integrity frameworks; quality assurance relies on nationally approved methodologies and accredited verification.

4. **Accounting Treatment:** There is no demand-side requirement for how carbon units in inventories must be accounted for.

C. Transparency and Assurance

1. **Public Reporting:** No demand-side requirements for public reporting have been specified.
2. **Third-Party Verification:** There are no demand-side requirements for third-party verification.
3. **Science-Based Targets:** No SBTi requirements for the demand side have been mentioned.
4. **Policy Advocacy:** There is no requirement for users to align advocacy with Paris Agreement goals.

D. Market Integrity Protection

1. **Anti-Greenwashing:** No explicit anti-greenwashing provisions tied to carbon unit use or marketing claims are described.
2. **Co-Benefits Delivery:** No safeguards or co-benefits requirements are set out; projects are defined in terms of GHG mitigation outcomes.[22]

III. Market-Side Regulations

Market infrastructure for Russian carbon units consists of a government-authorized national registry supporting issuance, ownership transfer, and retirement, alongside emerging private trading platforms, notably SPIMEX, which has launched OTC and auction-based trading for voluntary carbon units. Law 296 itself does not prescribe exchange trading, clearing, price discovery, or market conduct rules; instead, secondary market activity is developing through private initiatives layered on top of the registry system. Public disclosures on data standards, application programming interface (API) interoperability, know-your-customer (KYC), anti-money-laundering (AML) requirements, clearing arrangements, accounting treatment under Generally Accepted Accounting Principles or International Financial Reporting Standards, and market-specific anti-manipulation safeguards are limited or absent, indicating that market oversight remains largely indirect and supply-side focused.

A. Infrastructure Framework

1. **Market Structure:** There is no designated government-led marketplace. Carbon units are accounted for in the carbon unit registry, operated by a legal entity authorized by the

government.[23] SPIMEX has established an OTC trading segment for trading carbon credits and has run pilot transactions and auctions.[24]

2. **Registry Operations:** The registry accounts for carbon units and transactions and is used for opening accounts and recording operations.[25] There is no disclosure regarding registry operation and fees, nor regarding API access or technical interfaces.

3. **Data Standards:** The Ministry of Economic Development sets the form of the climate project implementation report and the submission procedure.[26] No disclosure of interoperability requirements across registries or common data schemas has been specified.

B. Trading and Participation

1. **Eligibility Rules:** The registry operator charges fees, and participants must sign an agreement before opening an account (registry participation conditions).[27] SPIMEX notes it can commence registration of buyers and sellers for its carbon credits segment, but does not (in the cited excerpt) describe AML/KYC controls.[28]

2. **Trading Mechanisms:** SPIMEX describes a registered trading segment for OTC trading for carbon credits registered in the national Russian registry. It has also publicly referenced conducting a pilot auction transaction as part of the OTC platform. No information on the auction format or rules has been disclosed.[29]

3. **Settlement Systems:** SPIMEX describes itself as both the organizer of trading and the clearing organization.[30] Central counterparty, including whether trades are cleared through a central counterparty or settled directly between buyers and sellers, is not disclosed.

4. **Price Discovery:** SPIMEX describes "a one-sided single-stage ascending-price auction with submission of open bids," which is an auction in which there is a single seller and multiple buyers who actively and openly increase their bids until only one buyer remains.[31]

5. **Oversight Authority:** A direct body has not been specified as responsible for the supervision of trading venues.

6. **Legal Classification:** Carbon credits are disclosed as "commodities or proprietary rights."[32] Credits under Law 296 are called carbon units and are defined as "a verified result of climate project implementation expressed in the mass of greenhouse gases equivalent to 1 tCO_2."[33]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** There is no disclosure of regulatory provisions to prevent market misconduct and manipulation.
2. **Transparency and Reporting Requirements:** No requirements for public market-data disclosure are mentioned. SPIMEX indicates it provides "exchange information" and indices under its own framework, but that is not the same as a legal carbon market transparency regime.[34]

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** No disclosure on securities law integration and regulatory harmonization has been specified.
2. **Cross-Border Trading Framework:** There is no disclosure on international transfer capabilities and Article 6 implementation.

E. Regulatory Advancement Road Map

1. **Infrastructure Plans:** SPIMEX has created an OTC segment and has conducted pilot auctions and transactions, indicating infrastructure rollout.[35]
2. **International Cooperation:** There has been no disclosure on bilateral agreements or registry linking.
3. **Regulatory Evolution:** There has been no disclosure on integration with broader financial markets.
4. **Enforcement Enhancement:** There is no disclosure on market conduct nor on penalty frameworks.

Notes

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SAUDI ARABIA

Overview

Saudi Arabia has initiated the development of a carbon market framework through the establishment of a domestic crediting mechanism and a state-backed trading platform, although binding regulations governing market participation and credit use have not yet been adopted. The Greenhouse Gas Crediting and Offsetting Mechanism (GCOM),[1] overseen by the Clean Development Mechanism Designated National Authority (CDMDNA),[2] provides the institutional framework for domestic project registration and credit issuance. In parallel, the Regional Voluntary Carbon Market Company (RVCMC) operates as a trading platform facilitating carbon credit transactions, though it does not have a regulatory or supervisory mandate.[3] The government has announced its intention to launch a national compliance carbon market by 2027, although detailed regulatory design elements have not been publicly disclosed.[4]

Current provisions focus primarily on supply-side processes, including project eligibility, methodology development, validation and verification, and registry tracking. Demand-side requirements, including rules governing credit use, disclosure, accounting treatment, and mitigation hierarchy, have not been established. Market infrastructure has been developed through auction-based trading and partnerships with registry, technology, and analytics providers. Saudi Arabia has indicated that it encourages its domestic crediting scheme and voluntary market infrastructure to align with Article 6 of the Paris Agreement, though detailed regulations governing host country authorization, corresponding adjustments, and internationally transferred mitigation outcomes (ITMOs) have not been published.[5]

I. Supply-Side Regulations

Saudi Arabia's supply-side project-based carbon credit market (PCCM) framework is centered on GCOM, administered under the authority of the CDMDNA, which establishes procedures for project registration, credit issuance, validation and verification by accredited third parties, and centralized registry tracking. GCOM allows project activities across sectors and applies additionality testing, measurement, reporting, and verification requirements, while addressing project-level double counting by prohibiting parallel registration under other crediting mechanisms. Publicly available documentation does not specify permanence timeframes, enforcement measures for noncompliance, or detailed rules governing host country authorization and corresponding adjustments for credits intended for international transfer. However, the framework is designed to adapt to future developments, including alignment with Article 6 of the Paris Agreement.

A. Regulatory Framework

1. **Market Classification:** Saudi Arabia's energy minister has announced an intention to launch a national compliance market by 2027, although no further information has been made available.[6] Separately, alongside the announcement of GCOM, the country's sovereign wealth fund and the Saudi stock exchange established a marketplace (RVCMC) for internationally traded project-based voluntary carbon credits.[7] The RVCMC has signed a memorandum of understanding (MoU) with the CDMDNA to support coordination and the development of the national carbon market framework ahead of the planned launch of a compliance market.[8]
2. **Regulatory Status:** No binding rules have yet been established.
3. **Key Authorities:** The domestic crediting mechanism, GCOM, has been established under the CDMDNA.[9]
4. **Sanctions:** There are no explicit enforcement provisions. It is assumed that if the project fails to qualify, it simply will not be registered with GCOM.

B. Credit Generation Standards

1. **Eligible Activities:** GCOM accepts projects and activities across all sectors, provided they comply with GCOM requirements.[10]
2. **Methodology Framework:** GCOM develops its methodologies internally and makes them available to proponents. Internationally approved methodologies include the International Renewable Energy Certificate (I-REC), Verra, and Gold Standard.[11] The designated national authority (CDMDNA) is responsible for approving and preparing the methodologies.[12]
3. **Measurement, Reporting, and Verification (MRV) Requirements:** The project proponent may choose a CDMDNA-accredited verification and validation body to verify the project's MRV documentation.[13]
4. **Registry System:** The GCOM registry is responsible for maintaining a comprehensive view of issued credits and their status. Upon submitting an application to the registry, projects are issued a unique tracking number that will remain the same throughout their lifetime. Projects that are accepted are registered in GCOM and identified according to their activity classification within the registry. Credit ownership is also tracked to ensure it can be traced to its originating project.[14] Project information is required to be disclosed clearly and factually to enable stakeholders to make decisions with reasonable confidence. Information is recorded, compiled, and analyzed in a way that upholds credibility and reliability.[15]

C. Integrity Principles

1. **Additionality Tests:** "The project must demonstrate that it would not have occurred in the absence of the incentives provided by the mechanism, to prove that the project is additional."[16] For projects to qualify as additional, GCOM requires them to undergo a legal or regulatory additionality test, a common practice test, and an implementation barrier test.[17]
2. **Permanence Safeguards:** Project proponents are required to assess the risk of and monitor, report, and compensate for the potential reversal of atmospheric benefits.[18] However, no specific duration of permanence is specified.
3. **Quantification Standards:** Projects are required to clearly define appropriate inventory boundaries and log appropriate information to ensure they meet meaningful emission reductions. Consistent accounting mechanisms allow for comparable greenhouse gas (GHG) emission data over time.[19] Accounting is divided into GHG metric and non-GHG metric (the latter includes man-made habitat hectares produced, hectares of forest land, etc.).[20]
4. **Double-Counting Prevention:** Credit issuance requires projects to prove that the activity is not registered under any other crediting mechanism.[21]

D. Sustainable Development

1. **Co-Benefits:** The GCOM handbook does not make any direct reference to co-benefits, although it states that its main purpose is to "drive positive social, environmental and economic impacts beyond emission reductions or removals."[22]
2. **Net-Zero Compatibility:** GCOM was established to drive progress toward net-zero emissions by allowing interested companies and entities to offset their GHG emissions through credit purchase.[23]

II. Demand-Side Regulations

Saudi Arabia has not established demand-side regulations governing the use of carbon credits by companies or other entities, and there are no publicly disclosed requirements related to mitigation hierarchy, scope eligibility, quality thresholds, accounting treatment, disclosure of credit use, or alignment with science-based targets. No oversight bodies or enforcement mechanisms for demand-side participation have been defined, and while the government has announced its intention to introduce a national compliance carbon market by 2027, the interaction between such a market and voluntary carbon credit use has not yet been specified.

A. Use Authorization Framework

1. **Applications Allowed:** The government has no explicit demand-side regulations for PCCMs. A compliance carbon market is expected to be launched in 2027, but its exact relationship to PCCMs is unclear.
2. **Regulatory Status:** No demand-side regulation currently exists.
3. **Oversight Bodies:** No oversight bodies for the demand side have been established.
4. **Standards Integration:** There are currently no demand-side requirements for integrations with standards.
5. **Enforcement Mechanisms:** No demand-side enforcement mechanisms have been established.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** There are currently no demand-side requirements for mitigation hierarchy.
2. **Scope Coverage:** There is no disclosure on scope coverage requirements.
3. **Quality Standards:** There are currently no requirements for mandatory integrity criteria based on recognized frameworks.
4. **Accounting Treatment:** There is no disclosure on the demand-side accounting treatment requirements.

C. Transparency and Assurance

1. **Public Reporting:** No specific requirements for public reporting have been established.
2. **Third-Party Verification:** There is an absence of regulatory requirements for independent assurance requirements.
3. **Science-Based Targets:** No demand-side requirements for alignment with science-based targets have been established.
4. **Policy Advocacy:** No further details on Paris Agreement alignment requirements have been specified.

D. Market Integrity Protection

1. **Anti-Greenwashing:** As of April 2026, there are no anti-greenwashing mandates.

2. **Co-Benefits Delivery:** There are no requirements on demand-side delivery of co-benefits.

III. Market-Side Regulations

Saudi Arabia's market-side framework is anchored by the RVCMC, a trading platform established by the Public Investment Fund (PIF) and the Saudi stock exchange, Tadawul, which facilitates carbon credit transactions through auction-based mechanisms and has announced plans to expand transaction types, including request-for-quote (RFQ) and block trades. The platform has established partnerships with registry providers, technology firms, and market analytics and rating entities to support trading operations; however, settlement systems, financial regulatory integration, accounting treatment for traded credits, market conduct rules, and fraud prevention measures have not been publicly disclosed, and the regulatory interaction between the RVCMC, GCOM, and a future compliance market remains undefined.

A. Infrastructure Framework

1. **Market Structure:** The credit trading exchange, the RVCMC, is jointly owned by Saudi Arabia's sovereign wealth fund, the PIF, and the Saudi Tadawul Group.[24] The RVCMC functions as a market infrastructure and trading venue rather than a regulatory authority, with credit issuance and project oversight remaining under the responsibility of GCOM and the CDMDNA.

2. **Registry Operations:** The platform provides the ability to integrate with registries. It has struck partnerships with global market analytics and rating firms, such as MSCI and BeZero, to support credit integrity.[25] Xpansiv was said to provide the technology infrastructure required for the exchange.[26]

3. **Data Standards:** No market-side data standards have been disclosed.

B. Trading and Participation

1. **Eligibility Rules:** No market-side eligibility rules have been specified. Credits traded so far stem from a range of locations and methodologies.[27] Some examples of registries in which traded credits were registered include Verra, Gold Standard, and Puro.earth.[28]

2. **Trading Mechanisms:** Credits may be traded in the RVCMC, which is owned by Saudi Arabia's PIF and the Saudi Tadawul Group.[29] The platform launched in November 2024 with RFQ and block trade functionality, and a spot market was expected to follow in 2025, but its operational status is unclear.[30]

3. **Settlement Systems:** No settlement systems have yet been disclosed.

4. **Price Discovery:** Auction systems have been put in place, and three auctions have been held

so far.[31]

5. **Oversight Authority:** The platform is majority-controlled by the PIF, which owns 80 percent of the platform and provides its strategic direction.[32]

6. **Legal Classification:** No information on accounting treatment for credit trading has been disclosed. Carbon credits are defined as "one ton of CO_2 or equivalent that has been reduced, avoided, or sequestered by a project. Carbon credits are designed to reduce overall carbon emissions by being traded in the marketplace."[33]

C. Market Integrity Safeguards

1. **Antimanipulation and Fraud Prevention**: There has been no specific disclosure on fraud prevention or anti-manipulation practices.

2. **Transparency and Reporting Requirements:** The platform claims "institutional grade infrastructure to enable transparent and secure transactions,"[34] although there are no details about what this looks like in practice.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** No information has been disclosed on financial regulation integration. However, there is an intention to incorporate it into the Islamic finance framework.[35]

2. **Cross-Border Trading Framework:** GCOM is designed to align with future changes and developments in Article 6 of the Paris Agreement. Credits generated can become ITMOs, subject to authorization by the CDMDNA.[36] No explicit information regarding the RVCMC's cross-border transaction framework has been released, although its auctions reportedly sell credits originating in and transferred to other countries.[37] The exchange was built to help expand the voluntary carbon market in the Middle East and North Africa region, and has since established partnerships with Japanese and Singaporean companies to scale its presence in the Association of Southeast Asian Nations and the Global South.[38]

E. Regulatory Advancement Road Map

1. **Infrastructure Plans:** No infrastructure plans have been disclosed.

2. **International Cooperation:** Recent partnerships with MSCI and BeZero are intended to expand the market's capability to trade high-quality credits. Additional MoUs with other international companies are aimed at building out an emissions offsetting offering for customers purchasing travel, supporting the generation of credits within Saudi Arabia, and offering internationally

generated credits in the exchange.[39]

3. **Regulatory Evolution:** The Saudi government has announced it intends to launch its compliance market in 2027. The interaction of this market with the exchange is yet to be defined.
4. **Enforcement Enhancement:** No information on enforcement enhancements has been provided.

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SINGAPORE

Overview

Singapore's project-based carbon credit market (PCCM) is built around the Carbon Pricing Act (CPA) and the International Carbon Credit (ICC) Framework, along with the Guidance on the Role of Carbon Credits in Corporate Decarbonisation released in October 2025, which addresses the functioning of voluntary carbon markets (VCM). Beginning in 2024, carbon tax-liable facilities may offset up to 5 percent of their taxable emissions with eligible ICCs that satisfy Singapore's seven integrity principles and comply with Paris Agreement Article 6 authorization rules. The National Environment Agency (NEA), which administers the ICC Framework, has issued operational guidance on how liable entities surrender ICCs for tax payment. Singapore also raised its carbon tax to S$25 (US$19.40)[1] per ton of carbon dioxide equivalent (tCO_2e) in 2024–2025 and S$45/$tCO_2e$ (US$34.90/$tCO_2e$) in 2026–2027, with a view to reach S$50–S$80/tCO_2e (US$38.80–US$62.00/tCO_2e) by 2030, strengthening price signals while allowing limited use of ICCs,[2] as explained later.

In parallel, the government is operationalizing Paris Agreement Article 6 supply via bilateral Implementation Agreements (IAs), with recent agreements including Vietnam (IA signed September 16, 2025)[3] and Mongolia (IA signed October 6, 2025),[4] to enable authorization and corresponding adjustments for credits that may be admitted to Singapore's Eligibility List, which is a list of host country-specific eligible Carbon Crediting Programmes (CCPs)[5] and methodologies that spell out which crediting programs and methodologies are acceptable once projects are authorized.[6]

On the VCM side, the Ministry of Trade and Industry (MTI), together with the National Climate Change Secretariat (NCCS) and Enterprise Singapore (EnterpriseSG), published official guidance in October 2025 on the role of carbon credits in corporate decarbonization, following a public consultation process. The guidance sets expectations for credible corporate use of carbon credits outside Singapore's carbon tax regime, emphasizing that companies should prioritize real and feasible emissions reductions across their value chains before using carbon credits to address residual emissions. It advises firms to use high-quality carbon credits aligned with Singapore's integrity principles, conduct appropriate due diligence, and make transparent disclosures and claims regarding credit use.

The guidance also clearly distinguishes voluntary use of credits from compliance use under Singapore's carbon tax framework, including the separate requirements that apply to ICCs. The document was released as part of the government's broader effort to build confidence in carbon

markets and promote high-integrity demand in the VCM.[7] Singapore's approach couples a rising carbon tax and a tightly specified ICC channel for compliance with a separate VCM guidance, aimed at scaling high-integrity demand while minimizing misleading environmental claims through steps on how to present and use carbon credits as part of a credible decarbonization plan.[8]

Singapore's next steps include continuing to emphasize nature-based solutions as a key element of its climate mitigation and carbon finance strategy. In September 2025, the government announced plans to procure 2.175 million tons of Article 6–aligned nature-based carbon credits from four projects located in Ghana, Paraguay, and Peru, with an estimated contract value of about S$76 million (US$58 million). These initiatives are designed to deliver a mix of outcomes—including reducing emissions from deforestation, enhancing soil organic carbon sequestration in grasslands through sustainable management, and removing emissions via reforestation of degraded pastureland—advancing both environmental integrity and Singapore's international cooperation under Article 6.[9]

I. Supply-Side Regulations

Singapore signed a new Paris Agreement Article 6 Implementation Agreement with Mongolia on October 6, 2025, expanding its partner set to 10 countries: Papua New Guinea, Ghana, Bhutan, Peru, Chile, Rwanda, Paraguay, Thailand, Vietnam, and Mongolia.[10] The IA establishes the legal and procedural framework for generating and transferring authorized credits, along with corresponding adjustments, i.e., Internationally Transferred Mitigation Outcomes (ITMOs). This includes roles for host-country authorization; measurement, reporting, and verification (MRV) requirements; and financial provisions such as share-of-proceeds arrangements. In effect, it broadens the pipeline of high-integrity supply that could, once authorized and admitted to Singapore's Eligibility List, be available to tax-liable companies alongside ICCs under the CPA.[11]

While Singapore and partner governments have signed agreements, the next steps will be to operationalize the Eligibility List. The Ghana-Singapore list is public and will be reviewed periodically, giving developers clarity on eligible project types, baseline approaches, and MRV expectations ahead of investment decisions.[12] These lists translate Singapore's seven integrity principles into project-level guardrails, aiming to reduce uncertainty for investors and developers and align future supply with Article 6 authorizations and the government's high-integrity standards. These steps will be replicated for the other countries as part of the Eligibility List in the upcoming months.

A. Regulatory Framework

1. **Market Classification:** Singapore's PCCM comprises voluntary and compliance markets. Compliance markets allow the use of credits from the ICC Framework.

2. **Regulatory Status:** Singapore has introduced two complementary frameworks to guide the use of carbon credits: the ICC Framework, which governs the use of eligible credits to offset a portion of liabilities under Singapore's carbon tax regime, and the Guidance on the Role of Carbon Credits in Corporate Decarbonisation, which sets expectations for the voluntary use of high-quality carbon credits as part of credible corporate decarbonization strategies outside the tax regime.

    - *Compliance:* The ICC Framework under the CPA allows tax-liable facilities to voluntarily offset up to 5 percent of their taxable emissions using eligible international credits.[13] The eligibility of ICCs to be used toward the carbon tax offset is subject to the seven eligibility criteria (not double counted, additional, real, quantified and verified, permanent, no leakage, and no net harm),[14] though the credits can be sourced from multiple channels. The credits can be sourced first from the Eligibility List, subject to the eligibility criteria, and second by working with a project developer (or a third-party service provider) to identify eligible ICCs from existing projects or develop new ones.[15]

    - *VCM:* The VCM guidance, jointly released by the NCCS, the MTI, and EnterpriseSG on October 28, 2025, sets out how companies should use high-quality carbon credits as part of credible decarbonization plans, referencing integrity criteria such as additionality, permanence, verification, leakage, and safeguards against double counting.[16]

3. **Key Authorities:**

    - *Compliance:* The NEA serves as the administrator of the ICC Framework under the CPA. The NEA manages processes including the Eligibility List of host-country programs and methodologies, verification of credits used to offset carbon tax liabilities, and operation of the Carbon Credits Registry.[17] The Ministry of Sustainability and the Environment (MSE), which oversees the NEA, provides strategic climate policy direction and co-issues the ICC eligibility criteria and related guidance, but does not handle credit registry or surrender procedures.[18] MSE's own policy mandate covers the development and coordination of Singapore's broader climate and sustainability policies, including the Carbon Pricing Act and the Singapore Green Plan 2030.[19]

    - *VCM:* The NCCS, together with MTI and EnterpriseSG, leads Singapore's work on the voluntary carbon market. These agencies jointly issued the Guidance on the Role of Carbon Credits in Corporate Decarbonisation on October 28, 2025, which sets out integrity principles and policy expectations for credible corporate use of carbon credits outside the tax regime. MTI and EnterpriseSG also support the growth of Singapore's carbon services and trading ecosystem, including project developers, traders, advisory firms, and MRV providers.[20]

4. **Sanctions:**

   - *Compliance:* The sanction for non-compliance with the eligibility or procedural standards under the ICC Framework is disqualification of the credit that can be used as an offset against the carbon tax, which is imposed by the NEA rather than a separate financial penalty.[21]
   - *VCM:* The guidance does not explicitly state any penalties or sanctions for non-compliance.

B. Credit Generation Standards

1. **Eligible Activities:**

   - *Compliance:* The ICC Framework standards do not comprise a single, universal list of eligible activities, but are instead determined based on a layered, bilateral agreement system under the ICC Framework. For an ICC to be eligible for tax offset, the underlying activity (defined by its methodology) must meet three criteria concurrently: (1) It must be located in a host country that has an IA with Singapore, which is necessary for corresponding adjustments to prevent double counting; (2) it must be issued by one of the preapproved CCPs; and (3) the specific methodology used by the activity must be included in the Eligibility List—a list whose contents can and often do differ by host country, reflecting the unique negotiations and domestic priorities agreed upon in the bilateral IA.[22]
   - *VCM:* The guidance does not define eligible activities or provide an exhaustive list of standards or programs, instead encouraging companies to use additional tools and standards to assess carbon credit quality.[23]

2. **Methodology Framework:**

   - *Compliance:* The ICC Framework references Article 6 of the Paris Agreement (especially corresponding adjustments); the methodologies of specific, pre-existing Singapore CCPs (Verra, Gold Standard, etc.); and the eligibility criteria.[24] The stringency of other standards, like the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), is referenced in official press releases.[25]
   - *VCM:* The guidance references the ICC Framework's integrity principles for context but does not require corresponding adjustments for voluntary corporate use. As such, claims do not count toward nationally determined contributions (NDCs).[26]

3. **MRV Requirements:**

   - *Compliance:* The ICC Framework requires that the ICCs be procured from Singapore's CCP

registry, in which they were issued, so the MRV process follows the CCP's requirements.[27]

- *VCM:* The guidance encourages companies to measure and report their baseline-year emissions, develop a credible decarbonization plan, and transparently disclose their use of carbon credits, while using the ICC Framework's integrity principles as a reference for identifying high-quality credits.[28]

4. **Registry System:**

- *Compliance:* The registry system under the ICC Framework is structured around three core pillars to ensure integrity and transparency. First, the NEA is developing its own national registry to centrally account for and track all ICCs surrendered by taxable facilities, ensuring compliance with Article 6 of the Paris Agreement. Second, the procurement of credits is currently limited to five pre-approved external registries, which could be expanded in the future: Gold Standard, Verra's Verified Carbon Standard, Global Carbon Council, American Carbon Registry, and Architecture for REDD+ Transactions. Finally, to enhance global transparency and prevent double counting, Singapore has partnered with the World Bank and the International Emissions Trading Association on the Climate Action Data Trust (CAD Trust) initiative, which is building a data dashboard for public access to information across multiple global registries.[29]

- *VCM:* The guidance encourages companies to acquire high-quality credits from reputable registries and to disclose where those credits are held.[30]

C. Integrity Principles

1. **Additionality Tests:**

- *Compliance:* The ICC Framework states that certified emissions reductions or removals must exceed any required by law or any regulatory requirement of the host country in the eligibility criteria of ICCs.[31]

- VCM: The guidance states that voluntary use of credits is not bound to Article 6 or the ICC Framework (compliance regulations), but the principles from the ICC Framework serve as a good guide on high-quality credit attributes, which include additionality.[32]

2. **Permanence Safeguards:**

- *Compliance:* The ICC framework states that certified emissions must be permanent, and reductions or removals must not be reversible, or if there is a risk that the certified emissions reductions or removals may be reversible, measures must be in place to monitor, mitigate,

and compensate for any material reversal of the certified emissions reductions or removals. The duration for permanence is not specified.[33]

- *VCM:* The guidance states that voluntary use of credits is not bound to Article 6 or the ICC Framework (compliance regulations), but the principles from the ICC Framework serve as a good guide on high-quality credit attributes, which include permanence.[34]

3. **Quantification Standards:**

   - *Compliance:* The ICC Framework states that certified emissions must be quantified and verified, and reductions or removals must have been calculated in a manner that is conservative and transparent, and must have been measured and verified by an accredited and independent third-party verification entity before the ICC was issued.[35]

   - *VCM:* The guidance states that voluntary use of credits is not bound to Article 6 or the ICC Framework (compliance regulations), but the principles from the ICC Framework serve as a good guide on high-quality credit attributes, which include quantification.[36]

4. **Double-Counting Prevention:**

   - *Compliance:* The ICC Framework states that certified emissions reductions or removals must not be double counted in contravention of the Paris Agreement.[37]

   - *VCM:* The guidance states that voluntary use of credits is not bound to Article 6 or the ICC Framework (compliance regulations), but the principles from the ICC Framework serve as a good guide on high-quality credit attributes, which include double-counting prevention.[38]

D. Sustainable Development

1. **Co-benefits:**

   - *Compliance:* Co-benefits are not explicitly stated or specified in the regulation. However, ICC eligibility criteria do include a "no net harm" provision requiring that the carbon emissions reduction or removal activities not violate any laws, regulatory requirements, or international obligations.[39]

   - *VCM:* The guidance does not explicitly address co-benefits, but it states that voluntary credit use is not bound by Article 6 or the ICC Framework, though the ICC integrity principles are presented as a guide to high-quality credit attributes.[40]

2. **Net-Zero Compatibility:**

- *Compliance:* Net-zero compatibility is not explicitly stated in the ICC Framework. However, thus far, all of Singapore's CCPs are concurrently labeled as Integrity Council for the Voluntary Carbon Market's (ICVCM) core carbon principle–eligible programs, which are assessed against its 10 Core Carbon Principles, including net-zero compatibility.[41]
- *VCM:* Net-zero compatibility and avoidance of carbon lock-in are not explicitly addressed in the guidance, and while voluntary credit use is not bound by Article 6 or the ICC Framework, the ICC integrity principles are offered as a guide to high-quality credit attributes.[42]

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**
   - *Voluntary claims:* The guidance for voluntary use by corporates sets out nonbinding expectations for credible voluntary use of carbon credits, anchored on three principles: abatement, quality, and transparency. It requires companies to prioritize all feasible emissions reductions across their operations and value chains, using carbon credits only as a complementary tool for residual, hard-to-abate emissions. The guidance specifies that credits should demonstrate high environmental integrity, including being real, additional, permanent, independently verified, and free from double counting, and it calls for transparent public disclosure of credit use, including volumes, project information, registry details, and the purpose of the claim.[43]
   - *Compliance integration:* The ICC Framework states that companies may voluntarily use it to offset up to 5 percent of their carbon tax liability.[44]
   - *NDC alignment:* While not stated in regulations, the official press releases state that Article 6 bilateral carbon credit partnerships are designed to "support the achievement of Singapore's NDC and enable partner countries to meet their own NDCs." This linkage positions Article 6 cooperation not as a stand-alone trading mechanism, but as an integrated tool for advancing nationally determined climate targets while maintaining environmental integrity and avoiding double counting.[45]
2. **Regulatory Status:** The issued ICC Framework and VCM guidance, as well as voluntary environmental or carbon-related claims, are subject to mandatory anti-greenwashing rules under the Consumer Protection (Fair Trading) Act 2003 (CPFTA), which is enforced by the Competition and Consumer Commission of Singapore (CCS).[46] Additionally, the Singapore Code of Advertising

Practice (SCAP), administered by the Advertising Standards Authority of Singapore (ASAS), establishes quasi-mandatory standards for advertisements that make environmental claims. These standards demand that any claim be clear, substantiated, and not misleading—especially when the claim involves terms like "eco-friendly" or "carbon-neutral." Although the SCAP itself is not legislation, ASAS has the authority to require the withdrawal or amendment of noncompliant advertisements, and breaches of SCAP may indicate unfair practices under the CPFTA.[47]

3. **Oversight Bodies:**

   - *Compliance:* The same oversight bodies as the supply-side regulations. The NEA serves as the administrator of the ICC Framework under the CPA. The NEA manages processes including the Eligibility List of host-country programs and methodologies, verification of credits used to offset carbon tax liabilities, and operation of the Carbon Credits Registry.[48] The MSE, which oversees NEA, provides strategic climate policy direction and co-issues the ICC eligibility criteria and related guidance, but does not handle credit registry or surrender procedures.[49] The MSE's own policy mandate covers the development and coordination of Singapore's broader climate and sustainability policies, including the Carbon Pricing Act and the Singapore Green Plan 2030.[50]

   - *VCM:* The NCCS, together with MTI and EnterpriseSG, leads Singapore's work on the voluntary carbon market. These agencies jointly issued the October 2025 Guidance on the Role of Carbon Credits in Corporate Decarbonisation, which sets out integrity principles and policy expectations for credible voluntary credit use. MTI and EnterpriseSG also support the development of Singapore's carbon services and trading ecosystem, including project developers, traders, advisory firms, and MRV providers.[51]

   - *Overall:*

     - *CCS:* Oversees enforcement of the CPFTA, which covers misleading environmental claims, including carbon-offset claims. It can investigate unfair trade practices, issue injunctions, and impose court orders for persistent offenders.[52]

     - *ASAS:* Administers the Singapore Code of Advertising Practice, which requires that environmental or carbon-related claims in advertisements be clear, substantiated, and not misleading; ASAS can mandate amendment or withdrawal of noncompliant advertisements.[53]

4. **Standards Integration:**

   - *Compliance:* The ICC Framework only allows approved carbon programs, which reference

other standards.[54]

- *VCM:* The guidance states that companies should reference global meta standards, such as the Paris Agreement Crediting Mechanism, ICVCM's Core Carbon Principles, and CORSIA, as benchmarks for credit quality.[55]

5. **Enforcement Mechanisms:**

   - *Compliance:* The ICC Framework's enforcement is through the NEA, which requires preapproval before carbon tax offset use.[56] No other penalties are indicated.
   - *VCM:* The guidance only provides guidelines and does not stipulate any sanctions.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:**

   - *Compliance:* The ICC Framework does not explicitly mention mitigation hierarchy.
   - *VCM:* The guidance encourages companies to prioritize internal decarbonization before using carbon credits.[57]

2. **Scope Coverage:**

   - *Compliance:* The ICC Framework does not provide explicit specifications on Scopes 1, 2, and 3 reductions.
   - *VCM:* The guidance encourages companies to prioritize emissions reductions across all emission scopes, particularly those that are technically, scientifically, and economically feasible.[58]

3. **Quality Standards:**

   - *Compliance:* The ICC Framework sets seven integrity principles (not double counted; additional; real; quantified and verified; permanent; no net harm; no leakage).[59]
   - *VCM:* The guidance encourages the adoption of high-quality carbon credit criteria, referencing the ICC Framework.[60]

4. **Accounting Treatment:**

   - *Compliance:* The regulation designates a national registry that manages registration, transfers, and cancellations of every carbon-emission trading product, and states that cancellation is the official ledger entry for compliance surrender.[61]

- *VCM:* Accounting treatment is not explicitly mentioned in the guidance.

C. Transparency and Assurance

1. **Public Reporting:**
   - *Compliance:* The ICC Framework states that transparency is needed in calculating emission reductions and removals. It also states that it accepts credits from NEA-approved programs, all of which publish project documentation, methodologies, and issuance or retirement records in publicly accessible registries.[62] There will also be a publicly available national registry called the Overall Project Register for the ICCs. It is unclear how much detail will be in the registry, as it is still being developed.[63]
   - *VCM:* Companies are encouraged to transparently disclose their use of carbon credits, including the type of credits used, volumes, project location, registry where the credits are held, purpose of use, and any third-party ratings, where available, in the guidance.[64]
2. **Third-Party Verification:**
   - *Compliance:* The demand-side requirements in the ICC Framework are to acquire credits that meet the criteria for high-quality carbon credits in the compliance regulations, including credits that have been quantified and third-party verified. The use of the credits does not require third-party verification, as they are used for carbon tax offsets.
   - *VCM:* Companies on the demand side are encouraged to consider disclosing their use of carbon credits and third-party ratings.[65] The guidance encourages acquiring credits that meet the criteria for high-quality carbon credits in the compliance regulations, including credits that have been quantified and third-party verified.[66]
3. **Science-Based Targets:** Not explicitly stated either in the compliance regulations or in the VCM guidance.
4. **Policy Advocacy:**
   - *Compliance:* The ICC Framework requires alignment with Article 6 of the Paris Agreement.[67]
   - *VCM:* The guidance encourages companies to have a credible decarbonization plan, including best practices, that outlines their contribution to the Paris Agreement temperature goals. However, it says voluntary use is not bound by Article 6 of the Paris Agreement, as it does not contribute toward the country's NDCs.[68]

D. Market Integrity Protection

1. **Anti-Greenwashing:**
    - *Compliance:* Greenwashing risks are controlled through the usage of high-quality credits, but are not explicitly addressed in regulations. This is managed through other forms of consumer protection laws.
    - *VCM:* The guidance encourages companies to have a credible decarbonization plan, including best practices, and to use high-quality credits, as defined in the compliance regulations, but it does not explicitly address greenwashing. This is managed through other forms of consumer protection laws.[69]
2. **Co-Benefits Delivery:** There is no requirement in the compliance regulations or the VCM guidance that buyers must demonstrate delivery of community, biodiversity, or sustainable development co-benefits as part of credit use.

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** There are four active carbon exchanges in Singapore—AirCarbon Exchange (ACX), Climate Impact X (CIX), European Energy Exchange, and Intercontinental Exchange. These exchanges form part of Singapore's broader effort to position itself as a regional hub for high-integrity carbon trading, with over 150 carbon services and trading firms already operating across origination, verification, and brokerage functions.[70]
2. **Registry Operations:** First, facilities must submit a "Notice of ICC Use" to NEA for acceptance, identifying the quantity and source of eligible ICCs that meet the government's environmental-integrity criteria. Once approved, the facility may procure the approved ICCs on an authorized CCP registry, if it does not already own them. Following procurement, the company must retire (cancel) the ICCs within the registry to ensure they cannot be traded or claimed again. Finally, the company must submit the Evidence of Retirement (EOR) through the Emissions Data Monitoring and Analysis system to NEA, which serves as the official ledger entry for accounting and compliance purposes under the CPA.[71]
3. **Data Standards:** The announcement about a new platform, the CAD Trust, launched in Singapore, indicates a push for interoperability across registries and traceability of credits, but it is a global initiative rather than a binding Singapore regulation.[72]

B. Trading and Participation

1. **Eligibility Rules:** None are clearly stated in legislation other than the process to use the credits to offset the carbon tax.

2. **Trading Mechanisms:** Carbon market infrastructure is built around a set of core market-side trading mechanisms rather than detailed statutory trading rules. Trading takes place primarily through exchange-based, order-book platforms such as CIX and ACX, where carbon credits are sold using standardized contracts that define eligible credit types, vintages, methodologies, and minimum lot sizes. These include standardized instruments, combined with transparent bid-ask order books, that create price discovery, liquidity, and fungibility, distinguishing Singapore from purely over-the-counter (OTC) voluntary markets.[73]

3. **Settlement Systems:** Singapore's leading carbon market trading platforms rely on delivery-versus-payment (DvP) settlement systems to ensure that carbon credits and cash move simultaneously, reducing counterparty risk and aligning carbon trading with established commodity market standards. CIX uses its dedicated CIX Clear service to verify credit availability and execute DvP settlement linked to underlying registries. Meanwhile, ACX uses digital or tokenized contracts that enable near-real-time atomic settlement. Both systems integrate directly with Verra, Gold Standard, and other registries to confirm ownership, transfer, and retirement, forming the core of Singapore's market-side integrity framework.[74]

4. **Price Discovery:** Price discovery occurs primarily through exchange-based, order-book trading on CIX and ACX. Both platforms publish live bid-ask quotes, enabling transparent, market-driven pricing rather than opaque OTC negotiation. CIX provides price signals for standardized spot contracts (initially nature-based baskets), while ACX offers continuous two-way pricing for its digital carbon contracts. Early CIX trades (e.g., ~US$5–US$6/tCO_2e for nature-based credits) demonstrate the creation of benchmark reference prices in Asia. Together, these mechanisms shift Singapore's carbon market toward transparent, liquid, and standardized price formation.[75]

5. **Oversight Authority:** Market-side activity in Singapore is overseen primarily by NEA, which governs credit integrity and retirement under the carbon-tax regime. Meanwhile, the Monetary Authority of Singapore (MAS) oversees carbon-trading platforms only if their activities trigger financial market regulations. Since carbon credits are not classified as financial instruments in Singapore, exchanges like CIX and ACX operate largely under self-regulatory market standards, not a dedicated carbon-market authority.[76]

6. **Legal Classification:** This is not explicitly addressed in regulations. However, a report by the International Swaps and Derivatives Association (ISDA) states that under Singapore law, whether

a carbon credit is considered intangible property or simply a contractual right depends on the specific terms attached to it. If the credit grants clear, transferable, and enforceable rights, it is likely to be treated as intangible property. Singapore courts generally apply a property-rights test developed in an English case and affirmed in local decisions, which requires the right to be definable, recognizable by third parties, transferable, and sufficiently stable.[77]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** Singapore does not have carbon market–specific anti-manipulation and fraud prevention laws. Spot trading of voluntary carbon credits is not regulated under Singapore's Securities and Futures Act (SFA), meaning general financial market manipulation rules only apply if the product is a regulated financial instrument (e.g., a derivative). For carbon credits used in Singapore's carbon tax regime, NEA enforces integrity through eligibility rules, registry-linked verification, mandatory retirement, and safeguards against double counting. Carbon credit exchanges operating in Singapore—such as CIX—may apply internal risk controls, but there is no public evidence of government-mandated anti-manipulation rules for voluntary spot trading. These exchanges have their own governance rules to manage manipulation and fraud.[78]

2. **Transparency and Reporting Requirements:** Relies on registry-based transparency and exchange-level disclosure, rather than a dedicated market-side reporting statute. All carbon credit transfers, ownership changes, and retirements must be recorded in the underlying credit registry (e.g., Verra, Gold Standard, ART), which provides serial-number traceability and public visibility into issuance, transfer history, and retirement status. For credits used under Singapore's carbon tax, the NEA requires entities to submit an EOR and verify that credits meet integrity and eligibility rules, creating an auditable reporting chain. On the market side, exchanges such as CIX and ACX provide order-book transparency, displaying live bids, offers, and executed trades for standardized contracts. They also maintain audit trails, transaction logs, and credit-specific attributes (e.g., vintage, project type, methodology, crediting program), which must be disclosed to participants. While MAS does not mandate carbon-market reporting unless financial instruments are involved, general financial market conduct rules on disclosure and fair dealing apply if a platform triggers securities regulation. Overall, transparency is ensured through registry disclosure, exchange-level trade visibility, and NEA reporting requirements, rather than a stand-alone carbon-market reporting framework.[79]

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** There is no dedicated carbon market financial regulation, but integration occurs through the MAS when carbon market activities intersect with existing

financial market laws. Carbon credits themselves are not classified as capital-market products under the SFA,[80] so spot carbon credit trading on platforms like CIX or ACX is not regulated as a financial instrument. However, if an exchange lists derivatives, futures, tokenized financial instruments, or structured products referencing carbon credits, those activities could fall under MAS oversight as regulated market operators or capital-markets intermediaries. MAS has recently released a statement of support for energy transition credits and describes exploratory work and stakeholder consultation on it, but not on regulating the credits themselves.[81]

2. **Cross-Border Trading Framework:** The cross-border carbon credit trading framework is anchored in its participation under the Paris Agreement's Article 6. Through legally binding IAs with host countries (e.g., Bhutan, Peru, Rwanda, Thailand, Vietnam), Singapore establishes the bilateral mechanisms to transfer credits in compliance with Article 6.2 standards, including corresponding adjustments, integrity safeguards, and eligibility under the Carbon Pricing (Carbon Tax and Carbon Credits Registry; Amendment) Regulations 2023. On the market side, this framework enables Singapore-based buyers and trading platforms to access projects abroad and secure credits that are eligible for use under Singapore's market (e.g., offsetting up to 5 percent of taxable emissions) while ensuring transparency and traceability across borders.

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** Singapore's carbon-market development efforts focus on strengthening data, transparency, and registry connectivity to support high-integrity international carbon trading, including through the CAD Trust, which enhances life cycle traceability and now covers about 85 percent of all carbon credits issued globally.[82] Voluntary market infrastructure in Singapore is also expanding through exchanges such as CIX and ACX, which currently operate spot and auction-based voluntary carbon credit platforms.[83] Simultaneously, the government is expanding its Article 6.2 Implementation Agreements to support cross-border carbon-market cooperation and has announced new nature-based carbon credit projects in partner countries, reflecting Singapore's growing use of Article 6 pathways.[84] These measures support Singapore's wider ambition—anchored by NEA, NCCS, and EnterpriseSG, among other government bodies—to position the country as a regional hub for carbon services and international carbon-market activity,[85] although fully regulated derivatives, clearing, or cross-exchange carbon-trading infrastructure have not yet been publicly established.

2. **International Cooperation:** Singapore actively pursues international cooperation under Paris Agreement Article 6 via binding bilateral IAs with host countries (e.g., Ghana, Peru, Paraguay, Thailand, Vietnam) to enable the transfer of mitigation outcomes (carbon credits) into Singapore's market.[86]

3. **Regulatory Evolution:** Singapore is progressively developing the institutional and data infrastructure around carbon markets, though spot carbon credit trading itself remains outside the regulated financial market framework. While carbon credits remain nonfinancial instruments, ISDA has reported that carbon-related derivatives or tokenized capital-market products fall under the Securities and Futures Act, bringing those products into regulated oversight.[87] In parallel, Singapore is strengthening digital traceability and registry connectivity through initiatives such as the CAD Trust and expanding Article 6 cooperation, supporting a gradual shift toward a more transparent and internationally interoperable carbon-market ecosystem.[88]

4. **Enforcement Enhancement:** Enforcement is partially supported by MAS's market conduct, anti-manipulation, anti-money laundering, and countering the financing of terrorism rules whenever carbon-related activities involve regulated financial products such as derivatives or tokenized capital-market instruments. Once a carbon-market activity falls within the scope of the SFA, MAS's surveillance frameworks for misconduct, manipulation, and unfair trading apply.[89] At the same time, Singapore is strengthening the integrity of carbon market transactions through digital traceability initiatives such as the CAD Trust.[90]

Notes

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SOUTH AFRICA

Overview

South Africa's project-based carbon credit market (PCCM) is primarily governed by the Carbon Tax Act (2019) and its associated carbon offset regulations, which regulate the use of credits within the carbon tax system.[1] The framework is focused on carbon credits for compliance use, rather than voluntary markets. Phase 1 of the carbon tax (2019–2022, extended to the end of 2025) allows firms to use carbon offsets to cover 5 percent for industrial process and fugitive emissions, and 10 percent for combustion emissions of their carbon tax liability. Phase 2 (2026–2030) could increase the offset limits by an additional 5 percent.[2] The draft tax amendment bill that amends Phase 2 offset limits is awaiting approval in the Parliament of the Republic of South Africa as of January 2026. The regulations do not outline rules for the voluntary use of carbon credits outside the compliance program.

Eligible offsets must be generated from approved domestic project types and issued under recognized standards, then listed, transferred, and retired through the Carbon Offset Administration System (COAS), which serves as the central authority for determining eligibility and use under the carbon tax.[3] In 2024, South Africa released a draft Article 6 Framework outlining how it intends to participate in the Paris Agreement carbon markets. The framework builds on existing systems, including the carbon tax offset regime and COAS, and sets principles for alignment with nationally determined contributions (NDCs), third-party standards, additionality beyond regulation, and sustainable development benefits. No bilateral Article 6.2 agreements have yet been concluded.

Market activity in South Africa remains anchored in COAS, which is the only registry through which credits can be listed, transferred, and retired for carbon tax compliance. Alongside this compliance infrastructure, several voluntary market trading channels operate independently of regulation. The Johannesburg Stock Exchange (JSE) Ventures, in partnership with Xpansiv, has launched the JSE Ventures Carbon Market (JSE-V Carbon) platform to facilitate trading in both domestic and international voluntary credits, including COAS. It must still follow COAS's separate procedures for cancellation and retirement, should buyers choose to use it for carbon tax offsets.[4] Additional private sector market infrastructure includes the Green Asset Exchange, which partners with Credible Carbon, one of South Africa's voluntary carbon registries, to offer locally generated voluntary credits,[5] as well as widespread over-the-counter (OTC) brokerage and bilateral contracting that dominate the voluntary market.

In 2025, the National Treasury (NT) released a consultation paper on developing the South African carbon credit market, proposing reforms to support broader carbon credit trading, including voluntary use,[6] but these proposals remain consultative and have not yet been incorporated into binding regulation.

I. Supply-Side Regulations

South Africa's project-based carbon credit supply is governed through the carbon offset regulations under the Carbon Tax Act (2019), which limit eligibility to approved mitigation projects undertaken in South Africa and linked to activities outside the scope of the carbon tax.[7] Eligible offsets must be issued under recognized third-party standards and administered through the Carbon Offset Administration System, which records project approval, ownership, and the cancellation and retirement of credits used for compliance.[8]

In 2022, the Department of Mineral Resources and Energy (DMRE; now Department of Electricity and Energy [DEE]) published a draft framework of domestic standards for the South African Carbon Offsets Program for public consultation. It outlines both how South Africa will develop, evaluate, and approve domestic carbon offset standards and the principles, criteria, and procedural requirements that these standards must meet—such as environmental integrity, governance, and transparency—to qualify for use under the national carbon tax offset system, alongside eligible international standards.[9] In 2024, South Africa released a draft Article 6 Framework indicating that the existing offset regime and COAS would underpin future participation in international carbon markets, subject to further regulatory alignment.[10] In parallel, the National Treasury's 2025 consultation paper on developing the carbon credit market highlights structural constraints affecting supply, including reliance on external standards, long project development timelines, fragmented registry and trading architecture, and the unclear legal status of carbon credits.[11] While the paper proposes reforms to modernize COAS and support broader market development, these proposals remain consultative, and the current supply framework continues to be defined by compliance use under the carbon tax.

A. Regulatory Framework

1. **Market Classification:** Regulations specifically cover compliance markets, which allow the use of domestic credits generated under COAS. Voluntary carbon markets are currently not regulated.

2. **Regulatory Status:** South Africa's carbon market is governed by the Carbon Tax Act (2019)[12] and the associated carbon offset regulations,[13] which establish the legal framework for carbon pricing and the use of offsets for compliance, including eligibility rules and administration through COAS. Recent policy developments, including the draft Article 6 Framework (2024)[14] and the National Treasury's 2025 consultation paper on developing the carbon credit market,[15] indicate potential

expansion and refinement of the framework, subject to further regulatory action.

3. **Key Authorities:** The key authorities governing South Africa's PCCM are as follows:[16]
   - *Presidential Climate Commission (PCC):* Advises the president and cabinet on climate policy, including recommendations on South Africa's NDC and just transition priorities.
   - *National Treasury:* Designs carbon pricing and carbon market policy, including the Carbon Tax Act and the carbon offset regulations, and leads consultations on carbon market reform and financial regulation.
   - *South African Revenue Service (SARS):* Administers and collects the carbon tax and applies offset allowances and tax-free thresholds under the Carbon Tax Act, including measurement, reporting, and verification (MRV) requirements.
   - *Department of Forestry, Fisheries and the Environment (DFFE):* Leads national climate policy and mitigation planning, oversees climate legislation and MRV systems, and ensures alignment with South Africa's NDC.
   - *Department of Electricity and Energy (DEE)* — formerly known as the Department of Mineral Resources and Energy (DMRE) before it was split into the DEE and the Department of Mineral and Petroleum Resources in 2024:[17] Administers the COAS, including the listing, transfer, and retirement of carbon credits used for carbon tax compliance. Previously, the Designated National Authority (DNA) acted as the official body for evaluating, approving, and promoting Clean Development Mechanism (CDM) projects. The DEE is potentially designated to be the DNA for Article 6.4 in the future.
4. **Sanctions:** No sanctions or penalties are specified. Consequences are limited to administrative rejection of applications, correction requests, or failure to list offsets.[18] The Climate Change Act (2024) introduces criminal offenses and penalties for noncompliance with obligations under the act, including fines of up to R 10 million (approximately USD 559,000)[19] and imprisonment of up to 10 years; in the context of carbon markets, these penalties may apply only where entities fail to comply with climate reporting duties, provide false or misleading emissions information, or violate future carbon budget requirements. However, these provisions do not apply to carbon offset project developers or the operation of the COAS, which remains governed by administrative rules without penalty clauses.[20]

B. Credit Generation Standards

1. **Eligible Activities:**

- A project is eligible only if it qualifies as an "approved project" registered under the Clean Development Mechanism, Verified Carbon Standard (VCS; Verra), Gold Standard, or another ministry-approved standard; is domestic; and relates to an activity that is not subject to the carbon tax. Pre-2019 projects are allowed only if they meet transitional verification and certification requirements.[22]
- Regulation 4 further excludes several project types from eligibility: renewable energy generation projects that exceed the 15 megawatts (MW) installed capacity threshold or that receive electricity tariffs above the ministerial threshold; projects already benefiting from government incentives such as the Section 12L energy-efficiency allowance; mitigation activities occurring within facilities subject to the carbon tax, including cogeneration, fuel switching, and on-site efficiency improvements; industrial gas destruction projects (HFC-23 and N_2O); nuclear energy projects; carbon capture and storage projects; and temporary certified emissions reductions.[23]

2. **Methodology Framework:** This framework recognizes CDM, VCS (Verra), and Gold Standard methodologies for credit generation, with no reference to the Integrity Council for the Voluntary Carbon Market, International Organization for Standardization, or national crediting methodologies.[24]
3. **MRV Requirements:** These requirements must undergo independent validation before registration and periodic third-party verification to confirm actual emission reductions, as per the approved standards: CDM, VCS (Verra), and Gold Standard. Accredited external verifiers check project design, baselines, monitoring plans, and reported results, and produce verification reports that are reviewed before credits can be listed in the COAS.[25]
4. **Registry System:** The system requires all carbon credits used against the carbon tax to be listed and tracked in COAS, the official registry managed under the DMRE. Projects must be registered under an approved international standard (CDM, VCS, Gold Standard), and the credits must be canceled in the originating registry via voluntary cancellation agreements between COAS and the aforementioned international standards before they are listed in COAS.[26] The system records project details, ownership, transfers, and retirements, with a transaction log to prevent double counting and ensure transparency. Only credits uniquely identified and retired in COAS are eligible for compliance.[27]

C. Integrity Principles

1. **Additionality Tests:** The regulation states that the intent is to prove that a carbon offset project is being implemented to reduce emissions in a manner that would not have occurred under a

business-as-usual situation.[28]

2. **Permanence Safeguards:** The regulation states that projects must have permanent effects through the long-term removal, reduction, or avoidance of carbon (or carbon dioxide equivalent) emissions. This applies to projects with the risk of reversibility, especially land-based projects, which can be exposed to fire and disease. The durataion for permanence is not specified.[29]

3. **Quantification Standards:** The closest criteria that fit the quantification standards are that emissions reductions or removals must be "real," projects must develop or use available methodologies that ensure carbon emissions are measurable and quantifiable, and projects must account for uncertainty and leakage.[30]

4. **Double-Counting Prevention:** There are two provisions to prevent double counting: (1) Projects that generate carbon offset credits must occur outside the scope of activities that are subject to the carbon tax to ensure that the carbon reduction benefit has not already been counted;[31] and (2) The carbon offset registry must facilitate the effective management of carbon offset credit records by ensuring that credits surrendered for compliance are retired, thus eliminating the possibility of double trading and double counting of credits either locally or internationally.[32]

D. Sustainable Development

1. **Co-benefits:** The rules specify that eligible projects must not only reduce emissions but also deliver sustainable development benefits aligned with South Africa's national priorities, such as job creation, rural development, health improvements, and biodiversity protection. Conversely, activities that produce few or no co-benefits are excluded; for example, industrial gas destruction projects were singled out as low value because they achieve emissions cuts without wider social or developmental gains.[33]

2. **Net-Zero Compatibility:** Though not explicitly stated, this could be inferred through the Carbon Tax Act's ineligible project list description, which includes industrial gas destruction projects such as HFC-23 and nitrous oxide destruction projects. In addition, projects that could potentially result in a double incentive will not be allowed: energy efficiency in company-owned or controlled operations that are covered by the carbon tax, and embedded or cogeneration of renewable energy for company-owned or controlled operations that are covered by the carbon tax. This includes parasitic electricity usage by fossil fuel–based power stations, fuel switch projects in company-owned or controlled operations that are covered by the carbon tax, and energy-efficient coal-fired power stations.[34]

II. Demand-Side Regulations

South Africa's demand for project-based carbon credits is shaped by the Carbon Tax Act and its accompanying offset regulations, which allow liable entities to use eligible credits to reduce a portion of their carbon tax liability. Under the approved regime, taxpayers may retire credits listed on the COAS to claim an offset allowance, creating the core compliance-driven demand signal for PCCM credits within the national system.[35] In principle, this structure positions the largest emitters—particularly in the power and industrial sectors—as the main purchasers of these credits.[36]

However, existing environmental-levy and fuel-levy provisions significantly suppress effective demand. Current legislation allows entities subject to these levies to neutralize their carbon tax exposure, which means they may not need to purchase offset credits even if they are formally covered by the tax. This is why Eskom, South Africa's state-owned electricity utility, despite being technically liable, has not had to pay the carbon tax, and why effective demand from Sasol, a publicly listed petrochemicals and energy company that runs large coal-to-liquids and chemicals plants, has also been limited. Since these two entities account for the overwhelming majority of potential compliance demand, their exemptions materially affect overall market uptake.[37]

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary claims:* South Africa is actively developing its VCM, with the government advancing market reforms through the National Treasury's consultation on modernizing the carbon credit market,[38] and the private sector is expanding trading infrastructure—most notably through the JSE and Xpansiv's launch of a voluntary carbon market platform that enables companies to buy and sell high-quality credits.[39] However, there are no policies currently informing the VCM.

   - *Compliance integration:* South Africa integrates carbon credits directly into its carbon tax system, where firms may use eligible domestic credits to reduce a portion of their tax liability. Under Phase 1 of the carbon tax (2019–2022, extended to the end of 2025), entities may use offsets for between 5 and 10 percent of their taxable emissions, depending on sector and activity. For Phase 2 (2026–2030), the draft Taxation Laws Amendment Bill proposes increasing these limits by five percentage points—to 15 percent for combustion emissions and 10 percent for industrial process and fugitive emissions—but these revised thresholds remain subject to parliamentary approval.[40]

   - *NDC alignment:* A draft Article 6 Framework published for public comment in November 2024

sets out how the country intends to implement Article 6 of the Paris Agreement.[41] The draft proposes establishing a single national registry under the Climate Change Act to serve as the central information repository for all Internationally Transferable Mitigation Outcomes (ITMOs) transactions and interoperate with the United Nations Framework Convention on Climate Change (UNFCCC) Article 6.4 registry and partner-country systems. The registry would function as a recording system—rather than a trading platform—for project- and credit-level authorizations and the issuance, transfer, retirement, and cancellation of carbon credits. It would distinguish between credits eligible for the domestic carbon tax (offsets) and those eligible for international transfer as ITMOs, and assign unique identifiers to ensure traceability and compliance with Article 6 requirements. South Africa has not yet concluded any bilateral Article 6.2 agreements.[42]

2. **Regulatory Status:** The government's formal rules on carbon credits are set out mainly through the Carbon Tax Act (2019) and associated Carbon Offset Regulations. These regulations focus heavily on the supply side, defining which projects are eligible and the operation of COAS. On the demand side, the rules are more limited: The Carbon Tax Act allows liable entities to use eligible carbon credits to reduce their tax liability, subject to percentage caps (5–10 percent in Phase 1, rising in Phase 2), provided the credits are domestic, listed, and retired in COAS. Beyond this, there is little detailed government guidance on the broader use of offsets, with voluntary and Article 6 arrangements remaining largely outside the current legal framework.
3. **Oversight Bodies:** Bodies that directly and indirectly oversee demand-side PCCM regulations are as follows:[43]

    - *NT* designs the carbon tax (with consultations), sets exemptions and tax-free allowances, and designs environmental-related taxes such as the fuel levy. The NT provides overall policy direction for South Africa's carbon pricing framework.
    - *SARS* administers the carbon tax and environmental-related taxes and implements the offset allowance provisions under the Carbon Tax Act, including offset use.
    - *DFFE* designs the Climate Change Act (with consultations) and leads the development of South Africa's climate change response, including long-term mitigation planning.
    - *DEE* (formerly known as DMRE) administers the COAS, which is responsible for the listing, transfer, and retirement of carbon credits used to offset carbon tax liabilities. The DEE is currently exploring and will likely adopt a domestic certification standard under the Carbon Tax Act's offset allowance.
    - *PCC* recommends South Africa's nationally determined contribution.

4. **Standards Integration:** International meta-standards are not referenced; instead, eligibility is limited to projects certified under CDM, Gold Standard, and VCS (Verra),[44] with Article 6.4 eligibility standards expected to be added through future regulatory amendments but not yet incorporated into the offset framework.[45]

5. **Enforcement Mechanisms:** No sanctions or penalties are specified. Consequences are limited to administrative rejection of applications, correction requests, or failure to list offsets.[46]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** This is not explicitly mentioned in the regulations.

2. **Scope Coverage:** This is not explicitly mentioned in the regulations. However, offsets can only be used to reduce liability for Scope 1 emissions under the Carbon Tax Act and apply only to direct emissions (e.g., fugitive emissions).[47] This implies that credits cannot be applied to Scope 2 or Scope 3 emissions, and there is no phase-out plan expanding or limiting their use beyond Scope 1.

3. **Quality Standards:** The compliance framework sets five principles that apply to the supply-side criteria: real, reliable, additional, permanent, and sustainable development.[48]

4. **Accounting Treatment:** Compliance offset accounting is handled through the COAS, which functions as the national registry for carbon tax offsets. COAS manages project registration, credit listing, transfers, and retirement (not "cancellation"), which is the official accounting entry used to demonstrate surrender of offsets for carbon tax reduction. SARS accepts only COAS-retired credits when assessing offset use under the Carbon Tax Act.[49]

C. Transparency and Assurance

1. **Public Reporting:** There is no dedicated public reporting requirement for carbon credit use under either the compliance or voluntary systems. The Carbon Tax Act and Carbon Offset Regulations do not mandate companies to disclose the type or volume of carbon credits they use, and the COAS is an internal, nonpublic registry, meaning offset listings, transfers, and retirements are not publicly accessible. Transparency instead comes indirectly through the international crediting standards allowed under the regime—CDM, Gold Standard, and Verra—which publish project documentation and issuance or retirement records on their own public registries.[50]

2. **Third-Party Verification:** There is no requirement for third-party assurance of company-level climate or carbon credit use claims; credit buyers only need to retire credits in COAS for SARS to recognize them for carbon tax reduction. Carbon offset projects, however, must undergo

independent third-party verification because eligible credits must come from CDM, Verra (VCS), or Gold Standard, all of which require validation and verification by accredited auditors. Projects also require an Extended Letter of Approval (ELoA) from the DMRE before credits can be listed in COAS. Once listed, credits may only be transferred or retired in the registry, and retirement is necessary for compliance use. Beyond this registry process, there is no requirement for additional third-party assurance of company-level claims.[51]

3. **Science-Based Targets:** There are no regulations requiring companies to set or disclose science-based targets or equivalent pathways as part of using offsets under the Carbon Tax Act or COAS.

4. **Policy Advocacy:** Compliance offset rules currently do not require alignment with Article 6. The Carbon Tax Act and Carbon Offset Regulations are entirely domestic mechanisms, and offset use under the carbon tax does not involve international transfers or Article 6 accounting. Article 6 considerations appear only in the draft Article 6 Framework, which outlines how future ITMO authorization and accounting would work.[52]

D. Market Integrity Protection

1. **Anti-Greenwashing:** Rules on advertising and green claims apply broadly to environmental statements and do not single out carbon credit use. The Advertising Regulatory Board Code of Advertising Practice (appendix G) requires that environmental claims be accurate, clear, scientifically supported, and not misleading.[53] The Consumer Protection Act, 2008, also prohibits any false, misleading, or deceptive marketing, which includes environmental claims. While these frameworks cover carbon credits by implication, there are no credit-specific provisions; companies using credits must therefore comply with general rules on truthful, substantiated environmental advertising.[54]

2. **Co-Benefits Delivery:** The rules specify that eligible projects must not only reduce emissions but also deliver sustainable development benefits aligned with South Africa's national priorities, such as job creation, rural development, health improvements, and biodiversity protection. Conversely, activities that produce few or no co-benefits are excluded; for example, industrial gas destruction projects were singled out as low value because they achieve emissions cuts without wider social or developmental gains.

III. Market-Side Regulations

South Africa hosts a growing set of voluntary carbon credit trading venues, including the JSE Ventures Carbon Market and the Green Asset Exchange, alongside OTC and broker-facilitated

trading. While these platforms collectively support voluntary carbon market activity, the JSE-V Carbon Market is the primary exchange referenced in the National Treasury's 2025 consultation paper and is therefore the focus of this analysis.[55]

A. Infrastructure Framework

1. **Market Structure:** South Africa's carbon credit market is undergoing a transition from a primarily OTC environment to an integrated model featuring formal self-regulating exchange trading. The JSE-V Carbon Market launched its partnership with Xpansiv, a global spot exchange for environmental commodities, in February 2025, while the Green Asset Exchange announced its platform upgrade and partnership with Credible Carbon, a local voluntary registry, in January 2026.[56] The JSE-V Carbon (and other exchanges) enables the trading of voluntary credits, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), and the South African COAS. It offers an order-book structure and settlement infrastructure connected to major international and local registries. The platform supports both exchange trading (transparent order book) and private OTC carbon credit trades, which can be settled through its registry-integrated infrastructure.[57]

2. **Registry Operations:** Any credit used for carbon tax reduction must pass through the COAS, which serves as South Africa's national compliance registry. COAS handles project approval and listing, requiring an ELoA from the DMRE—along with ownership transfers between account holders. Credits must be formally retired in COAS for the SARS to recognize them against carbon tax liability, and the system conducts documentation checks to confirm the validity, issuance, and eligibility of credits from CDM, Gold Standard, or VCS (Verra) before they can be listed or retired.[58]

3. **Data Standards:** Xpansiv's data infrastructure is not governed by any mandatory data standard.[59] South Africa's 2025 G20 presidency advanced work on the Common Carbon Credit Data Model (CCCDM), a voluntary, government-backed, G20-endorsed framework that standardizes core carbon credit data fields to improve transparency, interoperability, and traceability across registries. South Africa is exploring its relevance for strengthening domestic carbon market data systems.[60]

B. Trading and Participation

1. **Eligibility Rules:** Participation in South Africa's carbon credit trading market is self-regulated through the JSE-V Carbon platform and Xpansiv, which require trading participants to meet the exchange's access conditions, open a verified real-name trading account, and comply with platform rules. The exchange does not publish detailed eligibility criteria for which carbon credit

types can be traded, but its official description states that it supports transactions in "voluntary and compliance carbon credits—including COAS—and standardized VCM and CORSIA contracts." Because the platform permits both voluntary and compliance-linked products and relies on integration with major international registries, it is unclear whether the JSE restricts trading only to credits meeting South Africa's compliance criteria or whether it allows a wider range of international VCM credits. The system also supports settlement of bilateral OTC trades through its integrated post-trade infrastructure.[61]

2. **Trading Mechanisms:** Regulations do not impose statutory trading formats for carbon credits. Trading occurs through the JSE-V Carbon exchange, which provides a transparent order book for listing and executing trades, and also supports settlement of bilateral OTC transactions. The government does not mandate auction formats, contract standardization, or exchange-only trading. Instead, the market operates through a mix of exchange transactions, brokerage activity, and developer-buyer agreements.[62]

3. **Settlement Systems:** Settlement of market transactions is conducted through the JSE-Xpansiv post-trade infrastructure, which is integrated with major international registries to enable credit delivery and payment settlement. After execution—either via the exchange order book or OTC—the credits are transferred to the buyer's registry account for final settlement. For compliance use under the carbon tax, however, credits must ultimately be transferred into and retired in COAS, which serves as the authoritative accounting system for tax reduction; the JSE-Xpansiv settlement system does not replace COAS for compliance purposes.[63]

4. **Price Discovery:** The JSE-V Carbon platform facilitates transparent price discovery through its order-book trading, where bids, offers, and executed prices are visible to market participants. OTC deals may be less transparent, but can still appear in Xpansiv's aggregated market data products. The platform neither regulates carbon credit pricing nor imposes minimum or maximum price rules.

5. **Oversight Authority:** Carbon credit trading venues in South Africa are not regulated by a dedicated carbon market authority; no statutory authority sets trading venue rules, approves credit types for trading, or governs voluntary market conduct on exchanges. Instead, market oversight occurs through the following:[64]

    - *JSE-Xpansiv* (and other similar exchanges), which administers trading rules and access requirements and sets standards on the platform;

    - *NT*, which identifies market infrastructure gaps and proposes future reforms in its carbon market consultation process;

- *DFFE*, which governs international transfers under the draft Article 6 Framework but does not regulate domestic market trading; and
- *DEE*, which administers COAS for compliance, but does not regulate exchange trading.

6. **Legal Classification:** Current regulations do not explicitly define the legal status or accounting treatment of carbon credits. The NT consultation paper on developing carbon markets proposes reforms to clarify their intangible legal nature, explore classification as unlisted securities, and improve regulatory certainty for trading and accounting purposes.[65]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** The JSE-V Carbon and Xpansiv platform applies its own internal conduct, surveillance, and participant access controls, but these are platform rules, not government-mandated safeguards. The NT consultation paper identifies the lack of a legal framework for market conduct, manipulation, and fraud prevention as a major market "pain point," noting that clearer regulation may be introduced in future reforms.[66]

2. **Transparency and Reporting Requirements:** South Africa does not have a dedicated transparency or reporting statute for carbon credit trading. Transparency is primarily ensured through registry-based processes rather than market-side disclosure rules.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** South Africa does not have a dedicated financial regulatory framework that governs carbon credit markets, and carbon credits are not defined as financial instruments under the Financial Markets Act. As a result, spot trading of carbon credits—voluntary or compliance eligible—is not regulated as a financial market activity. Exchanges such as the JSE-V Carbon platform operate under their own internal rules, but are not licensed as regulated market infrastructures for carbon credit trading.

2. **Cross-Border Trading Framework:** The cross-border carbon credit framework remains in development and will likely be structured around its implementation of Article 6 of the Paris Agreement. The draft Article 6 Framework, published for public comment in November 2024, outlines how South Africa intends to govern international transfers, including authorizing projects, applying corresponding adjustments, assigning unique ITMO identifiers, and ensuring alignment with the national greenhouse gas inventory and NDC. The draft framework proposes a national Article 6 registry that would track issuance, authorization, transfer, cancellation, and retirement of ITMOs, distinct from COAS (which handles domestic carbon tax offsets).[67] South Africa has not yet signed any bilateral Article 6.2 Implementation Agreements and, therefore,

has no operational cross-border transfer mechanisms in place.

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** South Africa's carbon market development efforts are currently focused on modernizing market infrastructure and registry architecture to support high-integrity trading of carbon credits. These proposed infrastructure improvements aim to create a more robust ecosystem for credit listing, transfer, and retirement, and to support cross-border liquidity and trading.[68] South Africa's 2025 G20 presidency pushed forward work on CCCDM, a voluntary G20-endorsed framework that standardizes core carbon credit data fields to improve transparency, interoperability, and traceability across registries. As part of its future carbon market infrastructure planning, South Africa is exploring how elements of the CCCDM could support more consistent, high-integrity data practices in its domestic carbon offset system.[69]

2. **International Cooperation:** As of January 2026, South Africa has not yet concluded any binding bilateral Article 6.2 Implementation Agreements with other countries, and the Article 6 framework remains under development.[70]

3. **Regulatory Evolution:** The government consultation paper proposes legislative changes to clarify the legal and financial status of carbon credits, explore their recognition as tradable intangible assets, and adjust financial market regulation to support both exchange-based and bilateral trading. This reflects an incremental shift toward a more transparent and scalable market ecosystem, although formal, regulated derivatives, clearing, or cross-exchange carbon trading infrastructure are not yet established.[71]

4. **Enforcement Enhancement:** The carbon tax and offset regulations contain no market conduct, anti-manipulation, or fraud-prevention rules for trading platforms or voluntary participants, and the National Treasury consultation paper notes that future reforms will be needed to align market structures with financial market principles such as fair access, integrity, and robust settlement.[72]

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SOUTH KOREA

Overview

South Korea's project-based carbon credit market (PCCM) is embedded within the Korea Emissions Trading System (K-ETS) through a statutory offsetting regime for external projects.[1] The legal backbone of this regime is the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits (ETS Act) and its Enforcement Decree, which together define how greenhouse gas (GHG) reductions from external projects can be certified, registered in a dedicated offset registry, and converted into offset emission permits for surrender under the K-ETS.[2]

South Korea also operates a second, structurally distinct project-based crediting pillar: international mitigation activities implemented under Article 6 of the Paris Agreement. In the National Framework Plan for Carbon Neutrality and Green Growth,[3] the government sets an explicit 2030 "international mitigation sector" contribution of reducing 37.5 million metric tons of carbon and frames delivery by (1) establishing implementation foundations (including project guidelines and a public-private support platform) and (2) identifying projects through bilateral agreements with key countries. This pillar is separate from the K-ETS domestic external offset framework and is oriented toward government-to-government cooperation and the transfer of mitigation outcomes for use toward South Korea's national targets.

Under Articles 29–31 of the ETS Act,[4] emission reductions from projects implemented in sectors or locations outside the K-ETS coverage but in line with international standards may be converted into tradable emission permits after approval and certification by the competent authority and registration in the Offset Registry System (ORS). These certified reductions are issued as Korean Offset Credits (KOCs), which can then be converted into Korean Credit Units (KCUs) for compliance use in the ETS.[5]

In practice, this forms a government-run, compliance-grade project-based crediting program rather than a free-standing voluntary carbon market standard. As of December 2024, South Korea had 317 registered methodologies (211 Clean Development Mechanism [CDM] and 106 domestic credits)[6] and hundreds of registered projects.[7] Project types range from fuel switching and industrial efficiency to renewable energy and certain land use activities, with forest carbon offset projects specifically governed by the Act on the Management and Improvement of Carbon Sink and allowed to feed into the K-ETS external project pipeline.

A distinctive South Korea-specific feature is that forestry-based project crediting is governed through a dedicated statutory framework under the Act on the Management and Improvement of Carbon Sink (administered by the Korea Forest Service), which establishes a forest carbon center, project registration procedures, third-party verification provisions, a forest carbon registry, credit validity rules, and explicit linkages for using forest carbon stock to offset targets, including the compliance targets.[8]

The Ministry of Environment has progressively tightened carbon credit use. In Phase 3 (2021–2025), entities could use carbon credits for up to 5 percent of their compliance obligation, down from 10 percent in earlier phases, and international credits were capped as a subset of that limit.[9] Recent rule changes extended KOC validity from three to five years, and Phase 3 also opened the door to credits from Article 6 projects implemented by South Korean companies abroad, subject to forthcoming guidance.

South Korea is also one of the first movers on Article 6.2 implementation. In July 2025, South Korea and Cambodia launched a landmark Internationally Transferred Mitigation Outcomes (ITMO) project for e-mobility and charging infrastructure in Cambodia, authorized as the first Article 6.2 project under their bilateral partnership.[10] These units are designed to be integrated into South Korea's international carbon credit portfolio (international KOCs or ITMOs) and then into the K-ETS and nationally determined contributions (NDCs) accounting via the legal link in Article 36.[11]

I. Supply-Side Regulations

On the supply side, the core of South Korea's domestic PCCM is the K-ETS offset or external project mechanism established under the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits.[12] Under this mechanism, project developers implement external projects that generate certified GHG reductions,[13] which are issued as offset-eligible reductions and can be converted by K-ETS compliance entities into offset emission permits and surrendered for compliance (i.e., project-based credits function as compliance-linked offsets once converted). The Act expressly allows an eligible entity to request conversion of GHG reductions from an external project into emission permits and requires those converted units to be registered in the statutory offset register.

South Korea's supply-side eligibility is operationalized through (1) a statutory external project eligibility mechanism[14] and (2) an official catalogue of approved methodologies. In practice, project eligibility is defined by the approved methodology inventory in the government registry system, which currently lists 317 methodologies (with sector tags such as forestry, carbon sinks, transport, waste, energy demand, and renewable energy production) and shows the effective date and registration status of each methodology.[15]

A. Regulatory Framework

1. **Market Classification:** South Korea's PCCM supply is compliance-anchored; external project reductions become usable for the K-ETS only after government certification and conversion into offset emission permits that can be surrendered instead of allowances.

   There is also a compliance-linked international mitigation cooperation Article 6.2 pillar that is distinct from domestic K-ETS offsets. Under the government's National Framework Plan architecture, international mitigation is treated as a dedicated mitigation sector contributing to the national 2030 pathway rather than a domestic voluntary market.

2. **Regulatory Status:** The supply-side rules are legally anchored by a combination of the Act and presidential decree and implemented via binding administrative guidance for feasibility assessment, monitoring, verification, and certification.[16]

   - *Binding Legal Foundation:* The ETS Act defines emission permits and establishes the offset mechanism (Article 29), certification of external project reductions (Article 30), and the offset register (Article 31).[17]

   - *Binding Operational Rules through Government Guidelines:* The Act requires certification and conversion to follow guidelines prescribed by presidential decree, and the external project feasibility and certification guideline is issued as a formal administrative rule with cross-ministry versions and periodically updated (including updates referenced as recently as 2025).[18]

3. **Key Authorities:** Domestic external projects linked to the K-ETS offset framework:

   - *Ministry of Climate, Energy and Environment (MCEE):* As the competent authority, the MCEE converts external project reductions into emission permits (offset emission permits), certifies reductions, and maintains the ORS, which must be linked to the main permits register.[19]

   - *Ministry of Trade, Industry and Resources (MOTIR):* The MOTIR serves as the sectoral competent agency for industrial and energy sector external projects, coordinating with the MCEE on methodology approval and project certification. While the MCEE functions as the overall competent authority for the K-ETS and offset mechanism, the MOTIR implements project authorization and emission reduction certification for projects within its specific sectoral domains (industrial efficiency, energy production).[20]

   - *Korea Forest Service (KFS):* The KFS manages forest-based carbon offset projects under the Act on the Management and Improvement of Carbon Sink and coordinates with the MCEE on forestry external projects eligible for the K-ETS offset mechanism.[21]

- *Ministry of Agriculture, Food and Rural Affairs:* This ministry manages agricultural soil carbon sequestration projects and coordinates with the Korea Chamber of Commerce and Industry (KCCI) Carbon Reduction Certification Center for agricultural offsets.[22]
- *Ministry of Oceans and Fisheries:* This ministry serves as the sectoral competent agency for the fields of ports, marine, and shipping sectors' external projects and coordinates with the MCEE on methodology approval and project certification.
- *Ministry of Land, Infrastructure, and Transport:* This ministry serves as the sectoral competent agency for external projects related to fuel conversion and energy efficiency in buildings as well as low-carbon transportation, coordinating with the MCEE on methodology approval and project certification.
- *Korea Environment Corporation (K-ECO):* The K-ECO reviews project design documents (PDD) and monitoring reports evaluated by each government department and requests the certification committee to review external project approval and emission reduction certification.[23]
- *Greenhouse Gas Inventory and Research Center of Korea (GIR):* The GIR operates the government registry infrastructure (ORS) that publishes approved methodologies and supports project credit administration (methodology status, effective dates, etc.).[24]
- *National Institute of Environmental Research (NIER):* The NIER accredits and supervises third-party verification bodies for K-ETS external projects pursuant to delegated authority from the MCEE; conducts regular comprehensive evaluations of verification bodies once per year, including on-site inspections and witnessed assessments to ensure verification quality and maintenance of qualifications; and may establish and publicly announce standards for calculating verification costs subject to ministerial approval and enforce administrative sanctions, including designation revocation or business suspension for non-compliance.[25]

International mitigation activities implemented under Article 6 of the Paris Agreement:

- *Office for Government Policy Coordination:* This office publishes the National Framework Plan (April 2023) that sets the 37.5 million metric tons reduction target and implementation tasks for international mitigation.[26]
- *MOTIR:* This ministry publicly describes and operationalizes Article 6.2 cooperation via authorized bilateral projects (e.g., the Cambodia project) and describes an investment support program launched in 2023.[27]

- *Korean Standards Association:* Approved as a Designated Operational Entity under Article 6.4 mechanism in October 2025,[28] this association is authorized to conduct project validation, verification, and Sustainable Development Goals impact assessment for Article 6.4 emission reductions.
- *Host-Country Authorities:* These authorities provide formal authorization for projects under their national Article 6 governance framework (e.g., Cambodia's Ministry of Environment issued a Letter of Authorization for the first project).

4. **Sanctions:**
   - *Registry Account Suspension:* The Korea Offset Registry System can suspend or freeze accounts for criminal purposes (e.g., money laundering, fraud, or tax evasion),[29] repeated unauthorized access attempts, unfair trading practices related to offset credits, or pending investigation of project violations.
   - *Cancellation of Korean Offset Credits:* If verification fails or is found to be fraudulent, project information is false, misleading, or incomplete, or a project breaches program documentation or legal requirements, KOCs can be cancelled.
   - *Criminal Penalties for Fraud in External Project Certification:* A person who obtains certification of GHG reductions from an external project by fraud or other illegal means shall be punished by a fine not exceeding KRW 100 million (approx. USD 68,900);[30] where three times the amount of profits obtained or losses avoided as a result of such violation exceeds KRW 100 million, the person shall be punished by a fine not exceeding three times the amount of such profits or avoided losses.[31]

B. Credit Generation Standards

1. **Eligible Activities:** For the K-ETS offset framework, eligible project types are defined by 317 government-approved methodologies (as of the last update in December 2024)[32] across multiple sectors:
   - *Forest and Land Use (Carbon Sink Management and Improvement):* Forest creation and afforestation projects, forest restoration and reforestation after disasters, and sustainable forest management
   - *Energy Industry (Renewable Energy Production):* Solar photovoltaic systems, wind power generation, and geothermal energy production
   - *Energy Demand:* Energy efficiency improvements (e.g., insulation, HVAC upgrades), industrial

energy efficiency, and heat pump installations

- *Transport:* Electric vehicle deployment and charging infrastructure, fleet electrification for public transport, freight, rail, and maritime
- *Industrial Processes:* Fuel conversion (e.g., coal to natural gas, biomass, or renewable energy) and carbon capture and storage projects

Eligible activities under South Korea's Article 6 pillar are defined through bilateral cooperative agreements with host countries and participation in the Article 6.4 centralized mechanism. As of April 2026, South Korea has signed more than 10 bilateral Article 6.2 agreements, including with Ghana (March 2022, authorization for sustainable cookstoves and charcoal projects),[33] Indonesia (June 2024, projects not yet specified), and Cambodia (July 2025, e-mobility and charging infrastructure). In May 2025, the South Korean government selected six carbon reduction projects for Article 6 financial support, though project-specific details remain undisclosed.[34]

2. **Methodology Framework:**

For the K-ETS offset framework, each approved methodology operates under a formal regulatory framework that sets requirements for additionality, baseline determination, permanence, leakage assessment, and measurement, reporting, and verification (MRV). South Korea uses two parallel methodological systems:[35]

- *CDM-Based Methodologies* (211 methodologies): International methodologies adopted from the United Nations Convention on Climate Change (UNFCCC) Clean Development Mechanism, including
  - approved CDM methodologies adapted for domestic use,
  - CDM baseline and monitoring methodologies, and
  - sector-specific CDM tools and guidelines.
- *Domestic South Korean Methodologies* (106 methodologies): Domestically developed methodologies for
  - activities not covered by the CDM (e.g., domestic building efficiency, South Korean forest types),
  - projects tailored to the South Korean regulatory context, and

- simplified methodologies for small-scale projects.

For international mitigation activities implemented under Article 6 of the Paris Agreement, projects utilize methodologies approved by host countries in accordance with UNFCCC guidance, including adapted CDM methodologies such as AMS-III.C for the Cambodia e-mobility project. Article 6.4 projects will employ centralized methodologies approved by the Article 6.4 Supervisory Body.[36] South Korea submitted views to the UNFCCC in April 2023 supporting the development of simplified baseline and monitoring methodologies for Article 6.4 to reduce transaction costs, particularly for small-scale and least-developed country projects.

3. **MRV Requirements:** External projects under South Korea's K-ETS offset mechanism must undergo structured measurement, reporting, and verification by independent third-party verification bodies accredited by the NIER. Project proponents submit monitoring plans with their PDD for project registration and are required to produce annual monitoring reports documenting emissions reductions or removals according to approved methodologies. Certified emission reductions (KOCs) are then issued following independent verification of the monitoring report and certification by the competent authority, with documented QA-QC procedures ensuring data accuracy. Independent verification must comply with ISO 14065:2020 and ISO 14064-3:2019, and verification bodies must conduct mandatory on-site inspections before submitting verification reports to the MCEE and relevant sectoral agencies. Following technical review by the MCEE and sectoral competent agencies (such as the KFS for forestry projects), certification is issued for verified reductions, and KOCs are registered in the government-operated ORS maintained by the GIR. The NIER supervises all accredited verification bodies and enforces minimum fee schedules to ensure verification quality and prevent inadequate due diligence.[37]

4. **Registry System:** South Korea's statutory offset framework mandates the government-operated ORS[38] managed by the GIR to register, track, and manage certified reductions from external projects. The ORS is linked to the main Emissions Trading Registry System (ETRS), enabling seamless integration between offset credit issuance and compliance surrender. The registry maintains electronic records of all KOCs, including project identification, certified reduction quantities, verification body details, certification dates, and credit vintages with specified validity periods (currently five years). The ORS is integrated with the National GHG Management System (NGMS) to prevent double counting between domestic offset credits and international credits (CDM or Article 6 units) and coordinates with the Korea Exchange (KRX) to track trading activities and ensure proper accounting of KOC to KCU conversions.[39] Public

disclosure functions include publishing approved methodologies, project lists, certified reduction volumes, and offset credit issuance data to ensure transparency.

C. Integrity Principles

1. **Additionality Tests:** Projects must demonstrate additionality through a structured evaluation process as defined in Article 14 of the external business feasibility assessment guidelines.
    - *Legal and Institutional Additionality:* Mandatory for all projects. The project must go beyond legal and regulatory requirements and cannot be mandated by existing South Korean or international law.
    - *Economic Additionality:* Mandatory for projects with estimated annual GHG reductions of 60,000 tCO_2-eq or more. These projects must demonstrate financial barriers or that the project would not be economically viable without carbon credit revenue. For small-scale projects (below 60,000 tCO_2-eq/year), this evaluation is not mandatory, simplifying the process to reduce administrative burden.
2. **Permanence Safeguards:** South Korea employs differentiated crediting periods for general projects and for agriculture, forestry, and other land use projects. Forestry projects under the Act on the Management and Improvement of Carbon Sink must implement long-term forest management plans with operating standards conforming to UNFCCC norms,[40] and forest carbon stock validity periods are prescribed by presidential decree based on project type and size. A mandatory risk buffer system requires 10–30 percent of issued credits to be withheld in pooled buffer accounts, calculated based on a structured assessment of project implementation risks in accordance with Annex 10 (Project Implementation Risk Analysis and Forest Buffer Operation Standards) of the *Guideline on Feasibility Assessment and Certification of Emission Reductions for External Projects*. Project proponents bear strict liability for intentional reversals and must compensate through credit retirement or cash payment within 30 days, with non-compliance triggering account suspension. For K-ETS external projects, annual monitoring and periodic re-verification by NIER-accredited verification bodies ensure ongoing compliance for forestry projects under the K-ETS offset mechanism.[41] The Forest Carbon Offset Scheme (FCOS) is operated by the Forest Carbon Center under the Act on the Management and Improvement of Carbon Sink. This institutionally distinct program employs designated verification agencies to conduct document reviews and field surveys. The center holds the authority to revoke project registration or certification if documents or monitoring reports are falsely stated.[42]
3. **Quantification Standards:** Project-level emission reductions or removals must be quantified

using one of 317 government-approved methodologies registered in the ORS. The 317 approved methodologies referenced here specifically refer to methodologies eligible for use in external projects under the K-ETS: 211 adapted UNFCCC CDM methodologies and 106 domestic South Korean methodologies for activities not covered by the CDM.[43] Under the FCOS, projects registered under the Act on the Management and Improvement of Carbon Sink must use operating standards established by the KFS that conform to UNFCCC and international norms. These standards cover afforestation, reforestation, forest management, harvested wood products, forest biomass energy, and the monitoring and verification of forest carbon stock. Forestry projects intended for K-ETS compliance use methodologies and standards under the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits, distinct from the Forest Carbon Center's voluntary program.[44]

4. **Double-Counting Prevention:** South Korea operates the government-run ORS and the Forest Carbon Registry as separate and independent systems with no direct technical linkage. Instead, double-counting prevention is addressed through rigorous evaluation procedures conducted during the external project registration process to ensure no duplicate issuance or claims occur across the two frameworks. The ORS,[45] operated by the GIR, assigns unique serial numbers to all KOCs for K-ETS external projects, logging all issuance, conversion (KOCs to KCUs),[46] transfer, surrender, and cancellation events with time stamps. The ORS is linked to the ETRS as mandated by Articles 31[47] and 41 of the ETS Act and Enforcement Decree, ensuring seamless tracking across credit and allowance pools. The Forest Carbon Registry operated by the KFS under Article 24 of the Carbon Sink Act[48] manages forest carbon stock information, with forest carbon stock loss effects being recorded when used as offset outcomes or upon validity expiration to prevent double use. Persons trading forest carbon stock must register trading accounts and credits in the Forest Carbon Registry, paying registration fees per ton of CO_2. Integration with the NGMS prevents double counting between domestic projects and international offset credits (CDM, Article 6 ITMOs),[49] with cross-checks ensuring no project is registered in multiple programs.

D. Sustainable Development

1. **Co-Benefits:** Co-benefits are not formally required to issue KOCs under the K-ETS external project framework, but both statutory frameworks emphasize wider environmental, social, and economic outcomes. The Act on the Management and Improvement of Carbon Sink explicitly requires forest carbon offset activities to deliver multiple benefits beyond carbon sequestration, including biodiversity conservation, rural development, water quality improvement, recreational use, and support for local economies. Forest carbon offset projects must promote sustainable forest management aligned with international forestry norms and emphasize social, economic,

and environmental benefits centered on residents and societal welfare, including health promotion, quality of life improvement, and the pursuit of happiness for all citizens through forest welfare programs.[50] While co-benefits do not affect carbon crediting quantities or offset conversion eligibility, project developers frequently report them to buyers and government agencies, and South Korea's Fifth National Biodiversity Strategy (2024–2028) explicitly encourages nature-positive and community-positive project outcomes through ecosystem services enhancement, improved public access to nature's benefits, and sustainable use of genetic resources with benefit-sharing.[51]

2. **Net-Zero Compatibility:** South Korea's overarching climate framework, anchored in the Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis (enacted September 24, 2021),[52] legally commits the country to carbon neutrality (net-zero GHG emissions) by 2050 and establishes binding 2030 NDCs with enhanced emissions reduction targets. The 2050 Carbon Neutral Strategy (December 2020) positions domestic nature-based solutions, particularly forest carbon sink management, afforestation, reforestation, forest restoration, urban green space creation, coastal wetland restoration, and sustainable forest management, as critical contributions to South Korea's long-term decarbonization pathway.[53] The government plans to maintain forest carbon removals at the highest level possible through innovative forest management, changing tree species, implementing forest health programs, restoring degraded forestlands, and planting trees on underutilized lands to increase carbon stocks and offset 26.7 million metric tons of CO_2 emissions through nature-based solutions by 2030.[54]

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:** For domestic external projects linked to the K-ETS offset framework, the following apply:

    - *Compliance Integration:* Project-based credits from external projects and forest carbon offset programs may be used for K-ETS compliance after conversion from KOCs to KCUs.[55] KOCs represent certified reductions from domestic or international external projects registered in the ORS, while KCUs are compliance-grade units eligible for surrender. Covered entities under the K-ETS may use carbon credits for up to 5 percent of their annual compliance obligation (reduced from 10 percent in Phases 1–2 to 5 percent in Phases 3–4, 2021–2030), regardless of whether credits are domestic or international. KOCs must be converted to KCUs within five years of KOC issuance to maintain eligibility for compliance

use. For the 2024 compliance period, 1.9 million KOCs (1.7 million domestic, 0.2 million international) were converted to KCUs, and over 71,000 were surrendered for compliance.[56]

  - *K-ETS Compliance:* For forestry projects specifically, only those registered as external projects under the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits can generate KOCs convertible to KCUs for K-ETS compliance.
  - *Voluntary Use:* Forest carbon stock certified under the Act on the Management and Improvement of Carbon Sink operates as an institutionally distinct scheme. While these achieved-reduction type credits represent verified carbon benefits, they are certified in the Forest Carbon Registry and are not eligible for surrender to satisfy K-ETS compliance obligations.

- *Voluntary Claims:* South Korean companies, financial institutions, and individuals may voluntarily purchase and retire project-based carbon credits, including forest carbon stock from domestic forestry projects, agricultural offsets from KCCI Carbon Reduction Certification,[57] and eligible international standards (e.g., Verified Carbon Standard, Gold Standard, and CDM), to support climate finance objectives, achieve corporate net-zero pledges, or make climate-related claims. Forest carbon stock may be used for a social contribution-type forest carbon offset by participating in voluntary projects to reduce GHG and save energy, with relaxed standards prescribed by presidential decree compared to compliance-grade offsets. The South Korean government is establishing a voluntary carbon exchange (announced in September 2025) operated by Korea Exchange in collaboration with Xpansiv to enable trading of certified voluntary carbon credits, expand demand beyond K-ETS compliance obligations, and support corporate environmental, social, and governance (ESG) strategies and 2050 carbon neutrality commitments.[58]
- *NDC Alignment:* Emission reductions and removals from South Korean domestic projects, including external projects under the K-ETS offset mechanism and forest carbon offset projects under the Act on the Management and Improvement of Carbon Sink, are accounted for in South Korea's national GHG inventory and contribute to its NDC under the Paris Agreement (40 percent emission reduction below 2018 levels by 2030, with 37.5 million international credits targeted for NDC achievement).[59] The South Korean government does not apply corresponding adjustments to voluntary credit purchases or retirements from domestic projects, meaning the underlying mitigation continues to contribute to the country's NDC rather than to private voluntary claims. For international credits used for K-ETS compliance or voluntary retirement, South Korea is implementing Article 6 of the Paris Agreement, including bilateral cooperative agreements under Article 6.2, requiring

corresponding adjustments to prevent double counting where the host country authorizes transfer of ITMOs and adjusts its GHG inventory accordingly.

For international mitigation activities implemented under Article 6 of the Paris Agreement:

- *NDC Alignment:* Official government sources frame international mitigation outcomes as a tool to support South Korea's national mitigation pathway. The MOTIE's official description of South Korea's first Article 6.2 project states that 400,000 tons of the project's expected reductions will be transferred to South Korea and counted toward its NDC.[60]

2. **Regulatory Status:**

- *Compliance Use:* The K-ETS establishes legal obligations permitting covered entities to use project-based carbon credits for statutory compliance. Under Article 29[61] of the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits, external project reductions certified as KOCs may be converted to KCUs and surrendered to satisfy compliance obligations.[62] Covered entities can replace one compliance unit per ton of carbon dioxide equivalent (tCO_2e) emitted, with carbon credits allowed up to 5 percent of each entity's annual compliance obligation (Phase 3–4, 2021–2030), regardless of whether credits are domestic or international.[63]

- *Guidance-Based Voluntary Use:* Currently, there are no official government guidelines or binding regulations governing corporate use of voluntary carbon credits beyond compliance obligations, though the subject remains under active discussion by relevant authorities. The Ministry of Economy and Finance (MOEF) outlined the Korean Carbon Credit Activation Plan (August 2025), emphasizing robust verification, certification measures to prevent greenwashing, transparency in the market, and active private sector participation.[64] The planned Korea Exchange voluntary carbon exchange will enable trading of certified voluntary carbon credits, expanding demand beyond the K-ETS compliance scope to support corporate ESG strategies and net-zero pledges.

3. **Oversight Bodies:**

- *MOEF and MCEE:* The MOEF initially set the policy direction for voluntary and compliance carbon markets through the Korean Carbon Credit Activation Plan. Following the renaming of the Ministry of Environment to the MCEE in October 2025, overall policy authority for climate and carbon markets was consolidated under the new ministry, which now oversees the implementation of these frameworks, emphasizing robust verification, anti-greenwashing measures, and transparency. The MCEE[65] consolidates climate, energy, and environmental

policy, including carbon markets, and establishes principles for corporate net-zero credit use, double-counting prevention, and alignment with Article 6 of the Paris Agreement.

- *Korea Fair Trade Commission (KFTC):* The KFTC enforces consumer protection law through the Act on Fair Labeling and Advertising, requiring environmental claims (e.g., carbon neutral, net-zero, and eco-friendly) to be truthful, substantiated, and not misleading. Following revised environmental advertising guidelines (August 2023),[66] the KFTC issued its first greenwashing warnings to fashion brands (May 2025)[67] for unsubstantiated eco-claims. Under the proposed Amendment to the Environmental Technology Act, the MCEE will gain authority to fine companies up to KRW 3 million (USD 2,070)[68] for misleading environmental claims, positioning South Korea as an emerging nation with dedicated anti-greenwashing legislation.[69]
- *Financial Services Commission (FSC):* The FSC regulates sustainability-related claims by financial institutions and Korea Composite Stock Price Index (KOSPI)-listed companies. It also mandates ESG disclosure for KOSPI companies with assets valued at over KRW 2 trillion, extending to all KOSPI companies by 2030.[70]
- *Financial Supervisory Service and Korea Financial Investment Association:* This association introduced the Guidelines on ESG Bond Certification and Evaluation (January 2023) and Guidelines on ESG Fund Disclosure (effective December 2023) to prevent greenwashing in financial markets. These standards require credit rating agencies and asset managers to ensure sustainability claims are fair, clear, and substantiated by verifying the use of proceeds and disclosing investment strategies.[71]
- *Korea Exchange:* The KRX operates the K-ETS compliance trading platform and is launching a voluntary carbon exchange in collaboration with Xpansiv.[72] It provides market infrastructure, price discovery, transaction settlement, and trading oversight, and enforces listing requirements and market surveillance to prevent manipulation for both compliance and voluntary markets.
- *Greenhouse Gas Inventory and Research Center of Korea:* The GIR operates the ORS and the ETRS.[73] It also maintains transaction records, assigns unique serial numbers, and implements sanctions for fraud including account suspension, credit cancellation, and project de-registration, pursuant to Article 41 (Penalties) of the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits—while providing public disclosure of methodologies and certified reductions to prevent double counting.[74]

4. **Standards Integration:** South Korea does not legally mandate the use of the Science Based Targets Initiative (SBTi), Voluntary Carbon Markets Integrity Initiative, or Integrity Council for the Voluntary Carbon Market but actively engages with international integrity frameworks. The

country's 2050 Carbon Neutral Strategy and Framework Act on Carbon Neutrality align with Paris Agreement Article 6 requirements for international offset use.

5. **Enforcement Mechanisms:** South Korea employs a multi-layered enforcement regime. Under Article 33 of the ETS Act,[75] covered entities may use KOCs to meet up to 5 percent of their K-ETS compliance obligations.[76] Entities that fail to surrender sufficient units are subject to administrative fines of up to KRW 100,000 (USD 68,900)[77] per tCO_2e.

   - *Consumer Claims:* The KFTC enforces the Act on Fair Labeling and Advertising against greenwashing, requiring environmental claims (e.g., carbon neutral, net-zero, and eco-friendly) to be truthful and substantiated.[78]
   - *Financial Sector:* The Financial Services Commission and Korea Sustainability Standards Board regulate sustainability-related claims by FSC-authorized firms and KOSPI companies, requiring ESG disclosures, including carbon credit use, to be fair, clear, and substantiated (mandatory from 2026 for large KOSPI companies).[79]

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** South Korea has no statutory reduce-first mandate requiring companies to cut internal emissions before using offsets.
2. **Scope Coverage:** South Korea has no legal prescription limiting which emission scopes (1, 2, or 3) may be offset through voluntary claims.
3. **Quality Standards:** South Korea has no binding list of approved programs or methodologies for voluntary corporate use. The 317 registered methodologies in the ORS (211 CDM, 106 domestic)[80] are subject to approval by the MCEE and sectoral agencies; domestic forest carbon credits under the Act on the Management and Improvement of Carbon Sink must conform to UNFCCC and international norms (Art. 27).[81]
4. **Accounting Treatment:** South Korea does not currently mandate disclosure of carbon credit use in corporate climate reporting under the Korea Sustainability Standards Board (KSSB) climate standard (KSSB 2, aligned with International Financial Reporting Standards [IFRS] S2).[82] Mandatory disclosures focus on gross emissions (Scopes 1–2 and, where material, Scope 3), targets, transition plans, and internal carbon pricing, without requiring credits to be disclosed or separated from emissions totals.

C. Transparency and Assurance

1. **Public Reporting:**

- There is no clear, standalone South Korean legal requirement that mandates separate disclosure of carbon credit volumes or types used to achieve net claims in corporate reporting.
- Mandatory climate disclosure is emissions-focused (not carbon offset use–focused). South Korea's upcoming mandatory sustainability disclosure regime is being built on KSSB 1 (general) and KSSB 2 (climate), aligned to IFRS S1 and S2, with climate disclosures becoming mandatory from 2026 on a phased basis for listed firms under the Financial Services Commission road map. KSSB 2 requires disclosure of absolute gross Scope 1 and Scope 2 emissions (and Scope 3 as applicable).[83] KSSB 2 requires companies to disclose whether and how they use internal carbon pricing to manage climate risks or opportunities.

2. **Third-Party Verification:**
   - Since South Korea does not currently require carbon credit use disclosures as a standard corporate reporting item, there is no corresponding mandatory assurance requirement specifically for carbon credit usage statements.
   - Market readiness assessments note that a large majority of South Korean companies already have third-party verification of emissions data, reflecting stronger controls around emissions reporting accuracy (in terms of emissions assurance, not offset disclosure).[84]
3. **Science-Based Targets:** South Korea has no legal requirement for companies to obtain SBTi validation. However, KSSB 2 requires companies to disclose climate targets and progress, with an implicit expectation that targets align with the Paris Agreement's 1.5°C pathways.
4. **Policy Advocacy:** South Korea does not impose any legal rule requiring companies to purchase a minimum volume or type of project credits. Demand for project-based credits is primarily created indirectly via K-ETS offset use rules (limits on surrender), rather than an obligation to buy credits.

D. Market Integrity Protection

1. **Anti-Greenwashing:** The KFTC, the primary anti-greenwashing authority, enforces the Act on Fair Labeling and Advertising, under which false, exaggerated, or misleading environmental claims are prohibited. This applies to all commercial environmental claims, including claims such as carbon neutral, net-zero, and low-carbon, or claims implying emissions have been offset. The commission has also registered complaints against major energy companies for carbon offset greenwashing. SK Lubricants Co. faced greenwashing allegations for advertising products with unreliable carbon-offsetting projects, and SK E&S faced complaints for falsely marketing liquefied natural gas from its Barossa project as CO_2-free when only a limited amount

of upstream emissions were offset, as the company failed to account for combustion emissions and relied on carbon credits that activists deemed inadequate.[85]

2. **Co-Benefits Delivery:** South Korea does not require buyers of project-based credits to select projects with biodiversity, social, or community co-benefits. The Carbon Sink Act structurally recognizes social and environmental value in forest carbon projects, but this does not translate into a buyer-side mandate or claim requirement.

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:**

   - The K-ETS compliance market, one of the world's largest, facilitates trading of Korean Allowance Units (KAUs), KOCs, and KCUs through the KRX, the exclusive auctioning and secondary trading venue for emissions allowances covering over 80 percent of national emissions. The KRX manages the spot secondary market platform where allowances, KCUs, and KOCs are traded for different vintage years.

   - NH Investment & Securities was designated as the first brokered emissions trading provider to allow third-party participants such as financial institutions, investment entities, and pension fund operators to join.[86] Meanwhile, the ETRS and ORS facilitate seamless transaction processing.

   - For voluntary carbon credits, South Korea is launching the KRX Carbon Credit Market in a strategic partnership with Xpansiv (operator of the world's largest voluntary carbon spot exchange, CBL).[87]

2. **Registry Operations:** South Korea operates two integrated but distinct government registry systems. The ETRS[88] is operated by the GIR.[89] The MCEE serves as the official electronic record for K-ETS compliance units (KAUs, KCUs) and covered entity accounts, tracking allocations, auctions, secondary market transactions, banking or borrowing, and compliance surrender. The ORS, also operated by the GIR, records all domestic and international external project registrations, certified reductions (KOCs), conversion to compliance units (KCUs), transfers, and retirements. The ORS lists project and unit-level information, including project status, methodology, verification body, certified reduction volumes, and credit vintage years, providing a publicly viewable ledger. The ETRS and ORS are organically linked as mandated by Articles 31 and 41 of the ETS Act,[90] ensuring offset credits converted from KOCs to KCUs are tracked across

both registries without double counting. The relay management system developed by Koscom connects the GIR, the KRX, securities firms, the ETRS, and the ORS through dedicated servers, networks, and data-verification protocols, creating an integrated "cradle-to-retirement" ledger infrastructure.[91] South Korea's registries include trading venue integration; while the ORS itself does not facilitate trading, KOCs registered in the ORS can be traded over-the-counter (OTC) bilaterally, then settled through registry transfers or converted to KCUs and traded on the KRX exchange, with all transactions automatically recorded across linked registry systems.

3. **Data Standards:** South Korea applies rigorous data standards across compliance and voluntary markets aligned with international norms. MRV for external projects is conducted under ISO 14065:2020 (requirements for GHG validation and verification bodies) and ISO 14064-3:2019 (specification for verification and validation of GHG statements) via NIER-designated verification bodies,[92] ensuring data feeding into the ORS issuance meets internationally recognized assurance standards. For forest projects, the Korea Forest Service mandates operating standards conforming to UNFCCC and international norms (Art. 27 Carbon Sink Act), with MRV systems measuring, reporting, and verifying forest GHG emissions using country-specific biomass expansion factors for 22 tree species.[93] At a broader carbon market level, South Korea is developing cross-market data frameworks, including integration with Xpansiv's CBL platform (which has traded over 250 million tCO_2e since 2020), and exploring blockchain-based registry architecture to enhance transparency, prevent double counting, and enable automated smart-contract settlement.[94]

B. Trading and Participation

1. **Eligibility Rules:**

   - *Compliance Market:* Participation in South Korea's carbon markets requires opening accounts in the ORS or ETRS operated by the GIR. For the compliance market (K-ETS), covered entities automatically have ETRS accounts; non-covered entities (e.g., financial institutions, asset managers, and retail investors) may participate via secondary market trading on the KRX or through consignment trading (launched in 2025). Financial intermediaries must be approved by the MCEE before participating. As of December 2025, 21 intermediaries were approved.[95] Following regulatory reforms in November 2025, South Korea opened carbon trading to securities firms through brokered trading, significantly expanding market participation beyond the original 21 approved intermediaries.[96]

   - *Voluntary Market:* The KRX Carbon Credit Market will permit broader participation from companies, financial institutions, and individuals; registry account opening requires

organization details, tax identification, and acceptance of registry terms and conditions.[97]

- *Offset Credits:* Korean Offset Credits can be traded among ETS and non-ETS entities bilaterally. Also, both KOCs and KCUs can be traded on the KRX exchange.

2. **Trading Mechanisms:**

   - South Korea operates a compliance-anchored carbon trading system under the K-ETS, with trading of allowances (KAUs) and compliance-eligible offset credits (KCUs) conducted primarily through the KRX and settled via official registries (the ETRS or ORS). Spot trading occurs both on the organized exchange and through permitted OTC transactions, with all trades requiring registry settlement and account holder status.

   - South Korea is exploring (but has not yet operationalized) a centralized voluntary carbon market platform and potential derivatives such as allowance futures; exchange-based trading of voluntary credits, Article 6 ITMOs, or Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) units is not yet legally established. All trades require registry account holder status, and no off-registry assignment mechanism exists.[98]

3. **Settlement Systems:** Settlement of exchange-traded allowances, KCUs, and KOCs occurs on the KRX with real-time clearing; units are electronically transferred in the integrated registry system (the ETRS or ORS) with unique serial numbers and vintage linkage recorded. OTC bilateral trades are settled privately and then recorded in the government registries to ensure ownership transfer and prevent double counting.[99]

4. **Price Discovery:** South Korea has no mandatory transaction-level price reporting for KOCs or KCUs. Price discovery mechanisms include KRX spot exchange prices for allowances and KCUs published daily; Platts Carbon Markets pricing (effective January 16, 2024)[100] for KOC 25 27 and future vintages reflecting market-based won/tCO_2e valuation; and OTC bilateral prices for KOCs negotiated privately between project developers and buyers.

5. **Oversight Authority:**

   - *MCEE* oversees K-ETS compliance and external project offsets and consolidates climate, energy, and environmental policy, including carbon markets. It also establishes principles for corporate net-zero credit use, double-counting prevention, and alignment with Article 6 of the Paris Agreement.

   - *FSC* regulates sustainability-related claims by financial institutions and KOSPI-listed companies and mandates ESG disclosure for KOSPI companies with KRW 2 trillion+ in assets

from 2026, extending to all KOSPI companies by 2030.[101] The Korea Sustainability Standards Board released interim standards in October 2025 that are aligned with IFRS S1/S2 and require climate-related disclosures, including Scope 3 emissions. FSC Guidelines on ESG Bond Certification (January 2023) and ESG fund disclosure standards (December 2023) prevent greenwashing in financial markets, requiring sustainability claims to be fair, clear, and substantiated.[102]

- *KRX* operates the K-ETS compliance trading platform and will be launching a voluntary carbon exchange through a strategic partnership with Xpansiv, signed in September 2025.[103] It provides market infrastructure, price discovery, transaction settlement, and trading oversight, and enforces listing requirements and market surveillance to prevent manipulation for both compliance and voluntary markets.
- *GIR* operates the ORS and ETRS,[104] maintains transaction records, assigns unique serial numbers, implements sanctions for fraud (account suspension, credit cancellation, project de-registration), and provides public disclosure of methodologies, projects, and certified reductions to prevent double counting.
- *NIER* accredits verification bodies and monitors MRV compliance under ISO standards.

6. **Legal Classification:**

- *Registry-Based Property Rights:* Emission permits (including offset emission permits) exist only as electronic registry entries; they have no physical form, and their legal existence depends on registration in the government-operated registry system.[105] Each unit of certified GHG reduction from an external project converts to one offset emission permit representing 1 tCO_2e.[106] Offset emission permits are transferable and may be traded, but only liable entities under the K-ETS can convert KOC into KCU for compliance surrender.[107] The legal framework distinguishes between domestic offset emission permits (from domestic external projects) and international offset emission permits (from CDM, Article 6.4, Article 6.2 ITMOs).[108] Emission permits are not classified as financial investment products under Korean financial law, but their derivatives are regulated under the Financial Investment Services and Capital Markets Act.[109] Upon surrender for compliance, offset emission permits are permanently cancelled and removed from circulation.[110]
- *K-IFRS (Korean-Adopted IFRS) for Listed Companies and Major Unlisted Companies:* There is no Korea-specific accounting standard for carbon credits, whether compliance or voluntary. Accordingly, companies apply general K-IFRS principles,[111] with classification depending on the purpose and intent of holding. While South Korea's sustainability disclosure regime under

KSSB will mandate disclosure of gross emissions, targets, transition plans, and internal carbon pricing from 2026, it does not currently require disclosure of carbon credit use or mandate separation of credits from emissions totals. Treatment of carbon credits, therefore, remains governed by accounting policy and general disclosure principles rather than carbon market-specific accounting rules.[112]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** South Korea's project-based carbon market relies on serialized registry systems (the ETRS, ORS, and Forest Carbon Registry) that prevent double issuance and double counting through unique serial numbers, immutable transaction records, and organic linkage across integrated platforms. Fraudulent behavior, including selling nonexistent units, misrepresenting credit ownership, or submitting false verification documents, falls under the Criminal Act (theft, fraud, forgery) with imprisonment of up to 10 years and fines of up to KRW 100 million.[113]

2. **Transparency and Reporting Requirements:** The Korea Exchange publishes daily spot prices for KAUs and KCUs with high, low, and closing prices and transaction volumes. Platts Carbon Markets publishes daily KOC pricing benchmarks (effective January 16, 2024)[114] for KOC 25 27, KOC 26-28, and KOC 27-29 vintages reflecting market-based valuation.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** South Korea does not classify KOCs or forest carbon stock as financial products by default. However, carbon credit activities fall within the Financial Service Commission regulatory perimeter when structured as investment products, collective schemes, or fund strategies. South Korea's tax authority has not published comprehensive VAT guidance on voluntary carbon credits.

2. **Cross-Border Trading Framework:** South Korea actively pursues Article 6.2 bilateral agreements enabling ITMO transfer with corresponding adjustments to prevent double counting. As of April 2026, South Korea had signed 10 bilateral Article 6.2 cooperation agreements with multiple countries.[115] The government is targeting 37.5 million international carbon credits from Article 6 projects to support its 2030 NDC (40 percent emissions reduction from 2018 levels).

    - *Corresponding Adjustments:* When South Korea transfers ITMOs to buyer countries under Article 6.2, the government deducts transferred emissions from the country's NDC accounting to prevent double claims, ensuring high environmental integrity.

    - *Domestic Project Accounting:* Mitigation achieved through domestic K-ETS external projects

and forest carbon offsets continues to count toward South Korea's NDC even when credits are sold to private corporate buyers. South Korea applies no corresponding adjustments for domestic credits exported voluntarily, consistent with UNFCCC guidance that credits not transferred internationally remain in the host country's NDC accounting.

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** South Korea is building a centralized exchange-based architecture rather than a decentralized voluntary market infrastructure.
    - *KRX Carbon Credit Market:* This is a centralized exchange for voluntary credits, Article 6 ITMOs, and CORSIA credits, with real-time price discovery and integrated settlement via a relay management system.[116]
    - *Cross-Market Data Standards:* The MCEE is developing interoperability protocols enabling seamless integration between the ETRS (compliance), the ORS (external projects), the Forest Carbon Registry (forestry), and the KRX voluntary platform.[117]
2. **International Cooperation:** South Korea actively participates in Article 6 Paris Agreement implementation with clear strategic positioning. As of April 2026, 11 bilateral Article 6.2 agreements have been signed with corresponding adjustment mechanisms to prevent double counting. South Korea is targeting 37.5 million carbon credits from Article 6 projects to support its 2030 NDC (40 percent reduction from 2018).[118]
3. **Regulatory Evolution:** South Korea's regulatory evolution is centered on integrating carbon markets into compliance trading and climate disclosure, rather than mandating carbon credit transparency. KSSB 2 (phased from 2026) will require disclosure of gross emissions, targets, transition strategies, and internal carbon pricing, but does not mandate separate reporting of carbon credit use.[119] Project-based credits are integrated into the compliance market via conversion into KCUs under the K-ETS, which trades on the KRX, while voluntary credit markets remain underdeveloped. The Financial Services Commission has enabled security token offerings, but carbon credit tokenization remains exploratory. South Korea currently lacks an engineered removals standard, with policy emphasis on nature-based sinks, and no binding requirement yet exists to mainstream carbon credit use into regulated financial reporting.
4. **Enforcement Enhancement:** Enforcement of market integrity is strengthening across consumer protection, environmental, and ETS authorities. The KFTC[120] remains the primary enforcer against greenwashing under the Act on Fair Labeling and Advertising, supported by revised Environmental Labeling and Advertising Review Guidelines (2023) that require substantiated

and non-misleading environmental claims.[121] The MCEE enforces administrative sanctions for misleading environmental information under sector-specific environmental statutes. In financial markets, the FSC oversees disclosure accuracy for ESG-labeled securities and funds.[122] Within the K-ETS, the Korea Exchange conducts market surveillance for abnormal trading, while criminal and administrative penalties apply under the ETS Act and general criminal law for false certification, fraud, or obstruction. Registry operators (the ETRS, ORS, and Forest Carbon Registry) may suspend accounts, cancel credits, or de-register projects for non-compliance.[123]

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TÜRKIYE

Overview

Türkiye's project-based carbon credit market (PCCM) is established under the 7552 Climate Law, published in July 2025, which mandates both a national emissions trading system (TR ETS) and a carbon credit and offsetting mechanism.[1] The draft Türkiye Karbon Denkleştirme Sistemi (Carbon Offset System [TR KDS]) regulation establishes the country's carbon credit framework, covering emission reduction and removal activities both within and outside the national ETS, and sets national rules for generating, validating, verifying, and issuing Turkuaz Credits.[2] The Turkuaz Credits, carbon credits within the scope of the Turkish ETS, can be used to fulfill obligations or voluntary commitments.[3]

The TR ETS draft regulation allows regulated firms to use domestic project-based credits to meet up to 10 percent of their annual compliance obligation, creating the principal compliance demand channel. Credits used for compliance offsets must be five years old or less.[4] Credits may also be retired for voluntary purposes, with all issuance and retirement conducted through the national registry and disclosed annually.[5] International credits are recognized under Article 6 of the Paris Agreement and tracked through Türkiye's dedicated international registry, but they do not enter the TR KDS supply and are not eligible for ETS compliance.[6] A transitional clause within the draft framework permits the temporary use of credits from selected international standards for projects implemented within Türkiye until Turkuaz Credits begin issuance, but this does not extend to ETS compliance and does not replace the domestic TR KDS framework.[7]

Market infrastructure is centralized through two registries defined under Article 4(gg) of the TR KDS draft: the Türkiye Karbon Denkleştirme Kayıt Sistemi (Türkiye Carbon Offsetting Registry, hereafter referred to as the "domestic registry"), which governs issuance, transfer, cancellation, and retirement, and the Türkiye Uluslararası Karbon Kayıt Sistemi (Türkiye International Carbon Credit Registry, hereafter referred to as the "international registry"), which records internationally credited projects and imported credits. All transfers must occur within these systems to ensure traceability.[8]

I. Supply-Side Regulations

A. Regulatory Framework

1. **Market Classification:** Türkiye's draft regulations establish a compliance market through the TR ETS and a domestic PCCM with TR KDS, with the latter covering carbon credit use for TR ETS and voluntary purposes.

2. **Regulatory Status:** The legal basis for Türkiye's carbon market derives from Climate Law No. 7552,[9] which mandates the establishment of both an ETS and a carbon offsetting mechanism. To operationalize this mandate, the government issued two draft regulations. The TR ETS draft defines ETS coverage; allowance submission; carbon credit limits; measurement, reporting, and verification (MRV) rules; and compliance obligations.[10] The TR KDS draft establishes national rules for PCCM, including methodology approval, validation, and verification requirements, issuance of Turkuaz Credits, and dual registry infrastructure.[11]

3. **Key Authorities:**

   - *Ministry of Environment, Urbanisation and Climate Change—Directorate of Climate Change (DCC):* Leads national climate policy and oversees implementation for both the TR ETS and TR KDS. The DCC approves methodologies, sets registry rules, issues host-country authorizations, determines carbon credt limits in TR ETS, and administers corresponding adjustments.[12]

   - *Turkish Standards Institution (TSE):* Develops or adapts crediting methodologies, evaluates project documentation, manages validation and verification procedures, and operates both the domestic and international registries, including issuance of Turkuaz Credits.[13]

   - *Carbon Market Board (Karbon Piyasası Kurulu):* Established under the TR ETS Draft, exercises core authority over ETS governance, including approval of the National Allocation Plan, decisions on free allocations and auction volumes, price corridors, and offset-use limits.[14] Under the TR KDS, the board plays a role in Article 6 participation by determining which international crediting programs may be used during the transitional period and setting sectoral, methodological, and import/export limitations for internationally transferred mitigation outcomes.[15]

   - *TÜRKAK (Turkish Accreditation Agency):* Accredits validators and verifiers and ensures separation between validation and verification roles within the national crediting framework.[16]

4. **Sanctions:** TR KDS provides administrative consequences, such as rejection or correction of project documentation, for supply-side non-compliance.[17]

B. Credit Generation Standards

1. **Eligible Activities:** Under the TR KDS, program and project activities may generate Turkuaz Credits only if they relate to mitigation actions implemented within Türkiye and fall outside the scope of the TR ETS.[18] Projects must also meet eligibility requirements, including demonstrating *özgün katkı* ("own contribution" or "additionality"), meaning the project would not be

economically, financially, technologically, or institutionally viable without carbon market revenues,[19] and contributing to at least three Sustainable Development Goals (SDGs), one of which must be SDG 13 (climate action).[20] The regulation further prohibits registration of any project that already generates carbon credits under international mechanisms—such as the Paris Agreement Article 6 programs—or that issues Guarantee of Origin system (YEK-G) or similar energy-attribute certificates, which would undermine the exclusivity and integrity of Turkuaz Credit issuance.[21]

2. **Methodology Framework:** The TR KDS engages with international crediting frameworks, including Article 6 of the Paris Agreement and International Organization for Standardization (ISO) frameworks, specifically TS EN ISO 14064-2 for quantifying, monitoring, and reporting greenhouse gas (GHG) reductions from projects; TS EN ISO 14064-3 for the verification and validation of GHG statements; and TS EN ISO 17029 for the general principles and requirements governing validation and verification bodies.[22]

3. **MRV Requirements:** Validation and verification must be carried out by TÜRKAK-accredited bodies in accordance with TS EN ISO 14064-2, TS EN ISO 14064-3, and TS EN ISO 17029, which define how emission reductions and removals are quantified, monitored, validated, and verified.[23] After a project is assessed as eligible, TSE conducts an initial completeness and compliance review,[24] and accredited validators perform validation to confirm the accuracy and adequacy of project design documentation and assumptions.[25] Verified emission reductions or removals are documented in a verification report prepared annually by an accredited verifier, based on monitoring undertaken by the project owner.[26] Turkuaz Credits are then issued into the domestic registry only for the amount of emissions reduced or eliminated as confirmed in the verification report and upon payment of the issuance fee.[27] The system incorporates transparency obligations: TSE must publish summary information and associated project documentation for all registered TR KDS programs and projects via the domestic registry.[28]

4. **Registry System:** Türkiye operates a dual registry structure. The first, the domestic registry, created and managed by the TSE, records all TR KDS programs and projects and the issuance, transfer, cancellation, and retirement of Turkuaz Credits.[29] The international registry, established and operated by the Presidency of the DCC, records internationally credited projects in Türkiye and internationally authorized credits, such as credits issued under Article 6 of the Paris Agreement.[30]

C. Integrity Principles

1. **Additionality Tests:** Türkiye does not use the term "additionality" directly but embeds the concept through the özgün katkı ("own contribution") requirement, whereby a program or project must demonstrate that its GHG emissions reductions or eliminations would not be

economically, financially, technologically, or institutionally feasible without revenue from carbon credit sales and therefore could only be implemented through carbon market incentives.[31]

2. **Permanence Safeguards:** The regulation does not have explicit permanence requirements, such as time horizons, buffer pools, or reversal risk mechanisms.

3. **Quantification Standards:** Türkiye does not explicitly define quantification standards, but instead anchors such standards in ISO-based methodologies. It requires the use of TS EN ISO 14064-2 for quantifying and monitoring GHG reductions, TS EN ISO 14064-3 for validation and verification of GHG declarations, and TS EN ISO 17029 for institutional assurance. These standards require that reductions and removals are real, measurable, verifiable, transparent, conservative, and account for uncertainty and leakage, which could satisfy the functional equivalent of quantification criteria.[32]

4. **Double-Counting Prevention:** Double counting in Türkiye's crediting framework is prevented through two core safeguards. First, projects may only generate Turkuaz Credits if they occur outside the scope of ETS-covered activities.[33] Second, all Turkuaz Credits must be issued, transferred, canceled, and retired exclusively within the Türkiye Carbon Offsetting Registry operated by the TSE, which records issuance, ownership, and retirement and ensures that credits are issued only in the amount verified by an accredited verifier.[34]

D. Sustainable Development

1. **Co-benefits:** Türkiye's regulation requires that all projects deliver sustainable development co-benefits, not only emission reductions, though it does not use that specific term. Every TR KDS project must contribute to at least three SDGs, and one of these must be SDG 13. This creates a co-benefits screen: projects must demonstrate environmental, social, or economic benefits aligned with Türkiye's broader development priorities.[35]

2. **Net-zero Compatibility:** Regulations position carbon markets—including offsetting and international Article 6 mechanisms—as tools aligned with Türkiye's nationally determined contribution (NDC) trajectory. While domestic offsetting is not explicitly required to contribute to NDC achievement, it anchors these mitigation efforts in NDC and net-zero objectives.[36]

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

   - *Voluntary claims:* The regulation allows Turkuaz Credits to be used for voluntary purposes,

provided they are issued under the TR KDS. Entities are allowed to request carbon credits and, once issued, retire them through the domestic registry.[37]

- *Compliance integration:* Under the TR ETS regulation, firms may use domestic carbon credits for up to 10 percent of their annual allowance-surrender obligation.[38] Only credits from projects implemented within Türkiye are eligible, and they must be no more than five years old and cannot be YEK-G certificates or other energy-attribute instruments. For compliance, all credits—whether Turkuaz Credits or other domestic units—must be transferred into and retired through the domestic registry.[39]
- *NDC alignment:* Türkiye also establishes a structured NDC alignment and Article 6 authorization system. Internationally transferable credits must receive a host-country authorization before export, and the Presidency of the DCC applies a corresponding adjustment to Türkiye's NDC for all authorized units, ensuring that internationally transferred credits cannot also contribute to domestic climate targets. Internationally credited projects implemented within the country are recorded in the separate Türkiye International Carbon Registry, which is created and operated by the Presidency of the DCC. Türkiye has not published any methodological or eligibility criteria describing which projects may seek Article 6 authorization; regulations only empower the Presidency to manage the authorization and corresponding adjustment process, without referencing sectors. No bilateral Article 6.2 agreements have been concluded.[40]

2. **Regulatory Status:** Türkiye's formal demand-side rules are governed by three main regulations: the Climate Change Law (Law No. 7552),[41] the TR ETS regulation,[42] and the TR KDS regulation (the carbon credit and offsetting regulation),[43] with the latter providing some of the provisions on credit use, specifically for compliance use. The TR KDS authorizes the Presidency of the DCC to set ETS-use limits (subject to broader Carbon Market Board oversight) and publish the applicable rules, and establishes ETS eligibility criteria stated in the previous section. Voluntary use is governed only by requiring permanent retirement and prohibiting reuse of credits used for ETS compliance. Beyond the ETS, Türkiye has no PCCM-specific rules governing how carbon credits may be used in climate claims, reporting, or corporate net-zero pledges.[44] Misleading environmental or sustainability claims likely fall instead under general advertising and consumer protection law—notably Consumer Protection Law No. 6502[45] and the Commercial Advertising and Unfair Commercial Practices Regulation,[46] as supplemented by the Guide on Environmental Claims in Advertising[47]—but these apply broadly and do not establish carbon market-specific demand-side standards.
3. **Oversight Bodies:** Bodies that directly and indirectly oversee demand-side PCCM regulations

include the following:

- *DCC* leads national climate policy and implements the Climate Change Law, including issuing secondary regulations such as the TR KDS and TR ETS; oversees ETS design and climate policy coordination; and provides the institutional authority for the Presidency of the DCC and Carbon Market Board. Although the DCC does not directly regulate voluntary carbon credit use or corporate environmental claims, it sets the legal framework within which ETS demand-side rules, offset-use limits, and Article 6 authorizations are administered.
- *TSE* operates the Türkiye Carbon Offsetting Registry, where all Turkuaz Credits and all credits used for ETS compliance must be transferred and retired. It also ensures the traceability of credit issuance, transfer, and retirement, indirectly shaping demand-side integrity.
- *Carbon Market Board* established under the TR ETS Draft, exercises core authority over ETS governance, including approval of the National Allocation Plan, decisions on free allocations and auction volumes, price corridors, and offset-use limits.[48] Under the TR KDS, the Board plays a role in Article 6 participation by determining which international crediting programs may be used during the transitional period and setting sectoral, methodological, and import and export limitations for internationally transferred mitigation outcomes.[49]
- *Ministry of Trade—Advertisement Board* enforces the Law on Consumer Protection and the Commercial Advertising and Unfair Commercial Practices Regulation, as supplemented by the Guide on Environmental Claims in Advertising, which governs misleading environmental and sustainability claims. These bodies indirectly regulate voluntary carbon credit use by overseeing greenwashing and environmental claims integrity, though no carbon market–specific standards exist.
- *Consumer Protection Directorate* oversees compliance with the Law on Consumer Protection and investigates deceptive or unsubstantiated environmental claims affecting consumers, providing the only formal enforcement mechanism for misleading voluntary carbon credit claims in the absence of PCCM-specific demand-side rules.

4. **Standards Integration:** Türkiye's PCCM framework does not reference international demand-side meta-standards.
5. **Enforcement Mechanisms:** Offset-related penalties arise when an ETS installation uses ineligible or invalid Turkuaz Credits. In such cases, the installation is deemed to have failed its allowance-surrender obligation and becomes subject to the following: a TRY 1,000,000 (approximately USD 25,400)[50] administrative fine, mandatory resubmission of the missing

allowances, and/or potential deductions from future free allocations. Persistent noncompliance may lead to operational restrictions.[51] Demand-side use of credits outside the ETS is governed solely by general consumer protection and advertising law, including the Law on Consumer Protection and the Commercial Advertising and Unfair Commercial Practices Regulation, as interpreted through the Guide on Environmental Claims in Advertising. These rules prohibit misleading environmental claims but do not establish carbon market-specific standards or penalties for improper use of carbon credits as an offsetting mechanism.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** This is not explicitly mentioned in the regulations.
2. **Scope Coverage:** Scope coverage is not explicitly defined in Türkiye's PCCM regulations. However, the ETS rules implicitly confine credit use to direct emissions (Scope 1) because they may be used only by ETS-regulated installations to cover part of their allowance-surrender obligation, which corresponds only to regulated Scope 1 emissions.[52]
3. **Quality Standards:** Does not reference "real, additional, permanent, reliable" quality standards or impose quality-screening criteria beyond the eligibility rules in TR ETS (domestic origin, less than or equal to five years old, non-YEK-G, outside ETS-covered activities).[53]
4. **Accounting Treatment:** All Turkuaz Credits—and any domestic credits used for ETS compliance—must be routed through the domestic registry operated by the TSE.[54] Retirement in this registry is the official accounting action for both ETS compliance and voluntary use. Credits originally issued under other standards must be transferred into the TR KDS registry before use, creating a single point of accounting and preventing double use. ETS installations may surrender credits only through this registry, and voluntary claims require permanent retirement. International transfers (Article 6) are accounted for separately through the international registry, with corresponding adjustments applied to the NDC.[55]

C. Transparency and Assurance

1. **Public Reporting:** Türkiye does not impose public reporting requirements on companies for the type or volume of carbon credits they use—neither for ETS compliance nor for voluntary claims. Limited transparency arises only from international standards referenced on the supply side, as ISO-aligned MRV documentation is publicly available for some—though not all—project methodologies. The Presidency is also required to annually publish project-level information—project type, owner, and volumes of credits issued and redeemed—but this does not extend to disclosing buyers or the purpose of use, as no credit-level or buyer-level disclosure is required.[56]

2. **Third-Party Verification:** Türkiye does not require any third-party verification of company-level climate claims or carbon credit use. ETS installations must surrender credits in the TSE registry, but no external assurance is required. Verification applies only to projects, not buyers: Project-level MRV must follow TS EN ISO 14064-2, 14064-3, and ISO 17029 under TR KDS, and validation and verification must be performed by accredited bodies. Beyond this project-level MRV, companies using carbon credits—whether voluntarily or in the ETS—face no additional verification or assurance requirements, and there are no rules governing the substantiation of corporate claims involving credit use.[57]

3. **Science-Based Targets:** There are no regulations requiring companies to set or disclose science-based targets or equivalent pathways as part of using carbon credits under the regulations.

4. **Policy Advocacy:** Demand-side rules for domestic carbon credit use under the ETS are purely domestic and do not reference Article 6. Article 6 alignment appears for international transfer of credits but does not affect how domestic entities use credits, while voluntary market claims are not regulated.[58]

D. Market Integrity Protection

1. **Anti-Greenwashing:** Türkiye regulates environmental and sustainability claims through its general consumer protection and advertising framework rather than through PCCM rules. The Law on Consumer Protection does not specifically reference environmental claims, but its broad prohibitions on misleading or unsubstantiated commercial practices apply to such claims by implication. The Regulation on Commercial Advertising and Unfair Commercial Practices provides the legal basis for enforcement, while the 2023 Guide on Environmental Claims in Advertising sets out detailed criteria on clarity, substantiation, evidence, and the prohibition of vague or unverifiable statements. These rules indirectly cover voluntary carbon credit claims, but neither TR KDS nor TR ETS contains offset-specific advertising or disclosure requirements.[59]

2. **Co-Benefits Delivery:** Requires that all projects deliver sustainable development co-benefits, not only emission reductions. Every TR KDS project must contribute to at least three SDGs, and one of these must be SDG 13. This creates an explicit co-benefits screen: Projects must demonstrate environmental, social, or economic benefits aligned with Türkiye's broader development priorities.[60]

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** The PCCM is structured around a centralized, state-run crediting system

rather than an exchange-based market. All Turkuaz Credits—once methodologies are operational—are issued and managed through the national registry, and there is no exchange, marketplace, or trading venue established under TR KDS or TR ETS. Trading may occur privately between parties; however, the regulations provide no framework for exchange-based trading, price transparency, or market conduct rules.[61]

2. **Registry Operations:** Registry functions are centralized under the TSE, which operates the domestic registry. This registry manages project registration, validation, and verification uploads, issuance of Turkuaz Credits, transfers, cancellations, and retirements. Credits used for ETS compliance or voluntary purposes must be retired in this registry. A separate system, the international registry, operated by the Presidency of the DCC, tracks Article 6 authorizations and internationally credited projects implemented in Türkiye. All transfers, retirements, and authorizations proceed exclusively within these registries; there is no parallel private registry permitted for compliance or voluntary use at this point.[62]

3. **Data Standards:** Türkiye does not impose market-level or registry-level data standards. TR KDS incorporates ISO requirements only for MRV at the project level (TS EN ISO 14064-2, 14064-3, ISO 17029), but no data standard applies to trading, price transparency, market conduct, or registry data architecture. Registry data are not public except for annual mandated project-level disclosures. There are no rules governing interoperability with international registries, application programming interfaces, metadata standards, digital MRV, or market data publication.[63]

B. Trading and Participation

1. **Eligibility Rules:** Eligibility to participate in the project-based carbon crediting system is determined entirely through regulatory criteria, not market-access requirements. Under the TR KDS Regulation, only approved program and project owners registered in the Türkiye Carbon Offsetting Registry may generate, hold, transfer, or retire Turkuaz Credits. Account holders must meet the TSE's verification and onboarding requirements, but there are no platform-based trading eligibility criteria because no trading venue exists. Internationally credited projects implemented in Türkiye are recorded in a separate international registry operated by the Presidency, but these units are not tradable in a domestic exchange because Türkiye does not authorize marketplace trading for either domestic or international credits.[64]

2. **Trading Mechanisms:** Türkiye's PCCM does not include any statutory trading mechanism. All credit movements occur as registry-based administrative transfers within the domestic registry, where credits may be issued, transferred, canceled, and retired. The regulations do not provide for auctions, order books, exchange trading, brokerage systems, contract standardization, or

over-the-counter settlement frameworks. Transfers between registry accounts are permitted but occur solely within the registry and do not constitute market trading. As a result, Türkiye's PCCM functions as a centralized crediting and accounting system, not a trading market, with no regulated or self-regulated trading venues.[65]

3. **Settlement Systems:** Türkiye does not operate a post-trade settlement system for carbon credits, as there is no exchange or trading venue, nor is there any trade execution or clearing infrastructure.

4. **Price Discovery:** Türkiye has no price discovery mechanisms for carbon credits, as the PCCM does not include an exchange, order book, auction platform, or market data system.

5. **Oversight Authority:** There is no dedicated authority regulating carbon credit trading venues because no trading venues exist for carbon credits. Oversight of the PCCM and ETS occurs entirely through public regulatory bodies on the supply and demand side, encompassing both the domestic and international registries.

    - *DCC* sets ETS credit-use rules (TR ETS), authorizes international transfers and applies corresponding adjustments, and oversees the international registry.

    - *TSE* operates the domestic registry, administering project registration, credit issuance, transfers, cancellations, and retirements.[67]

6. **Legal Classification:** Regulations do not define the legal status, ownership classification, or financial accounting treatment of carbon credits.

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** Türkiye's PCCM and ETS frameworks do not contain market conduct rules, anti-manipulation provisions, or fraud prevention mechanisms for carbon credit transactions.

2. **Transparency and Reporting Requirements:** Türkiye has no dedicated transparency rules for carbon credit trading or market-side disclosures. Transparency is primarily ensured through registry-based processes rather than market-side disclosure rules.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** Türkiye does not authorize any trading venues or exchanges for carbon credits; there are no licensing requirements, market infrastructure approvals, or financial market conduct rules applied to carbon credit transfers or holdings.

2. **Cross-Border Trading Framework:** Türkiye's cross-border carbon credit framework requires host-country authorization by the Presidency of the DCC and the application of corresponding adjustments to Türkiye's NDC for all internationally transferred units. Authorized credits are recorded in the Türkiye International Carbon Registry, which tracks project information, authorized volumes, and transfers. The Presidency may also limit eligible international programs, sectors, and methodologies during the transitional period. Türkiye has not yet concluded any Article 6.2 bilateral agreements, and no operational cross-border transfer mechanism exists beyond these authorization and accounting procedures.[68]

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** Türkiye's PCCM is designed as a centralized, registry-based system, and current development efforts focus on operationalizing the domestic and international registries created under TR KDS. These registries form the core infrastructure for project registration, MRV documentation, credit issuance, transfer, and retirement, and they will serve as the foundation for any future domestic or cross-border credit flows once methodologies and project types are finalized.[69]

2. **International Cooperation:** Türkiye has not yet concluded any bilateral Article 6.2 Implementation Agreements, and operational international transfer channels have not been established. Cross-border activity will remain limited until Article 6–related methodologies, authorization procedures, and registry linkages are implemented under TR KDS.[70]

3. **Regulatory Evolution:** The Climate Change Law anticipates the expansion of Türkiye's carbon market architecture, including ETS development, carbon credit integration, and Article 6 participation, but neither TR KDS nor TR ETS currently defines the legal or financial status of credits or contemplates exchange-based trading. Future regulatory updates—particularly concerning allocation rules, Article 6 implementation, and the evolution of registry processes—are likely as the ETS becomes operational. As of April 2026, however, no formal proposals on classifying credits as financial instruments or enabling trading venues have been published.

4. **Enforcement Enhancement:** Türkiye's PCCM and ETS frameworks do not contain market conduct, anti-manipulation, or fraud prevention rules, largely because no carbon credit trading market exists. Enforcement is limited to administrative functions—ensuring registry accuracy, verifying MRV documentation, and enforcing ETS allowance-surrender obligations. The regulations provide no indication of how market-side integrity would be monitored or enforced if trading infrastructure were introduced, and, given the nascent stage of PCCM regulatory development in the country, no policy documents outlining prospective market conduct rules, transparency requirements, or oversight mechanisms exist yet.

Notes

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UNITED KINGDOM

Overview

The United Kingdom's project-based carbon credit market (PCCM) is anchored in a robust compliance market under the UK Emissions Trading Scheme (UK ETS) and a high-integrity domestic voluntary market governed by the Woodland Carbon Code (WCC)[1] and the Peatland Code.[2] This framework is underpinned by the Climate Change Act 2008 (amended in 2019),[3] which enshrines a legally binding 2050 net-zero target and establishes carbon budgets to drive economy-wide decarbonization.

As of 2026, the market is undergoing a significant transition toward higher integrity and eventual integration into the UK ETS. While it currently does not accept project-based carbon credits, the UK ETS Authority announced in June 2025 its decision to integrate engineered greenhouse gas removals (GGRs) into the scheme by 2028–2029,[4] creating a long-term compliance pathway for project-based carbon removal credits.

On the governance and integrity side, in 2024–2025, the UK moved from a largely market-driven voluntary offset landscape toward an explicit national policy framework for the voluntary carbon market (VCM) and nature market. In late 2024, the government published a set of guiding principles for high-integrity voluntary carbon and nature markets, and in April 2025, the Department for Energy Security and Net Zero (DESNZ) launched a consultation[5] that set out a proposed policy and governance framework to improve trust in credits, clarify what constitutes a high-quality carbon or nature unit, and operationalize six integrity principles. The principles—which cover prioritizing in-value-chain mitigation; use of high-integrity credits, robust measurement, reporting, and verification (MRV); transition planning; avoiding misleading claims; and collaboration and interoperability—are explicitly intended to align the UK's approach with emerging international best practices, such as the Integrity Council for the Voluntary Carbon Market (ICVCM) and the Voluntary Carbon Markets Integrity Initiative (VCMI), and are central to the government's strategy to develop credible nature and carbon credit markets.

I. Supply-Side Regulations

On the supply side, the core of the UK's domestic PCCM is formed by two government-backed voluntary standards: the WCC and the Peatland Code. UK authorities describe the WCC as the "quality assurance standard for woodland carbon projects in the UK,"[6] designed to remove carbon dioxide (CO_2) from the atmosphere and to enable landowners and companies to generate

independently verified woodland carbon units under a government-backed framework. The Peatland Code—developed by the International Union for the Conservation of Nature (IUCN) UK Peatland Programme[7] and similarly recognized by UK public bodies as the domestic voluntary standard for peatland restoration—provides a science-based methodology for generating verified carbon units from emissions reductions achieved through restoring degraded peatlands over 30- to 100-year commitments. Together, these codes constitute the main domestic project-based crediting infrastructure endorsed by the government and explicitly referenced in UK policy discussions on nature-based climate solutions and net-zero delivery.

A. Regulatory Framework

The UK's PCCM supply-side regulations combine binding program and registry rules with non-binding government principles for carbon markets' integrity.

1. **Market Classification:** Project-based credits in the UK are currently generated almost entirely through the domestic voluntary carbon market via government-backed standards—the WCC[8] and the Peatland Code[9]—which the UK government explicitly recognizes as high-integrity domestic carbon and nature credit programs. These codes sit outside the UK ETS, which is currently an allowance-based compliance market that the UK operates for energy and industry, but is legislated to integrate engineered removals (GGRs) by 2028. The DESNZ frames these domestic codes as the backbone of the UK's nature-based PCCM,[10] while signaling the development of frameworks for engineered and nature-based removals.

2. **Regulatory Status:** Program rules and registry terms are binding within schemes:

   - The WCC[11] and Peatland Code are voluntary to join, but once a project is registered, the code rules, validation and verification requirements, and UK Land Carbon Registry Terms and Conditions become contractually binding on project developers and account holders.[12]

   Government integrity principles are formally endorsed:

   - The UK government's principles for voluntary carbon and nature markets integrity (2024)[13] apply across nature and engineered removal markets.[14]

3. **Key Authorities:**

   - *DESNZ* leads policy on voluntary carbon and nature markets[15] and government integrity principles, and coordinates with the UK ETS Authority on future GGR integration.
   - *Scottish Forestry* is the program authority for the WCC on behalf of the UK, Scotland, Wales, and Northern Ireland governments, responsible for code governance, technical guidance,

and accreditation,[16] and for overseeing the UK Land Carbon Registry relationship.

- *The IUCN UK Peatland Program* develops and manages the Peatland Code. Scottish Forestry represents the Peatland Code in the UK Land Carbon Registry as program administrator.[17]
- *The UK Land Carbon Registry Operator and S&P Global* operate the UK Land Carbon Registry, whose terms and conditions govern the listing, transfer, retirement, and cancellation of WCC and Peatland Code units and embed sanctions for fraud, misrepresentation, and noncompliance.[18]
- *The Competition and Markets Authority (CMA)* issues and enforces the Green Claims Code, while the Advertising Standards Authority (ASA) enforces advertising rules, including specific guidance on "carbon-neutral" and "net-zero" claims.[19]
- *The Financial Conduct Authority (FCA)* regulates authorized firms that design, distribute, or market investment products or strategies referencing carbon credits. The FCA has flagged high-risk unregulated schemes, including historical carbon credit scams.[20]

4. **Sanctions:** Non-compliance within the UK's domestic project-based crediting schemes is enforced primarily through program rules and the UK Land Carbon Registry Terms and Conditions,[21] which allow the registry operator to
   - suspend or freeze registry accounts,
   - void, retire, or cancel Woodland Carbon Units (WCUs), Pending Issuance Units (PIUs), or Peatland Carbon Units (PCUs),
   - discontinue project listings, and
   - require correction of misstatements or non-conformities.

   Under the Peatland Code, additional internal sanctions include the use of a buffer reserve,[22] where units may be drawn down to compensate for reversals or significant underperformance; persistent non-compliance may result in buffer forfeiture or removal of the project from the code.

B. Credit Generation Standards

1. **Eligible Activities:** Eligible project types are defined under the two codes: the WCC covers new woodland creation and woodland restoration, generating removals through biomass growth;[23] the Peatland Code covers peatland rewetting and restoration, generating emissions reductions by lowering peat oxidation and methane emissions.[24] No other project categories (e.g., soil carbon, renewable energy, industrial fugitives) are currently eligible under UK-endorsed

domestic crediting schemes.

2. **Methodology Framework:** Each code operates under a formal methodology framework that sets additionality, baseline determination, permanence, leakage assessment, and risk-buffer requirements. The WCC uses the WCC carbon calculation methodology, look-up tables, and validated project design documents, and requires compliance with the UK Forestry Standard.[25] The Peatland Code applies science-based emissions-factor methodologies[26] and mandates long-term management plans and risk-buffer contributions to ensure permanence.

3. **MRV Requirements:** Projects must undergo structured validation and verification by an independent body accredited by the UK Accreditation Service. Validation and verification must follow:

   - *ISO 17029:2019:* General principles for validation and verification bodies
   - *ISO 14065:2020:* Requirements for validating and verifying environmental information
   - *ISO 14064-3:2019:* Specification for verification and validation of GHG statements[27]

4. **Registry System:** All project registration, issuance of PIUs, conversion to verified units (WCUs or PCUs), transfers, and cancellations occur within the UK Land Carbon Registry,[28] operated by S&P Global,[29] which maintains serialization, account structures, and program-level enforcement powers.

C. Integrity Principles

1. **Additionality Tests:** Both the WCC and the Peatland Code require projects to demonstrate additionality by passing formal additionality screens. The WCC applies a legal additionality test, a financial additionality test, and barrier assessment, ensuring projects go beyond legal obligations and cannot be carried out without carbon finance.[30] The Peatland Code requires projects to pass legal compliance and financial feasibility,[31] demonstrating that restoration is not legally mandated, is not business as usual, and relies on carbon revenue. These tests mirror international integrity expectations and align with the UK government's principles for high-integrity voluntary carbon and nature markets, which require real, additional, and verifiable climate benefits.

2. **Permanence Safeguards:** Both codes include permanence safeguards to manage reversal risk. Woodland Carbon Code requires long-term woodland management plans (40–100 years)[32] and mandates corrective action reporting in the event of a reversal (e.g., fire, disease, or storm damage). Peatland Code requires commitments of 30–100 years,[33] depending on restoration

type, and contributes a portion of expected reductions to a shared buffer reserve that is drawn down if reversals occur.

3. **Quantification Standards:** Project-level emission reductions or removals must be quantified using methodologies defined in each code. The WCC uses a standardized carbon calculation methodology, look-up tables from Forest Research, and model-based estimates of biomass growth, applying conservative assumptions and uncertainty deductions.[34] The Peatland Code uses scientifically derived emissions factors from the UK Peatland Emissions Inventory, alongside baseline and project scenario assessments incorporating conservative estimates.[35]

4. **Double-Counting Prevention:** Both codes prevent duplicate issuance or claims through the UK Land Carbon Registry,[36] which assigns unique serial numbers to all PIUs, WCUs, and PCUs; records all issuance, transfer, retirement, and cancellation events; and provides public visibility of retired units to prevent double claims and double counting across projects or buyers. The UK government's VCM integrity principles also require that credits used toward corporate claims be transparently reported and not counted more than once.

D. Sustainable Development

1. **Co-benefits:** Co-benefits are not required for the issuance of WCUs and PCUs, but both UK domestic standards emphasize wider environmental and social outcomes. The WCC encourages the delivery of biodiversity enhancement, improved water regulation, recreational benefits, and landscape resilience, consistent with the UK Forestry Standard. The Peatland Code highlights benefits such as improved water quality, reduced wildfire risk, biodiversity gains, and support for rural economies. While co-benefits do not affect carbon crediting, developers frequently report them to buyers, and the UK government's principles for high-integrity voluntary carbon and nature markets[37] explicitly encourage nature-positive and community-positive project outcomes.

2. **Net-Zero Compatibility:** The UK's overarching climate framework, anchored in the Climate Change Act 2008 (as amended in 2019),[38] legally commits the UK to meet net-zero greenhouse gas (GHG) emissions by 2050[39] and five-yearly carbon budgets. This framework positions domestic nature-based projects, particularly woodland creation and peatland restoration, as critical contributions to the UK's long-term decarbonization pathway, as reflected in the Net Zero Strategy and Environmental Improvement Plan.[40]

II. Demand-Side Regulations

A. Use Authorization Framework

1. **Applications Allowed:**

- *Voluntary Claims:* UK-based companies, financial institutions, and individuals may voluntarily purchase and retire project-based carbon credits—including units from the WCC, the Peatland Code, and eligible international standards—to support climate-finance objectives or make climate-related claims. The UK government's principles for voluntary carbon and nature market integrity explicitly address both the buying and selling of credits and are intended to guide responsible participation in voluntary markets for buying and selling carbon and nature credits.[41]
- *Compliance Integration:* Project-based credits from the WCC and Peatland Code cannot be used for UK ETS compliance. UK ETS Authority states that offset credits are not allowed in the UK ETS;[42] the scheme is currently allowances-only, with a planned future window for engineered GGRs issued as compliance-grade units, not voluntary offsets.
- *Nationally Determined Contribution (NDC) Alignment:* Emission reductions and removals from UK-based projects (including WCC, Peatland Code, and future engineered-GGR projects) are accounted for within the UK's national GHG inventory and carbon budgets under the Climate Change Act 2008. The UK government does not apply corresponding adjustments to voluntary credit purchases from domestic projects, meaning the underlying mitigation continues to contribute to the UK's NDC rather than to private voluntary retirements.[43]

2. **Regulatory Status:**
   - *No Compliance Use:* The UK ETS does not currently allow offsets, and voluntary credits cannot substitute for required decarbonization.[44]
   - *Guidance-Based Voluntary Use:* Corporate use of voluntary carbon credits is governed by non-binding government guidance—the UK government's principles for high-integrity voluntary carbon and nature markets (April 2025),[45] which position credits as a complement to, not a substitute for, deep in-value-chain mitigation[46] and require transparency in claims.
3. **Oversight Bodies:**
   - *DESNZ* sets overall policy for voluntary carbon and nature markets, including principles on how credits should be used in corporate net-zero strategies and how to avoid double counting and low-integrity use.[47]
   - *CMA* enforces consumer-protection law through the Green Claims Code, which applies to any UK business making environmental claims (including carbon-neutral, net-zero, or offset claims) and requires that such claims be truthful, substantiated, and not misleading.[48]
   - *ASA* applies rules and specific guidance on carbon-neutral and net-zero claims, requiring

advertisers to be clear about the extent to which claims rely on carbon credits, avoid unqualified carbon-neutral statements, and provide accessible information on basis and limitations.[49]

- *FCA*, through PS23/16 Sustainability Disclosure Requirements (SDR) and the anti-greenwashing rule, regulates sustainability-related claims made by FCA-authorized firms, including products or strategies that invest in or rely on carbon credits. The anti-greenwashing rule applies to all authorized firms, requiring that any sustainability-related claims are "fair, clear and not misleading."[50]
- *UK Land Carbon Registry Operator and S&P Global* operate the UK Land Carbon Registry, whose terms and conditions govern listing, transfer, retirement, and cancellation of WCC and Peatland Code units and embed sanctions for fraud, misrepresentation, and non-compliance.[51]

4. **Standards Integration:** While there is no legal mandate to use the Science Based Targets Initiative (SBTi), VCMI, or ICVCM, the UK government explicitly positions its principles as aligned with global integrity standards. The government intends to endorse ICVCM's[52] Core Carbon Principles as a benchmark for high-quality credits, align with VCMI's claims framework, and integrate carbon credit disclosure[53] requirements from the Transition Plan Taskforce (TPT) framework.
5. **Enforcement Mechanisms:**
   - The UK employs a multilayered enforcement regime governing the use and marketing of project-based carbon credits. Under the Greenhouse Gas Emissions Trading Scheme Order 2020, UK ETS operators may surrender only UK allowances (UKAs) for compliance, meaning voluntary carbon credits cannot be used to meet statutory obligations. Consumer-facing claims involving carbon credits are tightly regulated. The Digital Markets, Competition and Consumers Act 2024[54] empowers the CMA to issue substantial civil penalties for misleading environmental claims, while the ASA[55] can require withdrawal of advertisements that make unqualified or unsubstantiated carbon-neutral or net-zero claims. For financial firms, the FCA's anti-greenwashing rule[56] (within the Sustainability Disclosure Requirement regime) requires that all sustainability-related claims referencing carbon credits be "fair, clear and not misleading,"[57] with breaches subject to supervisory or enforcement action. Serious misconduct, such as issuing or selling nonexistent credits, may constitute criminal fraud under the Fraud Act 2006,[58] exposing individuals to prosecution and potential imprisonment.

B. Corporate Use Requirements

1. **Mitigation Hierarchy:** There is no statutory "reduce-first" mandate that forces UK companies to

cut internal emissions before using offsets. However, the UK government's principles for voluntary carbon and nature market integrity set a clear policy expectation that credits are only used in addition to ambitious value-chain action,[59] explicitly referencing the mitigation hierarchy.[60]

2. **Scope Coverage:** No UK law prescribes which Scope 1, Scope 2, or Scope 3 emissions may be offset in voluntary claims. In principle, companies can associate credits with any scope, provided claims are not misleading under consumer protection and advertising law.[61]

3. **Quality Standards:** There is no binding list of approved programs or methodologies for corporate voluntary use, but government policy is clearly moving toward anchoring quality expectations in ICVCM, VCMI, and national standards. Principle 2 ("Use high-integrity credits") directs buyers to credits that are real, additional, permanent, independently verified, and transparently registered, and the DESNZ consultation proposes to formally recognize the ICVCM Core Carbon Principles[62] and Assessment Framework as a benchmark for high-integrity credits used in the UK. It also positions the UK's own domestic standards (WCC, Peatland Code) and the forthcoming GGR standard for engineered removals as examples of high-integrity supply.[63] These expectations remain soft law for corporations (guidance, not statute) but are reinforced by the CMA's Green Claims Code and the ASA's codes, which effectively require that any credits relied upon for claims meet robust integrity criteria.[64]

4. **Accounting Treatment:** UK frameworks increasingly require companies to separate gross emissions from the use of carbon credits in disclosures, rather than silently netting them away.

    - The government's principles (Principle 3: Measure and disclose the planned use of credits)[65] require entities to report how many credits they use or plan to use, how they fit into their transition strategy, and how to avoid presenting credit use as if it changes national-level accounting. The TPT Disclosure Framework (section 4.4, "Carbon Credits") requires transition plans to disclose the intended role of credits in meeting targets, volumes purchased and retired, type (removal versus avoidance; nature-based versus technological), certification scheme, and other quality indicators; credits are treated as a separate lever, not as an adjustment embedded inside reported gross emissions.[66]

    - FCA-regulated listed companies and financial institutions already make climate disclosures aligned with the Task Force on Climate-related Financial Disclosures. Moreover, SDR's anti-greenwashing rules require that any "net-zero" or "sustainable" claims relying on credits be clearly explained and not obscure the underlying gross emissions profile.[67]

C. Transparency and Assurance

1. **Public Reporting:** Companies in the UK are increasingly expected to separately disclose their

use of carbon credits rather than net them into emissions totals. Under the UK government's Principle 3 for voluntary carbon and nature markets,[68] organizations are encouraged to "measure and disclose" both planned and actual credit use as part of sustainability reporting. The TPT framework further recommends that transition plans detail the role, type, and expected volume of carbon credits used to meet targets (Element 4.4).[69]

2. **Third-Party Verification:** Firms disclose the use of carbon credits in annual reports, transition plans, or sustainability statements. These disclosures fall within the scope of statutory audit consistency checks, meaning auditors must assess whether statements about credit purchases, retirements, or reliance on credits are accurate and consistent with other information in the report. The TPT framework and FCA supervisory expectations also require credible governance[70] and evidence for claims involving carbon credits.

3. **Science-Based Targets:** UK law does not require companies to obtain SBTi validation. Entities must disclose their own climate targets, progress under FCA rules and the TPT framework, and ensure any science-aligned or Paris-aligned claims are not misleading.

4. **Policy Advocacy:** There are no mandatory buy-side quotas or rules prescribing the volume or type of credits that corporates must purchase. Government guidance encourages the use of high-integrity credits aligned with ICVCM[71] or VCMI principles and emphasizes transparency, but participation remains voluntary.

D. Market Integrity Protection

1. **Anti-greenwashing:** The UK applies anti-greenwashing enforcement across consumer markets, advertising, and financial services.

    - The CMA enforces the Green Claims Code, which requires all environmental and offset-related claims to be truthful, substantiated, and not misleading. Under the Digital Markets, Competition and Consumers Act 2024, the CMA now has direct civil penalty powers and can issue fines of up to 10 percent of global turnover for misleading environmental claims, including carbon-neutral or net-zero claims based on low-integrity offsets.[72]

    - The ASA enforces the advertising codes and its 2023–2024 environmental claims guidance, requiring ads referencing carbon credits, carbon neutrality, or net-zero claims to be transparent about the role of credits, to avoid unqualified or absolute claims, and to provide clear substantiation. It can also issue ad bans, require public corrective statements, and refer persistent offenders to statutory regulators.[73]

    - The FCA's anti-greenwashing rule (effective May 31, 2024)[74] requires all sustainability-

related claims made by FCA-authorized firms, including those involving carbon credit use in portfolios, funds, or investment products, to be fair, clear, and not misleading. Under the SDR and investment labels regime, firms must provide transparent disclosure when carbon credits materially contribute to net-zero or sustainable product claims. FCA enforcement can include supervisory intervention, fines, or marketing restrictions.

2. **Co-benefits Delivery:** There is no legal requirement in the UK for buyers to prioritize project-based credits with biodiversity, social, or community co-benefits. However, the UK government's voluntary carbon and nature markets integrity principles[75] encourage credit users to support nature-positive outcomes and to choose projects with broader environmental and social value where possible.

III. Market-Side Regulations

A. Infrastructure Framework

1. **Market Structure:** The UK's project-based carbon and nature markets operate as a decentralized, largely over-the-counter (OTC) voluntary market layered on top of the broader UK carbon-market ecosystem. Project-based units from the WCC and Peatland Code are typically traded via offtake agreements between brokers and project developers, with trades privately negotiated and then settled through registry transfers;[76] there is no dedicated central exchange. In parallel, the UK runs a separate compliance market under the UK ETS, where spot and futures trading of UKAs occur on ICE[77] and other financial venues, but these instruments are distinct from domestic project-based credits and cannot be interchanged.

2. **Registry Operations:** All accredited domestic land-use projects (WCC and Peatland Code) and their units are recorded in the UK Land Carbon Registry, operated by S&P Global. The registry

   - serves as the official electronic record of project registration, predicted and actual sequestration, and unit ownership and retirement;
   - lists project and unit-level information (project status, PIUs, verified units, retirements, and buffer units) and provides a publicly viewable ledger of UK-based carbon units; and
   - serializes each unit (PIUs, WCUs, and PCUs) with unique identifiers, enabling traceability, prevention of double issuance, and public confirmation of retirements.

   The registry is not a trading venue;[78] rather, it functions as the cradle-to-retirement ledger for WCUs and PCUs,[79] recording issuance, transfer, buffer allocation, invalidation, and retirement, while price discovery occurs off-registry in OTC contracts and brokered markets.

3. **Data Standards:** The UK Land Carbon Registry and domestic codes apply common data standards to support integrity and transparency:

    - WCC and Peatland Code guidance require projects to submit standardized documentation (project design documents,[80] monitoring and verification reports) and rely on unit serialization and public registries to prevent double counting and provide transparent credit histories.

    - MRV for projects is conducted under International Organization for Standardization (ISO)-based validation and verification standards (ISO 17029, ISO 14065, ISO 14064-3)[81] via bodies accredited by the UK Accreditation Service, ensuring that data feeding into registry issuance meets internationally recognized assurance norms.

B. Trading and Participation

1. **Eligibility Rules:**

    - Participation in the UK Land Carbon Registry is open to organizations involved in UK land-sector projects or holding UK land carbon units.[82] S&P Global performs due diligence or identity checks[83] before activating accounts to uphold platform integrity and mitigate risks.

    - Project developers, aggregators, traders, and large corporate buyers typically hold accounts, while corporate buyers that do not wish to open an account can still participate via assignment.[84] Peatland Code guidance[85] explicitly allows units to be assigned on behalf of a corporate buyer without requiring the buyer to have an account, with a note attached to the unit naming the buyer and rendering the unit non-tradable once assigned.

    - There is no bespoke UK financial services license category for dealing in WCC or Peatland units, but where carbon credit schemes are structured as investment products or collective investment schemes, the FCA treats them under the Financial Services and Markets Act; past enforcement (e.g., Capital Alternatives)[86] has confirmed that some carbon credit schemes constituted unauthorized collective investment schemes (UCISs) and could not lawfully be promoted to retail investors.

2. **Trading Mechanisms:**

    - *Spot or Physical Market (OTC):* Trading of WCUs and PCUs is almost entirely over the counter. Buyers typically (1) identify a project or aggregator using the WCC's public lists and registry holdings pages, and (2) negotiate a contract directly with project developers, aggregators, or brokers.

- *Assignment Versus Transfer:* Under the Peatland Code (and similarly for the WCC), two mechanisms demonstrate a sale: a transfer, where units move from the seller's registry account to the buyer's registry account, and an assignment,[87] where the buyer does not hold an account and the seller's registry account records a non-tradable assignment with the buyer's name, automatically leading to retirement at verification for PIUs.
- *Derivatives:* As of early 2026, there are no UK-specific exchange-traded futures contracts that reference only WCUs or PCUs.

3. **Settlement Systems:**
   - *Registry Settlement (Units):* For trades where both parties hold accounts, settlement of WCC or Peatland transactions is completed by electronic transfer of units within the UK Land Carbon Registry,[88] which acts as a serialized ledger rather than a trading venue or central counterparty.
4. **Price Discovery:** The UK has no mandatory transaction-level price reporting for WCUs and PCUs. Price discovery is primarily based on the following:
   - Bilateral OTC prices are negotiated between project developers, aggregators, and buyers.
   - The WCC publishes indicative national averages based on reported transactions.[89]
5. **Oversight Authority:**
   - *DESNZ* leads policy on voluntary carbon and nature markets, including the "Voluntary Carbon and Nature Markets: Raising Integrity" consultation (2025)[90] and the government integrity principles, and coordinates with the UK ETS Authority on future GGR integration.
   - *His Majesty's Revenue and Customs (HMRC)* regulates the value-added tax (VAT) treatment of voluntary carbon credits.[91] Revenue and Customs Brief 7 (2024) confirms that, from September 1, 2024, sales of voluntary carbon credits where the place of supply is the UK must be treated as taxable supplies, with some trades brought into the Terminal Markets Order for potential zero rating.
   - *FCA*, through PS23/16 SDR and the anti-greenwashing rule, regulates sustainability-related claims made by FCA-authorized firms, including products or strategies that invest in or rely on carbon credits. The anti-greenwashing rule applies to all authorized firms, requiring that any sustainability-related claims be fair, clear, and not misleading.
   - *UK Land Carbon Registry Operator and S&P Global* operate the UK Land Carbon Registry,

whose terms and conditions govern listing, transfer, retirement, and cancellation of WCUs and PCUs and embed sanctions for fraud, misrepresentation, and non-compliance.[92]

6. **Legal Classification:** The only formal government definition comes from HMRC, which, for VAT purposes, defines voluntary carbon credits as "tradable instruments representing the reduction or removal of one ton of CO_2e," and distinguishes them from compliance-market units.[93] This VAT definition does not confer property status or financial instrument status; it only clarifies tax treatment.

   There is no UK-specific accounting standard for voluntary carbon credits. Entities therefore apply the general UK-adopted International Financial Reporting Standards, and classification depends primarily on the purpose and intent of holding the credits, consistent with practice guidance from major accounting firms and UK regulators.

   - *Inventory (International Accounting Standard [IAS] 2) Guidance:*[94] If WCUs, PCUs, or PIUs are held for resale, or for use in delivering offsetting services to customers (e.g., retailers, aggregators, or intermediaries), they typically meet the definition of inventory. They are measured at the lower of cost or net realizable value.[95]
   - *Intangible Assets (IAS 38) Guidance:*[96] If voluntary carbon credits are purchased and held for the company's own use as part of a long-term decarbonization or net-zero strategy, rather than for trading, they generally meet the definition of an intangible asset.
   - *Expense (P&L):* Where credits are purchased and immediately retired to offset current-period emissions or claims, many UK entities recognize an expense at the point of retirement, particularly when holdings are small or immaterial, credits do not meet internal capitalization thresholds, or the company's accounting policy treats offset purchases as a period cost. This treatment is common among corporations making annual "carbon-neutral" or "net-zero" product or operations claims.[97]

C. Market Integrity Safeguards

1. **Anti-Manipulation and Fraud Prevention:** The UK's project-based carbon market relies on the UK Land Carbon Registry as a single, serialized ledger that prevents double issuance and double counting of WCUs and PCUs. Fraudulent behavior, such as selling nonexistent units or misrepresenting credit ownership, falls under the Fraud Act 2006, while misleading environmental or credit-related claims are enforced by the CMA (Green Claims Code,[98] Digital Markets, Competition and Consumers Act 2024)[99] and ASA (environmental advertising rules). Where carbon credit schemes are marketed as investments, the FCA[100] regulates market

conduct under the Financial Services and Markets Act and has previously taken action against unauthorized collective investment schemes involving carbon credits.

2. **Transparency and Reporting Requirements:** The UK Land Carbon Registry provides public project-level information, including project documentation, PIUs issued, verified units, retirements, buffer contributions, and unit serial numbers. The WCC and Peatland Code publish annual market data such as average prices,[101] transaction volumes, and market trends.

D. Financial and Cross-Border Integration

1. **Financial Regulation Integration:** The UK does not classify WCC or Peatland Code units as "financial products" by default. However, carbon credit activities fall within the UK financial services regulatory perimeter when they constitute regulated investment activity (e.g., when credits are packaged or promoted as investments or form part of a UCIS, as confirmed by FCA enforcement in Capital Alternatives). FCA rules under the Financial Services and Markets Act 2000, therefore, apply where carbon credit schemes resemble investment products or are marketed to retail consumers.[102] From a tax standpoint, HMRC Brief 7 (2024)[103] establishes that most voluntary carbon credit transactions are taxable supplies for VAT purposes in the UK.

2. **Cross-Border Trading Framework:**

   - The UK does not permit domestic voluntary credits (WCC or Peatland Code units) to be transferred internationally (Article 6) for compliance purposes,[104] nor does the UK apply corresponding adjustments to voluntary domestic credit use.
   - DESNZ's consultation confirms that mitigation achieved in the UK through domestic projects will continue to count toward the UK's NDC and carbon budgets, even when credits are sold to private buyers.[105]
   - The UK is exploring participation in the Paris Agreement Crediting Mechanism (PACM). The consultation proposes establishing a designated national authority to enable project developers to generate and sell Article 6.4 credits, specifically mitigation contribution emission reductions (MC-A6.4ERs), without corresponding adjustments.[106]
   - No cross-border trading of WCUs or PCUs currently occurs under Article 6.2 arrangements, though the UK is developing governance structures for future interoperability.

E. Regulatory Advancement Development Road Map

1. **Infrastructure Plans:** The UK government is expanding the enabling architecture for high-integrity voluntary markets rather than building a centralized exchange. Current priorities

include:

- strengthening the UK Land Carbon Registry (operated by S&P Global) as the unified ledger for domestic land-sector credits;[107]
- developing the UK GGR Standard and associated accreditation pathway to support future integration of engineered removals into both the voluntary market and the UK ETS;[108] and
- at a broader nature-markets level, developing cross-market data and governance frameworks through standards such as the British Standards Institution's BSI Flex 701, "Nature Markets—Overarching Principles and Framework," which sets out common principles for integrity, transparency, data quality, and market governance across all UK nature and carbon credit schemes, including the WCC, the Peatland Code, Biodiversity Net Gain, and emerging private standards.[109]

2. **International Cooperation:** The UK continues to participate actively in United Nations Framework Convention on Climate Change Article 6 negotiations, but has clarified that domestic voluntary credits will not receive corresponding adjustments and will continue to count toward UK carbon budgets and the NDC.[110] The 2024–2025 DESNZ consultation proposes enabling UK project developers to access the PACM[111] by establishing a designated national authority, allowing the issuance of Article 6.4 credits without corresponding adjustments. No Article 6.2 Internationally Transferred Mitigation Outcomes export pathway currently exists.
3. **Regulatory Evolution:**
   - *Development of Governance and Data Standards Enabling Financial Market Confidence:* The BSI Flex 701 nature markets framework[113] sets cross-market standards for integrity, data quality, governance, and transparency across all UK nature and carbon markets, critical prerequisites for institutional investors and insurers to treat WCC, Peatland Code, and nature-credit units as recognized environmental assets.
   - *Integration of Engineered GGRs into the UK ETS,[113] Enabling Financial Grade Credit Instruments:* The UK ETS Authority's decision to admit engineered GGR credits into the ETS from 2028–2029 creates, for the first time, a compliance-grade carbon-removal asset class. This will allow financial institutions to value, hedge, trade, and contract long-term removals alongside ETS allowances, tightening the link between voluntary removal credits and compliance markets.
   - *Mainstreaming Carbon Credit Use into Regulated Financial Reporting:* The FCA is incorporating the TPT Disclosure Framework[114] into its sustainability disclosure regime,

meaning listed companies and financial institutions will be required to disclose how carbon credits feature in investment strategies, transition plans, and net-zero pathways, bringing carbon credit data into the core of regulated financial reporting.

4. Enforcement Enhancement: Market integrity enforcement is intensifying across regulators:
    - The CMA now has direct civil-penalty powers under the Digital Markets, Competition and Consumers Act (up to 10 percent of global turnover) for misleading green or offset claims.[115]
    - The ASA enforces strengthened rules on "carbon-neutral" and "net-zero" advertising, requiring explicit disclosure when claims rely on offsets.[116]
    - The FCA's anti-greenwashing rule (May 2024)[117] introduces binding obligations for financial firms to ensure all sustainability-related claims, including those involving carbon credits, are fair, clear, and not misleading.
    - Fraudulent carbon credit schemes face criminal liability under the Fraud Act 2006.[118]

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