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Beyond Compliance: Procedural Legitimacy, Carbon Information Governance, and China's Response to the EU CBAM

Meng Zhang^{1,*}¹ School of Law, Beijing Foreign Studies University, Beijing, China

* Correspondence: Meng Zhang, School of Law, Beijing Foreign Studies University, Beijing, China

Abstract: Legal debate over the European Union's Carbon Border Adjustment Mechanism (CBAM) has concentrated on World Trade Organization compatibility, carbon leakage, and climate ambition. This article argues that a central difficulty lies in the administration of evidence. CBAM relies on methods for calculating embedded emissions, verification, default values, an adjustment reflecting free allocation under the EU Emissions Trading System, and proof of carbon prices effectively paid abroad. Formal duties fall on authorised EU declarants, while much of the underlying evidence is generated by foreign installations and upstream suppliers. The measure's legal defensibility therefore depends not only on formal alignment with the EU Emissions Trading System, but also on whether the methodology is accessible, verified actual data can displace defaults, evidence of a qualifying foreign carbon price receives reasoned consideration through the declarant's procedure, and errors can be corrected before liability is fixed. World Trade Organization jurisprudence under Article XX of the General Agreement on Tariffs and Trade provides the principal legal basis for this claim. Transboundary environmental impact assessment is not directly applicable to a trade regulation, but its sequence of prior assessment, participation, consideration of alternatives, and continuing review offers a limited procedural analogy for evaluating external regulatory burdens. The article then distinguishes two elements of China's response. Carbon information governance is the direct interface with CBAM because it determines product-level emissions, verification, and proof of carbon prices paid. The Ecological Conservation Redline has a complementary role in ecological spatial and biodiversity governance; it neither establishes embedded emissions nor reduces CBAM liability. Keeping those functions separate allows China to challenge specific assumptions with traceable evidence and clarifies the procedural conditions under which the European Union can defend CBAM against claims of arbitrary or unjustifiable discrimination.

Keywords: carbon border adjustment mechanism; GATT Article XX; procedural legitimacy; transboundary environmental impact assessment; carbon information governance; Ecological Conservation Redline

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1. Introduction

CBAM entered its definitive period on 1 January 2026. It is neither a conventional tariff nor a direct extension of the European Union Emissions Trading System (EU ETS) to installations abroad. It links access to the EU market to the calculation and verification of emissions embedded in imported goods, and reduces the number of certificates to reflect free allocation under the EU ETS and carbon prices effectively paid in a third country. The transitional period from October 2023 to December 2025 required quarterly reporting. For the 2026 import year, the first annual declaration must be submitted and the corresponding certificates surrendered by 30 September 2027, while sales of CBAM certificates begin on 1 February 2027. The 2025 amendment (Regulation (EU) 2025/2083) introduced a 50-tonne annual mass threshold for most covered goods, excluding electricity and hydrogen, and revised the administrative timetable. The definitive-period

acts govern verification, verifier accreditation, calculation of embedded emissions, the free-allocation adjustment, and default values. CBAM therefore combines customs supervision, climate accounting, and later financial settlement. EU declarants bear the formal obligations, but their ability to comply depends on production data and supporting records generated outside the Union.

Most legal analysis asks how this design should be characterised under Articles I, II, and III of the General Agreement on Tariffs and Trade (GATT), whether it can be provisionally justified under Article XX(b) or (g), and whether its link with the EU ETS is sufficiently even-handed. One line of scholarship treats CBAM through the law of border adjustments and internal charges; another concentrates on non-discrimination and environmental exceptions; a third examines whether cooperation and transparent rule-making can reduce the risks of unilateralism. The literature has also addressed carbon leakage, administrative feasibility, and the gradual change in professional assessments of World Trade Organization (WTO) compatibility [1–6]. These inquiries are indispensable, but they do not fully explain why a formally neutral emissions methodology may impose sharply different burdens on exporters with unequal monitoring, reporting, and verification capacity. The unresolved question is narrower than a general objection to unilateralism: when an importing jurisdiction makes foreign data and foreign administrative capacity conditions of market access, what procedures are needed to keep the measure from being applied arbitrarily?

The European Commission did not adopt CBAM without preparatory assessment. Its Impact Assessment Report (SWD(2021) 643 final) and proposal (COM(2021) 564 final) examined six policy options, economic and environmental effects, compliance costs, and stakeholder views. The difficulty lies in the focus of that record. An assessment organised principally around EU carbon leakage and internal policy coherence may not give affected trading partners an equivalent opportunity to test the assumptions that later determine their burden. An accounting boundary, a default value, or a rule on acceptable proof may appear technical in the legislative file, yet decide whether a producer is assessed on actual performance or on a conservative proxy. A legal dispute is therefore likely to concern not only the stated climate objective, but also the administration of actual values, defaults, verification, foreign carbon prices, and corrections. Procedural legitimacy is used here to describe that field of review. It is not a free-standing source of law; it organises requirements already visible in WTO jurisprudence, climate-law differentiation, and the due-diligence tradition of international environmental law.

The central claim is that CBAM has a conditional path to legal justification. Its climate objective and formal connection to the EU ETS matter, but they cannot cure discriminatory application. A stronger defence would show that methods are accessible, relevant foreign evidence receives reasoned consideration, verified actual data can displace proxies, and review can correct a defective rule before liability is final. China's response should follow the same functional discipline. Carbon information governance is the direct interface because CBAM asks how much greenhouse gas is embedded in a product and what qualifying carbon price has been paid. The Ecological Conservation Redline (ECR) answers a different question: which areas require strict control to protect ecological functions and biodiversity. It can strengthen the credibility of China's wider green transition, but it cannot establish product emissions or reduce a CBAM obligation.

The analysis is doctrinal. It reads the CBAM legislation together with WTO jurisprudence on environmental exceptions, the Paris Agreement, recent climate advisory opinions, and materials on transboundary environmental assessment and prevention. Chinese legal and policy materials are used to identify the existing foundations for carbon data governance and ECR supervision; scientific literature defines the ECR's ecological function. These materials are not treated as a substitute for product carbon accounting. Section 2 identifies the transboundary regulatory burden created by CBAM. Section 3 explains why its WTO defence depends on design and application. Section 4 develops transboundary environmental impact assessment as a limited procedural analogy. Section

5 turns to China's institutional response, and Section 6 sets out a reciprocal procedural arrangement. The conclusion states the resulting legal test.

2. CBAM as a Transboundary Regulatory Measure

The legal difficulty begins with a mismatch between formal addressees and information holders. Regulation (EU) 2023/956 imposes obligations on authorised CBAM declarants established in the Union, but the evidence needed to calculate embedded emissions is ordinarily held by non-EU installations. An importer cannot rely on actual values, obtain verification, or claim a reduction for a carbon price paid abroad without records from the producer and, in many cases, upstream suppliers. A foreign operator may enter installation information in the CBAM registry, yet the importer remains responsible for the declaration. The party answerable to the EU authority may therefore be different from the party able to reconstruct the production record. CBAM converts differences among domestic climate systems into evidentiary conditions for cross-border trade. That design can respond to carbon leakage only if the required data can be generated, checked, and corrected on terms that do not systematically favour producers already organised around EU methods [1].

The current framework makes that dependence explicit. It covers specified goods in cement, electricity, fertilisers, iron and steel, aluminium, and hydrogen. The 50-tonne threshold removes most low-volume imports from the full regime, although electricity and hydrogen remain outside that exemption. Above the threshold, the annual declaration records the quantity of imported goods, their embedded emissions, the certificates to be surrendered, and any reduction for a carbon price effectively paid in a third country. The financial adjustment is phased in as free allocation under the EU ETS is withdrawn. Verification is governed by Implementing Regulation (EU) 2025/2546, accreditation of verifiers by Delegated Regulation (EU) 2025/2551, calculation by Implementing Regulation (EU) 2025/2547, the free-allocation adjustment by Implementing Regulation (EU) 2025/2620, and default values by Implementing Regulation (EU) 2025/2621. The threshold changes who is subject to the regime; it does not alter the underlying calculation problem for covered imports. Liability still depends on a comparison between emissions associated with the imported goods and the carbon constraint borne by comparable EU production after free allocation is taken into account.

That comparison is administratively intensive. Depending on the product and production route, the calculation may require installation boundaries, production levels, direct process emissions, heat or electricity inputs, precursor data, emission factors, and evidence that a carbon price was paid without being rebated. During the transitional period, specified alternative methods and default values could be used under Implementing Regulation (EU) 2023/1773 when actual information was unavailable. The definitive framework now separates verification, accreditation and oversight of verifiers, the method for calculating embedded emissions, the free-allocation adjustment, and the establishment of default values. Actual values are not simply figures supplied by an exporter. They must be derived within the prescribed system boundary, supported by records, and verified under the applicable rules. A foreign carbon price matters only to the extent that a qualifying monetary amount was effectively paid and can be documented after rebates or compensation are taken into account. CBAM therefore does more than set a price. It allocates responsibility for producing, validating, preserving, and explaining facts.

This allocation differs from an ordinary border charge. A customs duty can generally be administered from information available at importation. CBAM asks how a product was made, which inputs were used, what emissions occurred at a foreign installation, and whether another jurisdiction imposed a qualifying carbon price. The Union does not issue direct commands to that installation, but access to more favourable treatment depends on information that only the installation or its suppliers can provide. The issue is therefore not extraterritorial jurisdiction in the strict sense. It is the conditioning of market access on proof generated within another regulatory system. Scholarship on border adjustments

has long recognised that legal defensibility turns on the relationship between the imported product, the domestic carbon measure, and the method used to quantify embedded emissions [1–3, 6]. CBAM adds a procedural question: who bears the risk when the necessary information is unavailable, commercially sensitive, or unverifiable in the prescribed form?

The default-value rules reveal that risk. Defaults make administration possible when actual data are missing, but they also decide who bears the cost of uncertainty. A producer able to document actual emissions can seek treatment based on its own performance; a producer without accepted data is assessed through a proxy designed to avoid understatement. The definitive default-value regulation adds mark-ups for that purpose. Such conservatism may be administratively defensible, yet it can magnify differences in technical capacity and verification cost [6]. A default should therefore remain a rebuttable administrative tool rather than become an unreviewable presumption about a country, sector, or production route. The relevant comparison is not only between EU and imported goods. It also concerns foreign producers who can convert their operations into evidence recognised by the Union and those who cannot. Formal uniformity in the formula does not answer whether the evidentiary route is reasonably accessible or whether better evidence can displace the proxy before liability is fixed.

The Commission's preparatory record documents extensive consultation, but the distribution of participation is instructive. Of the 219 responses to the initial feedback exercise, 24 came from third countries. The 25 targeted interviews involved 17 industry participants, five non-governmental organisations, and three member-state institutions. Those figures do not invalidate the assessment, and they show that external effects were not wholly ignored. They also explain why later participation matters once technical assumptions produce concrete effects abroad. Consultation is legally useful when it can affect a methodology, a default, a deadline, or the treatment of foreign evidence. It has less value when affected parties are heard only after those choices have hardened. The procedural issue is therefore one of timing, influence, and reasons, not the mere existence of a consultation record.

The practical burden will vary by sector, firm size, and national infrastructure. Exporters with established measurement, reporting, and verification systems can transmit installation data and obtain accredited verification at lower marginal cost. Others may have to reconstruct historical records, negotiate access to precursor data, rely on intermediaries, or accept defaults. The Commission's impact assessment anticipated proportionally higher compliance costs for smaller firms, while recent analysis identifies substantial administrative burdens and the need to adjust the framework when imbalances emerge [6]. Unequal effects do not by themselves establish discrimination; many neutral regulations impose different compliance costs. They warrant closer legal scrutiny where the difference is produced by assumptions, access to evidence, or procedures controlled by the importing jurisdiction. CBAM is therefore best understood as a climate measure with transboundary regulatory effects, not merely as an anti-leakage charge.

3. Conditional Legality under WTO and Climate Law

The first legal issue is how CBAM should be characterised under the GATT. Depending on the feature challenged, Article I may govern most-favoured-nation treatment, Article II tariff bindings and border charges, and Article III national treatment of imported products. If the certificate obligation is treated as a charge imposed on importation, Article II and the question of an adjustment equivalent to an internal charge come to the foreground. If it is treated as an internal fiscal or regulatory measure applied to imported products, Article III becomes more central. Article I may be engaged if recognition of foreign carbon prices or a country-specific arrangement confers an advantage that is not extended immediately and unconditionally to like products from other members. Production methods may also affect the analysis of likeness and less favourable treatment. No single label is likely to resolve the legality of the whole scheme.

The certificate obligation, emissions methodology, authorisation requirement, credit for foreign carbon prices, and treatment of free allocation may each require separate analysis. Existing work accordingly treats WTO compatibility as design-dependent rather than categorical [1–3].

That defence remains conditional. The formal link to the EU ETS is weakened if imported goods bear carbon costs from which comparable EU production is effectively shielded, or if foreign producers lack a realistic route to establish actual emissions. The phased withdrawal of free allocation and the corresponding adjustment of CBAM liability address the first concern. Rules on actual values, verification, defaults, and carbon prices paid abroad address the second. Timing matters as much as formal design. If imported goods were charged for emissions still covered by free allocation to EU production, the legislative link would not prevent a less favourable competitive condition. Conversely, a credit for a foreign carbon price has little practical value if the proof demanded cannot be obtained from the authority or operator that generated it. None of these safeguards is self-executing. Their legal effect depends on whether comparable emissions are calculated on comparable boundaries, credits are available on intelligible terms, and errors can be corrected before they become a financial liability. A measure may be even-handed in its text and discriminatory in its administration.

If a substantive GATT violation is established, Article XX supplies the possible justification. Paragraph (g) is the most evident route where a measure relates to the conservation of an exhaustible natural resource and is made effective in conjunction with restrictions on domestic production or consumption; paragraph (b) may also be invoked where the protection of human, animal, or plant life or health is at issue. The Appellate Body's analysis is two-tiered. The measure must first fall within one of the listed exceptions and must then satisfy the chapeau, which addresses the manner of application. The member invoking Article XX bears the burden of establishing both stages. The chapeau inquiry is fact-sensitive: it asks how the challenged feature operates among countries where the same conditions prevail and whether the discrimination is connected to the policy objective. A legitimate climate objective can support provisional justification, but it does not answer whether CBAM is applied without arbitrary or unjustifiable discrimination or disguised restriction.

US – Gasoline (WT/DS2/AB/R) provides the starting point. The chapeau seeks to prevent abuse of Article XX and requires due regard for both the invoking member's right to pursue an excepted policy and the treaty rights of other members. US – Shrimp (WT/DS58/AB/R) made the procedural implications more concrete. The original United States scheme failed not because sea-turtle conservation was impermissible, but because its application was rigid, pressed exporting countries towards essentially the same regulatory programme, gave inadequate attention to different local conditions, and offered deficient procedures in the certification process. The Appellate Body also criticised the absence of a transparent and predictable process through which an applicant could be heard and a refusal explained. In the Article 21.5 proceedings (WT/DS58/AB/RW), the revised scheme received more favourable treatment because it accepted programmes comparable in effectiveness, required consideration of local conditions, and was accompanied by serious good-faith efforts to negotiate. Comparable effectiveness distinguishes equality of environmental outcome from identity of regulatory form. These cases do not create a general duty to obtain foreign consent. They show that flexibility, reasons, and access to a fair evidentiary process can determine whether an environmental trade measure survives the chapeau.

Brazil – Retreaded Tyres (WT/DS332/AB/R) adds a different warning. A measure may contribute to a protected objective and still fail Article XX if exemptions or inconsistent enforcement undermine the rationale invoked to justify it. The dispute concerned both the MERCOSUR exemption and imports permitted through domestic court injunctions; the problem was the resulting incoherence between the asserted health objective and the actual application of the ban. The Appellate Body examined the measure's contribution, reasonably available alternatives, and the relationship between

the discrimination and the stated objective. Applied to CBAM, the point is not that every default or exception is suspect. It is that methodological asymmetries, unexplained exclusions, or inconsistent recognition of foreign carbon costs must be justified by the climate objective rather than administrative convenience alone. An exception is not harmless merely because present trade volumes are limited if the distinction lacks a defensible relationship to the objective. The chapeau tests the coherence between the reason given for the measure and the way its burdens are distributed.

The Paris Agreement supplies context, not a ready-made defence or prohibition. Its nationally determined structure preserves diversity in mitigation choices, while Article 4(3) requires each successive contribution to reflect common but differentiated responsibilities and respective capabilities in the light of different national circumstances. That principle does not entitle every developing country or exporter to an exemption from CBAM, nor does it require the Union to treat all climate policies as economically equivalent. It does make capacity and regulatory diversity relevant to the design of assistance, timelines, evidentiary methods, and recognition of foreign measures. The Paris Agreement is not incorporated into the GATT as a direct test of CBAM, but it forms part of the legal setting in which the climate objective and different national circumstances are understood. A methodology that assumes a uniform ability to generate installation-level data sits uneasily with that differentiated architecture, even if no discrete breach of the Paris Agreement follows. The appropriate consequence is procedural calibration, not automatic non-application of the measure.

Recent climate advisory opinions reinforce the importance of procedure, though they do not decide CBAM's WTO status. In its advisory opinion of 21 May 2024 on climate change and international law, the International Tribunal for the Law of the Sea described the relevant due-diligence standard as stringent in light of the risk of serious and irreversible harm, while treating cooperation, technical assistance, monitoring, and environmental assessment as components of the applicable law-of-the-sea regime. In its advisory opinion of 23 July 2025 on the obligations of states in respect of climate change, the International Court of Justice likewise linked climate-related due diligence to risk assessment, environmental impact assessment, and, where the relevant conditions are met, notification and consultation. It also recognised that the cumulative and diffuse character of greenhouse-gas emissions may justify general assessment procedures covering classes of activity, without excluding specific examination of particularly significant proposed activities. These opinions concern states' environmental obligations, not a border adjustment. Their relevance is narrower: contemporary climate law increasingly evaluates conduct through prior assessment, cooperation, and continuing supervision, rather than solely through an ex post account of emissions reduced. They support procedural reasoning without converting every climate-related economic measure into an environmental-impact-assessment obligation.

Taken together, these materials support a claim of conditional legality. CBAM's objective, its connection to the EU ETS, and its focus on embedded emissions make a WTO justification plausible. The same materials identify the points at which that justification may fail: inappropriate comparators, inaccessible proof requirements, rigid treatment of different foreign conditions, or review that cannot correct a defective assumption. Conditional legality is not a prediction that a panel would uphold or invalidate the regulation as a whole. Any dispute would concern specified measures, products, comparators, and instances of application. Procedural legitimacy does not replace those treaty tests. It identifies where they are likely to operate in a scheme whose effects are produced through data and administration.

Two conclusions should be resisted. Unilateral adoption does not by itself establish illegality; Article XX can accommodate unilateral environmental measures. Climate urgency does not establish legality; the chapeau applies precisely after a protected objective has been identified. The useful inquiry is whether the challenged feature is connected to that objective, whether affected exporters can present relevant evidence of actual performance or qualifying carbon costs, and whether the administering authority

explains its treatment of that evidence. This framing keeps the analysis within the GATT rather than inventing a separate doctrine of procedural legitimacy. It also turns an abstract conflict between trade and climate into a reviewable dispute about specified methods, comparators, and administrative choices.

4. Transboundary Environmental Impact Assessment as a Procedural Analogy

Transboundary environmental impact assessment offers a useful analogy because it addresses a familiar problem: a decision taken within one jurisdiction may create material effects beyond it, while the affected state lacks control over the initial decision. In its 2010 judgment in *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, the International Court of Justice held that due diligence and the duties of vigilance and prevention require an environmental impact assessment where a proposed industrial activity may have a significant adverse impact in a transboundary context. The Court left the assessment's specific content to the circumstances, including the nature and magnitude of the proposed development and its likely effects. It also treated procedural and substantive obligations as distinct. Uruguay's procedural breaches were legally cognisable even though Argentina failed to establish a breach of the substantive pollution obligation. The doctrine is therefore more than a technique for proving completed harm. It requires the decision-maker to assess risk before authorising the activity and to comply with the applicable process; it does not prescribe a single substantive outcome.

Certain Activities Carried Out by Nicaragua in the Border Area and Construction of a Road in Costa Rica along the San Juan River (2015) clarified both the trigger and the limit. A state must first ascertain whether a proposed activity carries a risk of significant transboundary harm. If that risk exists, an *ex ante* assessment is required; if the assessment confirms such a risk, notification and consultation may follow as measures of due diligence. The Court rejected *post hoc* studies as a substitute for the assessment that should have preceded construction, confirming that timing forms part of the obligation. CBAM does not fit that rule directly. It is a trade and climate regulation, not a project threatening a shared river or another state's territory. Compliance cost imposed on an exporter is not the kind of transboundary environmental harm that triggers customary environmental impact assessment. The analogy is functional: both settings ask how a decision-maker should identify external effects, hear those affected, compare alternatives, and revisit a decision when better information emerges.

The International Law Commission's 2001 Draft Articles on Prevention of Transboundary Harm from Hazardous Activities make the legal boundary especially clear. Article 1 confines the draft articles to activities involving a risk of significant transboundary harm through their physical consequences. The commentary explains that this requirement was chosen to exclude transboundary effects caused by monetary, socio-economic, or similar state policies. Compliance costs generated by CBAM therefore fall outside the draft articles' scope. The materials remain useful only as a contrast and as a source of procedural elements—risk assessment, information exchange, notification, and good-faith consultation—developed more fully in the literature on transboundary environmental impact assessment [7]. The analogy must not be used to convert a policy objection into a claim of physical transboundary harm. Its value lies in disciplining the sequence of administrative inquiry.

A transboundary-impact perspective would begin by identifying the foreign burdens before the relevant rule is fixed. The Commission assessed carbon leakage, sectoral coverage, policy alternatives, and compliance costs, but the Impact Assessment Report and proposal leave room for a more disaggregated account of burdens outside the Union. At least four categories should be separated: compliance burdens arising from data and verification; distributive effects concerning who ultimately bears the adjustment; recognition effects concerning the treatment of foreign policies; and information effects concerning access to commercially sensitive production data. Perfect forecasting is neither possible nor required. What matters is whether the decision record makes the principal

foreign burdens visible, explains its assumptions, and identifies uncertainty rather than concealing it within a single aggregate estimate.

Identification alone is insufficient if participation cannot affect the decision. WTO jurisprudence treats serious engagement and regulatory flexibility as relevant to the chapeau, while transboundary assessment practice gives affected states notice and an opportunity to comment as part of informed decision-making [7]. For CBAM, participation should attach to concrete choices: calculation boundaries, default values, evidence of carbon prices paid abroad, recognition of verification systems, and implementation timelines. The relevant participants should also be identified with care. A state may raise questions about recognition of its public policies, while an operator is better placed to explain production routes, data gaps, and verification cost. Neither needs a veto. Both should receive the methodology in time to respond, a channel for submitting contrary data, and reasons explaining why an alternative was accepted or rejected. Without those features, consultation remains informational rather than participatory and may fail to expose the factual basis of a contested assumption.

The same record should show that alternatives were genuinely considered. Brazil – Retreaded Tyres confirms that a reasonably available, less trade-restrictive alternative may matter to Article XX analysis, and transboundary assessment frameworks likewise treat alternatives as part of the decision record [7]. The relevant alternatives need not abandon carbon pricing. They may include a different default, a longer data transition for a sector with demonstrated capacity constraints, recognition of an equivalent verification route, or targeted technical assistance. Revenue used to support industrial decarbonisation abroad may improve cooperation and capacity, but it cannot cure discrimination in the calculation or application of the charge. The comparison must preserve the chosen level of climate protection. Procedural fairness does not require the Union to select a materially weaker measure, but it does require an explanation when a comparably effective and less burdensome design is rejected. That explanation should address feasibility and effectiveness rather than restate the preferred option.

Review is the final safeguard. The CBAM Regulation already contains reporting and review provisions, and the 2025 amendment shows that the framework can be changed in response to implementation experience. The statutory review covers matters such as sectoral scope, indirect emissions, circumvention, effects on developing countries, and the functioning of the mechanism. A procedurally adequate review should also test the accuracy of defaults, the availability and cost of verification, the treatment of foreign carbon prices, recurring data errors, and the distribution of burdens among trading partners. It should publish enough information for affected parties to understand why a method is retained or changed. Review has legal significance only if it can lead to revised methods, updated values, altered evidentiary requirements, or targeted assistance before the same defect is repeated.

The analogy therefore yields a limited framework: prior identification of external effects, participation tied to specific regulatory choices, reasoned consideration of alternatives, and review with corrective capacity. It does not replace GATT Articles I, II, III, or XX, and it does not establish that CBAM violates general international law because no project-style transboundary environmental impact assessment was conducted [7]. Nor can procedural quality rescue a substantively discriminatory measure. Its function is evidentiary and analytical. It directs attention to the administrative choices through which formally neutral carbon rules may become rigid, inaccessible, or incoherent, and it supplies criteria for evaluating improvements without assuming that every foreign burden must be removed. China's response should operate at that level.

5. China's Institutional Response

China's strongest response is not a general assertion that CBAM is protectionist. Such a claim may form part of a diplomatic or WTO position, but it cannot by itself show that a particular default is inaccurate, a verifier rejected valid data, or a carbon price was treated inconsistently. China already has elements of the necessary information

infrastructure. The Interim Regulations on Administration of Carbon Emissions Trading (State Council Decree No. 775, 2024) require key emitting entities to prepare annual emissions reports, maintain data-quality controls and supporting records, and submit to provincial verification; they also assign duties to technical service providers. The national carbon-footprint plan (MEE Document No. 30 of 2024) calls for general product-accounting rules, product-specific standards, a factor database, data-quality and security controls, and international alignment. These measures establish an institutional direction, but they do not make Chinese data automatically usable under CBAM. The immediate task is to convert domestic records into evidence that can travel across legal systems.

The direct interface is product carbon information. The 2025 work plan extending the national emissions-trading market to steel, cement, and aluminium (MEE Document No. 23 of 2025) strengthens the monitoring, reporting, and verification base in three sectors that also fall within CBAM. Enterprises producing covered goods nevertheless need product- and installation-level records of energy use, process emissions, electricity inputs, precursor materials, production routes, and output. Sectoral standards must translate those records into embedded-emissions calculations, while verification rules must preserve an auditable chain of evidence. A standard used for export compliance should identify its legal status, system boundary, materiality threshold, emission factors, and relationship to enterprise reporting duties. Public authorities have a different task: maintaining reliable factors, supervising verification quality, and resolving inconsistencies that affect export compliance. The objective is not to guarantee acceptance of every Chinese calculation. It is to ensure that an exporter can present a complete, traceable, and legally intelligible record.

That system should not be designed as a copy of the EU ETS. The Paris Agreement leaves each party to prepare its nationally determined contribution and pursue domestic mitigation measures, so comparability cannot be reduced to identity of institutional form. A further distinction is necessary. Participation in China's emissions-trading market, receipt of freely allocated allowances, or compliance with a non-price regulation does not by itself prove a deductible carbon price. Under the current CBAM rules, a reduction depends on a documented monetary amount effectively paid under a qualifying carbon-pricing scheme, after rebates or other compensation are taken into account. Non-price measures may remain relevant to comparable effort, proportionality, cooperation, or technical assistance, but they should not be presented as a monetary credit. A persuasive claim must identify the legal basis, covered emissions, amount paid, and connection to the goods concerned.

A usable information system also needs a route for contestation. The amended framework permits actual values to displace defaults when the prescribed conditions are satisfied, while the definitive acts specify how those values are calculated, verified, and distinguished from default values. Chinese exporters should be able to obtain verified installation data, identify the source of each factor, and correct errors before an importer submits the annual declaration. The procedural position is complicated because the EU importer, not the foreign producer, is the authorised declarant. A producer may supply information through the registry, but it ordinarily has no direct procedural relationship with the authority reviewing the declarant's compliance. Contracts and domestic support arrangements should therefore allocate responsibility for data requests, corrections, verifier access, confidentiality, and late information. A technically sound figure that cannot be traced to an accountable process may still fail abroad; a transparent record allows an EU assumption to be challenged through the declarant with evidence rather than rhetoric.

The ECR belongs outside that direct carbon-accounting chain. China's supervision measure (MEE Document No. 2 of 2022) defines it as an ecological boundary approved by the State Council and implemented by provincial governments, and requires supervision aimed at ensuring that ecological function is not reduced, area is not diminished, and the protected character is not altered. It provides for monitoring, assessment of ecological function and human activity, supervision of damage and restoration, information systems,

and public disclosure. Scientific studies explain how delineation can draw on ecosystem-service assessment, biodiversity and vulnerability indicators, spatial planning, and stakeholder input, and how the redline may extend conservation beyond conventional protected areas [8–10]. The institution protects ecological space; it does not assign an embedded-emissions value to an industrial product.

The two regulatory fields can nevertheless interact. ECR restrictions may affect the location or expansion of industrial activity, protect ecosystems that store carbon, and disclose ecological risks within a supply chain [8–10]. These effects may form part of a broader account of the environmental conditions under which production occurs. They remain outside the CBAM calculation unless the applicable methodology expressly recognises them. Ecosystem sequestration cannot simply be netted against process emissions, and spatial protection does not prove that a particular installation has low embedded emissions or that an EU-recognised carbon price was paid. Overstating the ECR's role would invite an easy objection and obscure its genuine contribution to ecological spatial and biodiversity governance.

Verification is another institutional bottleneck. CBAM data originate largely within enterprises, while legal responsibility is divided among producers, verifiers, importers, and competent authorities. The EU framework sets separate rules for verification, accreditation and oversight, and calculation. China's Interim Regulations assign duties and liability to technical service providers, and the sector-expansion work plan adds data-quality controls for steel, cement, and aluminium. Domestic rules should connect those obligations to independence, conflicts of interest, record retention, sampling, confidentiality, and correction of material misstatements. Accreditation should establish competence without turning the verifier into an advocate for the enterprise. Mutual recognition may reduce duplicate audits only where the underlying standards and supervision provide comparable assurance. A system that controls these points will reduce rejection risk, contractual disputes, and greenwashing [6].

These domestic arrangements should be linked to structured cooperation. China can ask the Union to publish assumptions early, explain changes in default values, recognise equivalent verification where the evidence supports it, and provide technical assistance for sectors facing demonstrated capacity constraints. The claim becomes stronger when China makes its own methods, data-quality rules, and review procedures available for scrutiny. The national carbon-footprint plan itself calls for international coordination and mutual recognition of rules. Cooperation can occur through bilateral technical dialogue, WTO committees, sectoral arrangements, and direct engagement among competent authorities and operators. Scholarship that frames CBAM as a move from coexistence towards cooperation, together with transboundary-assessment practice, supports engagement directed at concrete implementation choices rather than abstract claims of climate leadership [5, 7]. Reciprocity here means reciprocal exposure to reasons and evidence, not acceptance of the other party's regulatory model.

These are two separate lines of response. Carbon information governance bears directly on CBAM liability because it supplies embedded-emissions data, verification, proof of a qualifying carbon price, and grounds for contesting a default. Ecological spatial governance has an indirect but legitimate role because the ECR protects ecological functions and biodiversity within territorial planning [8–10]. The first line should be assessed by the accuracy, traceability, and legal usability of product data; the second by the effectiveness and transparency of spatial protection. Keeping them separate strengthens both. China can participate in CBAM administration without treating EU methods as the only valid form of climate regulation, while the ECR can enter international environmental dialogue without being miscast as a carbon-border substitute.

6. Procedural Reciprocity in CBAM Governance

The preceding analysis points to a reciprocal procedural arrangement. The Union may retain a unilateral border measure and trading partners may retain different climate policies, but each side should expose the information and reasons needed for the other to

respond. The relationship is not symmetrical in formal power: the Union adopts the market-access rule and ultimately decides how it is administered. Reciprocity therefore does not mean equal control over the regulation. It means that the rule-maker accepts relevant evidence and explains its choices, while the affected state accepts equivalent scrutiny of the data and policies on which its objections rely. For the Union, this entails assessment of foreign burdens, publication of methodologies, receipt of contrary evidence, and correction of avoidable or incoherent effects. For China, it entails reliable carbon data, supervised verification, and presentation of domestic measures in an evaluable form. Joint authorship of CBAM is not required; administration open to evidence from beyond the adopting jurisdiction is.

Consultation on the EU side must have practical consequences. The regulation, its Impact Assessment Report, and the proposal already contemplate cooperation with third countries, reporting on effects on developing countries, technical assistance, and periodic review. Those commitments should be connected to a published process for updating calculation rules, defaults, and evidentiary requirements. Affected states and declarants should know when a value will be reviewed, what data may be submitted, which authority will decide, and why an alternative was rejected. A reasoned response matrix could identify objections accepted, rejected, or deferred and the evidence relied upon, while preserving confidential business information. Such a process would make review more predictable without freezing the methodology. It cannot validate a rule that breaches a substantive obligation, but it could prevent disputes that arise only because an administrative assumption became irreversible before it could be challenged.

Reciprocity also requires internal consistency in China. The same installation should not report materially different emissions to a sectoral regulator, a verifier, an EU importer, and a sustainability disclosure without a documented explanation. Electricity factors and precursor data should identify their source, geographic scope, and period of validity. Corrections should remain traceable rather than overwrite the original record. Verification bodies should be accountable for methodology and conflicts of interest. Access rights must also be defined: importers and verifiers need enough information to test the calculation, but process data should be disclosed only to the extent legally necessary and protected against unrelated use. These requirements follow from the evidentiary structure of the definitive calculation, verification, accreditation, free-allocation, and default-value rules. They also reinforce China's own emissions-trading and product-footprint systems, so the investment is not valuable only for exports.

Common but differentiated responsibilities and respective capabilities should operate within this design as a principle of calibration, not a blanket exemption. US – Shrimp permits attention to different conditions and comparable effectiveness, while the Paris Agreement preserves national diversity and makes capacity relevant. A capacity argument should therefore identify the firm, sector, production chain, or jurisdiction in which the constraint is demonstrated rather than assume that all exporters are similarly situated. The appropriate response should match the constraint. A producer or trading partner with weaker measurement infrastructure may have a stronger claim to technical assistance, a transitional method, or a realistic opportunity to establish comparable performance. It does not follow that high-emitting goods must enter without adjustment. The relevant distinction is between accommodating different means and abandoning the environmental objective.

The operational test is narrow. A disputed CBAM feature is more defensible when the Union can identify the external effect it considered, show that affected parties had access to the underlying method, explain why a less burdensome alternative would not achieve the same objective, and demonstrate that review can correct error. China's objection is stronger when it supplies verifiable contrary data, identifies the precise legal or methodological inconsistency, and accepts comparable scrutiny of its own evidence. Procedural defects also differ in consequence. A delayed explanation may be remediable; a rule that permanently excludes relevant foreign evidence bears directly on discrimination. Cooperative scholarship and transboundary-assessment practice support

this exchange of reasons without turning consultation into consent [5, 7]. Procedural reciprocity narrows the dispute to claims that can be proved and remedies that can be specified.

7. Conclusion

CBAM illustrates a broader change in climate governance. A jurisdiction can regulate access to its market, yet the measure may depend on facts generated in production systems beyond its territory. That dependence does not make the measure unlawful, nor does it give foreign producers a right to determine EU climate policy. It changes the conditions of a credible legal defence. Formal alignment with a domestic carbon price must be matched by accessible methods, even-handed treatment of evidence, and procedures capable of correcting assumptions that burden foreign producers. Where an obligation is administered through data, the reliability and fairness of the evidentiary route become part of the legal problem rather than a matter of technical implementation alone.

CBAM has a conditional rather than presumptive path to legality. GATT Article XX leaves room for environmental action, but its chapeau directs attention to rigid administration, unexplained distinctions, and disregard of different conditions. The Paris Agreement makes regulatory diversity and capacity relevant without creating an automatic exemption. International environmental law does not impose a project-style transboundary environmental impact assessment on CBAM; its contribution here is a limited analogy built around prior assessment, participation, alternatives, and corrective review. China should respond at the same level. Product carbon accounting, verification, proof of carbon prices effectively paid, and contestable records form the direct legal interface. The ECR remains a complementary institution of ecological spatial and biodiversity governance. This division avoids categorical opposition and false equivalence. It also identifies the question likely to determine CBAM's long-term legal resilience: whether affected trading partners can understand, test, and correct the administrative assumptions that turn climate ambition into a trade obligation, and whether contrary evidence receives a reasoned response.

References

1. M. A. Mehling, H. van Asselt, K. Das, S. Droege, and C. Verkuijl, "Designing border carbon adjustments for enhanced climate action," *American Journal of International Law*, vol. 113, no. 3, pp. 433–481, 2019, doi: 10.1017/ajil.2019.22.
2. J. Englisch and T. Falcão, "EU carbon border adjustments and WTO law, Part One," *Environmental Law Reporter*, vol. 51, no. 10, pp. 10857–10882, 2021.
3. J. Englisch and T. Falcão, "EU carbon border adjustments and WTO law, Part Two," *Environmental Law Reporter*, vol. 51, no. 11, pp. 10935–10946, 2021.
4. L. Durel, "Border carbon adjustment compliance and the WTO: The interactional evolution of law," *Journal of International Economic Law*, vol. 27, no. 1, pp. 18–40, 2024, doi: 10.1093/jiel/jgae007.
5. P. Leturcq, "The European Carbon Border Adjustment Mechanism and the path to sustainable trade policies: From coexistence to cooperation," *Cambridge Yearbook of European Legal Studies*, vol. 24, pp. 67–87, 2022, doi: 10.1017/cel.2022.6.
6. F. Bachmann and F. J. G. Nellen, "A critical analysis of the Carbon Border Adjustment Mechanism," *Global Trade and Customs Journal*, vol. 20, nos. 7–8, pp. 519–530, 2025, doi: 10.54648/GTCJ2025082.
7. K. Bastmeijer and T. Koivurova, Eds., *Theory and Practice of Transboundary Environmental Impact Assessment*, Martinus Nijhoff Publishers, Leiden, 2008, ISBN 978-90-04-16479-6.
8. Y. Bai, C. P. Wong, B. Jiang, A. C. Hughes, M. Wang, and Q. Wang, "Developing China's Ecological Redline Policy using ecosystem services assessments for land use planning," *Nature Communications*, vol. 9, article 3034, 2018, doi: 10.1038/s41467-018-05306-1.
9. J. Gao, Y. Wang, C. Zou, D. Xu, N. Lin, L. Wang, and K. Zhang, "China's ecological conservation redline: A solution for future nature conservation," *Ambio*, vol. 49, no. 9, pp. 1519–1529, 2020, doi: 10.1007/s13280-019-01307-6.
10. C.-Y. Choi, X. Shi, J. Shi, X. Gan, C. Wen, J. Zhang, M. V. Jackson, R. A. Fuller, and L. Gibson, "China's Ecological Conservation Redline policy is a new opportunity to meet post-2020 protected area targets," *Conservation Letters*, vol. 15, no. 2, e12853, 2022, doi: 10.1111/conl.12853.

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