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CARBON MARKETS, INTERNATIONAL TRADE, AND CLIMATE FINANCE

RAFAEL LEAL-ARCAS,* AOSAMA ALGHAMDI, MOHAMMED ALHARETHI,[†]
MARYA ALDOUKHI[#]**

This study explores the intersection of carbon markets, climate finance, and trade mechanisms such as Carbon Border Adjustment Mechanisms (CBAMs) to advance global climate goals under equitable and transparent governance. Part I highlights the potential of carbon markets to support climate action under Article 6 of the Paris Agreement, emphasising the need for robust rules, capacity-building, digital innovation, and alignment with Sustainable Development Goals (SDGs). These measures could accelerate technology diffusion, finance mobilisation, and progress toward net-zero economies, fostering a just and sustainable future. Part II examines the integration of CBAMs with climate finance, suggesting that directing CBAM revenues to climate adaptation and mitigation in developing countries aligns with the principle of common but differentiated responsibilities. This approach can transform CBAMs from trade barriers to tools for equitable emissions reduction, strengthening global collaboration and economic fairness. However, implementation challenges such as administrative costs, trade impacts, and compliance for carbon-intensive economies require phased and inclusive strategies. Finally, Part III

* Professor of Law and Public Policy, KAPSARC School of Public Policy, Riyadh, Saudi Arabia. Jean Monnet Chaired Professor in EU International Economic Law, awarded by the European Commission; Member, Madrid Bar; Ph.D., European University Institute; M. Res., European University Institute; J.S.M., Stanford Law School; LL.M., Columbia Law School; M.Phil., London School of Economics and Political Science. The author may be contacted at r.leal-arcas[at]outlook.com.

** Researcher, KAPSARC School of Public Policy, Riyadh, Saudi Arabia. They may be contacted at SA24070039[at]kspp.edu.sa.

[†] Researcher, KAPSARC School of Public Policy, Riyadh, Saudi Arabia. They may be contacted at SA24070017[at]kspp.edu.sa.

[#] Researcher, KAPSARC School of Public Policy, Riyadh, Saudi Arabia. They may be contacted at SA24080043[at]kspp.edu.sa.

underscores the risks of CBAMs, questioning their environmental efficacy, political feasibility, and compatibility with trade agreements. The study concludes that equitable governance and innovative public-private partnerships are essential to harmonise trade, finance, and climate objectives, ensuring a resilient and inclusive low-carbon future.

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I. INTRODUCTION

Climate change is arguably the single most serious and multifaceted problem of international relations, affecting both natural ecosystems and human societies at the same time.¹ The effects of climate change, such as the rise in extreme weather events, alterations in biodiversity and decrease in productivity of ecosystems threaten the security of resources, economic sustainability,² and social justice of all nations, especially low-income and developing countries.³ These nations are among

¹ *Climate Change: Impacts, Adaptation, and Vulnerability*, 9 IPCC (2022), https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf.

² See generally INTERNATIONAL TRADE AND SUSTAINABILITY: PERSPECTIVES FROM DEVELOPING AND DEVELOPED COUNTRIES (Rafael Leal-Arcas ed., 2022).

³ *Five Ways the Climate Crisis Impacts Human Security*, UNITED NATIONS CLIMATE ACTION, <https://www.un.org/en/climatechange/science/climate-issues/human-security>.

the periphery countries that bear the severe consequences of climate change, despite their low industrial carbon emissions, such as persistent droughts, floods, and resource shortages.⁴ In these susceptible areas, socioeconomic factors are inherently vulnerable and climate change stresses them further, compromising food and water security, health and well-being, and economic prosperity. Thus, the policies aimed at reducing climate change and their impacts on the most vulnerable regions have become the focus of international policy and politics.

Policy makers face a formidable challenge when tackling climate change. They must reduce greenhouse gas (GHG) emissions rapidly and across all sectors, while ensuring mitigation efforts remain credible, equitable, and well-coordinated. The United Nations Framework Convention on Climate Change (UNFCCC) provides the overarching framework for this work, and the Paris Agreement on Climate Change builds on that foundation by encouraging Parties to submit Nationally Determined Contributions (NDCs),⁵ to increase ambition over time. Yet balancing a bottom-up approach to climate action with a global need for coherence and integrity remains a core difficulty.

Carbon markets have emerged as a powerful tool for cost-effective emissions reductions. They offer a pathway for countries, companies, and investors to secure flexible mitigation options. However, these markets often develop in isolation, under heterogeneous rules and methodologies, creating fragmentation that weakens their overall impact on global emissions. Article 6 of the Paris Agreement seeks to connect different carbon markets, ensuring that Internationally Transferred Mitigation Outcomes (ITMOs)⁶ support NDC fulfilment, avoid double counting, and encourage real, permanent emission reductions, all of which is analysed in Part II.

Part III first presents a conceptual basis of environmental economics and a climate change policy that includes principles of fairness and equity, which explains why climate finance and the Carbon Border Adjustment Mechanisms (CBAMs)⁷ must

⁴ *High and Dry: Climate Change, Water, and the Economy*, WORLD BANK (May 02, 2016), <https://www.worldbank.org/en/topic/water/publication/high-and-dry-climate-change-water-and-the-economy>.

⁵ Nationally Determined Contributions (NDCs) are each country's self-defined climate action plans under the Paris Agreement on Climate Change, outlining targets for reducing greenhouse gas emissions and adapting to climate impacts.

⁶ Internationally Transferred Mitigation Outcomes (ITMOs) are carbon credits exchanged between countries under Article 6.2 of the Paris Agreement, allowing them to cooperate in meeting their climate targets (i.e., Nationally Determined Contributions) while ensuring no double counting of emissions reductions.

⁷ Carbon Border Adjustment Mechanism (CBAM) is the European Union's (EU) policy tool designed to prevent carbon leakage and level the playing field for EU industries subject to

be integrated and how they can be governed. Then, the part discusses the development and status quo of climate finance and CBAMs, and more importantly the barriers and advantages that relate to the integration of these two frameworks. The part offers several ways of how climate finance may be embedded in CBAMs such as the use of direct financing channels, market-based approaches, and public-private partnerships (PPPs). In the end, the part provides policy recommendations and stakeholder analysis on how the administration of governance can be achieved in the most efficient manner, putting forward considerations of fairness and transparency in the integration of climate finance and trade measures such as CBAMs.⁸

In Part IV, we explore the case of the European Union (EU). The EU aims to be climate neutral by 2050 through the implementation of the Green Deal strategy.⁹ One of the main components of the Green Deal is the Fit for 55 policy package that aims to decrease greenhouse gas emissions by a minimum of 55% by 2030.¹⁰ This policy package includes the EU Emissions Trading System (EU ETS), which uses a cap and trade model that sets a limit on the yearly amount of greenhouse gas emissions that can be emitted.¹¹ This limit determines the number of available allowances that can be purchased and traded by greenhouse gas emitters.¹² Each allowance permits the emission of one ton of carbon dioxide.¹³ Given these strict rules and the implications they can have on the production of carbon-intensive goods, the EU established another policy called the CBAM.¹⁴ This mechanism helps

strict climate rules. It works by placing a carbon price on imports of carbon-intensive goods (like steel, cement, aluminum, fertilizer, and electricity) based on their embedded emissions. Importers must buy CBAM certificates equivalent to the EU's domestic carbon price under the Emissions Trading System (ETS). This ensures that foreign producers face similar carbon costs as EU manufacturers, discouraging companies from relocating to countries with weaker climate regulations and encouraging global decarbonisation.

⁸ For an analysis of the European Union's CBAM, see generally R. Leal-Arcas & Manuliza Faktaufon, *EU Trade Policy and Climate Change: The case for a Carbon Border Adjustment Mechanism*, in OXFORD ENCYCLOPAEDIA OF EU LAW 1, 1-9 (2024); R. Leal-Arcas et al., *A legal exploration of the European Union's Carbon Border Adjustment Mechanism*, 31(4) EUR. ENERGY & ENV'T L. REV. 223-240 (2022) [hereinafter R. Leal-Arcas et al., 2022].

⁹ Wissal Morchid et al., *Measuring the Cost of the European Union's Carbon Border Adjustment Mechanism on Moroccan Exports*, 16(2) SUSTAINABILITY 4967 (June 11, 2024).

¹⁰ *Fit for 55 - The EU's Plan for a Green Transition*, CONSILIUM (Mar. 17, 2025), <https://www.consilium.europa.eu/en/policies/fit-for-55/> [hereinafter Consilium].

¹¹ *What is the EU ETS?*, EUROPEAN COMMISSION, https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/what-eu-ets_en; see also *id.*

¹² Consilium, *supra* note 10.

¹³ *Id.*

¹⁴ *Fit for 55: How Does the EU Intend to Address the Emissions Outside of the EU?*, COUNCIL OF EUROPEAN UNION, (2023), <https://www.consilium.europa.eu/en/infographics/fit-for-55-cbam-carbon-border-adjustment-mechanism/>.

reduce the effects of carbon leakage, which occurs when producers move production to other countries with more lenient climate rules in order to reduce the production costs.¹⁵ This problem is addressed by requiring importers to purchase CBAM certificates to cover the price difference compared to domestic production.¹⁶

II. STRENGTHENING THE INTEGRATION OF CARBON MARKETS INTO THE INTERNATIONAL LEGAL AND GOVERNANCE ARCHITECTURE UNDER THE UNFCCC

This part argues that we must strengthen the integration of carbon markets into the UNFCCC's legal and governance architecture. Doing so requires clear accounting rules, rigorous safeguards, robust oversight mechanisms, and capacity-building for less-resourced countries. It also demands alignment with NDCs, incorporation of private-sector initiatives, harmonisation of standards, and continuous adaptation to evolving science and technology. Policymakers must embed carbon markets within credible global frameworks that inspire trust,¹⁷ without which investment would stall, ambitions wane, and climate goals slip further out of reach.

This argument holds great significance as the world enters a narrow window for meaningful emissions cuts. Carbon markets can speed these efforts by directing finance to scalable mitigation opportunities. Yet poorly governed markets increase the risk of inflated claims and moral hazard. With careful design, transparency, and continuous improvement, carbon markets can support genuine transformation. The UNFCCC stands at crossroads. By integrating carbon markets into its legal and governance architecture, it can steer global climate action toward a stable, sustainable, and prosperous future.

A. *Background: Evolving Carbon Markets and the UNFCCC*

Carbon markets emerged through policy experimentation, notably under the Kyoto Protocol's flexible mechanisms. The Clean Development Mechanism (CDM) enabled industrialised countries to fund projects in developing countries for emission reduction credits.¹⁸ While pioneering, the CDM drew criticism for

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ See R. Leal-Arcas et al., *The World Trade Organization and Carbon Market Clubs*, 52 GEORGETOWN J. INT'L L. 895-976 (2021).

¹⁸ Axel Michaelowa et al., *Additionality Revisited: Guarding the Integrity of Market Mechanisms under the Paris Agreement*, 13(1) CLIMATE POL'Y 1, 8 (2019) [hereinafter Michaelowa].

insufficient additionality checks and a project portfolio concentrated in a few large emerging economies. Questions arose about whether all credited activities delivered genuine climate benefits.

Over time, national and regional carbon pricing initiatives have proliferated.¹⁹ The EU ETS became one of the largest compliance carbon markets,²⁰ while China launched a national emissions trading scheme covering its power sector.²¹ Subnational linkages, such as the California-Quebec market, demonstrated that cooperation could cross borders.²² Yet these efforts lacked a unifying global framework that ensured consistency, transparency, and compatibility. Voluntary carbon markets also expanded as companies sought offsets for corporate sustainability goals.

The Paris Agreement's bottom-up approach to climate action, where each Party submits its own NDC, is a paradigm shift. Ensuring environmental integrity in a decentralised regime requires common rules and rigorous oversight. Article 6 of the Paris Agreement addresses this challenge by outlining cooperative approaches (Article 6.2), a new centralised mechanism (Article 6.4), and a framework for non-market approaches (Article 6.8). Together, these provisions aim to ensure that international cooperation on mitigation supports the global goal of limiting temperature rise, while adhering to environmental integrity and transparency.

B. *Ways in Which Carbon Markets May Be Further Integrated*

Let us analyse various ways in which carbon markets may be further integrated into the international legal and governance system under the UNFCCC.

¹⁹ See generally Jan Arlinghaus, *Impacts of Carbon Prices on Indicators of Competitiveness: A Review of Empirical Findings* (OECD Env't Working Paper No. 87, 2015); see also Eddy Bekkers et al., *A Global Framework for Climate Mitigation Policies: A Technical Contribution to the Discussion on Carbon Pricing and Equivalent Policies in Open Economies* (WTO Staff Working Paper, 2024); See Jane Ellis et al., *Carbon Pricing and Competitiveness: Are They at Odds?* (OECD Env't Working Paper No. 152, 2019); World Bank Group, *Report of the High-Level Commission on Carbon Pricing and Competitiveness* (2019); Ian W.H. Parry et al., *Proposal for an International Carbon Price Floor Among Large Emitters*, IMF Staff Climate Notes (2021), <https://openknowledge.worldbank.org/server/api/core/bitstreams/e49473de-ad98-5d26-8add-102687c9dc80/content>.

²⁰ *State and Trends of Carbon Pricing 2021*, THE WORLD BANK (May 25, 2021), <https://hdl.handle.net/10986/35620>.

²¹ *Id.* at 25.

²² Michael Mehling et al., *Linking Heterogeneous Climate Policies (Consistent with the Paris Agreement)*, 17 ENV'T RES. LETTERS 1, 2 (2017).

First, a clarification on the accounting rules and preventing double counting is necessary. At the heart of a credible carbon market lies the principle that one metric ton of emission reduction is unique and cannot be counted twice. The Paris Agreement's Article 6 thus requires 'corresponding adjustments.' Parties selling ITMOs must adjust their emission inventories to prevent double counting.²³ Without such measures, environmental integrity would collapse, resulting in erosion of trust in the system. Developing robust, enforceable accounting rules is a top priority. The Glasgow Climate Pact made progress, but finer details remain under negotiation.²⁴ Parties must submit standardised reports showing all ITMO flows, and independent expert reviewers must verify compliance. Building a transparent registry under the UNFCCC Secretariat can unify tracking and reduce confusion. Over time, these measures will strengthen confidence among parties, investors, and civil society.

Second, ensuring environmental integrity and additionality. Environmental integrity ensures that carbon markets drive genuine emission reductions rather than shifting emissions around. The Paris Agreement's Article 6.4 mechanism aims to replace the CDM with a more credible and equitable system.²⁵ Additionality stands at the centre of this credibility. Projects must prove that their emission reductions would not have occurred without market-based finance.

Weak additionality inflates global emission tallies and creates 'hot air' credits that undermine ambition. The UNFCCC can prescribe standardised baseline methodologies, strict tests for additionality, and conservative assumptions. Regular reviews can update these methods in line with evolving technology, policies, and costs. Standardisation and periodic tightening of baselines ensure that credited projects remain truly additional and support real mitigation.

Third, emphasising transparency through Measurement, Reporting, and Verification (MRV) and the Enhanced Transparency Framework (ETF). Transparency forms the backbone of trust. The ETF under the Paris Agreement requires Parties to report progress toward their NDCs.²⁶ Carbon markets must feed

²³ Lambert Schneider et al., *Robust Accounting of International Transfers under Article 6 of the Paris Agreement* (Stockholm Env't Inst. Working Paper No. 10, 2019).

²⁴ U.N. Framework Convention on Climate Change, Conference of the Parties, Glasgow Climate Pact, U.N. Doc. FCCC/CP/2021/L.13/Rev.1, ¶ 36 (Nov. 13, 2021).

²⁵ United Nations Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, *Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement*, U.N. Doc. FCCC/PA/CMA/2021/10/Add.1 (15 March 2022) ¶¶ 14, 16.

²⁶ Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104, art. 13 [hereinafter Paris Agreement].

into this reporting system rather than operate in the shadows. The MRV protocols must apply to every credit generated, transferred, and retired.

A centralised data platform, accessible to parties and observers, can enhance transparency. Independent third-party verifiers can audit project performance and ensure accurate data. Capacity-building is crucial here. Many developing countries need training, funding, and institutional support to implement robust MRV systems. Over time, such support will democratise participation, allowing more parties to reap the benefits of carbon markets and ensuring a level playing field.

Under the UNFCCC, enforcement and compliance mechanisms are generally non-punitive and facilitative, aiming to support countries in meeting their climate obligations, rather than penalise them. Specifically, under the Kyoto Protocol, a Compliance Committee was established with two branches:

- Facilitative branch: it helped countries meet their commitments through advice and assistance.
- Enforcement branch: it could impose consequences, such as requiring countries to make up shortfalls in future periods or suspending eligibility to trade emissions.

Under the Paris Agreement on Climate Change, the compliance mechanism (Article 15) is non-adversarial and non-punitive. It focuses on transparency, dialogue, and capacity-building, encouraging countries to meet their NDCs through peer pressure, public accountability, and reporting cycles.

Fourth, aligning carbon markets with NDCs and long-term strategies. Carbon markets must reinforce rather than undermine the NDC process. If parties rely too heavily on purchased credits instead of strengthening domestic policies, they risk stalling structural transformations at home. The UNFCCC framework can require parties to document how market activities complement their national targets and long-term strategies.

As global ambition increases, carbon markets must evolve. Baselines should tighten, making it harder to generate credits over time.²⁷ This process supports a ratcheting mechanism, as low-cost options are exhausted, parties turn to deeper, more transformative mitigation measures. Markets serve as a bridge, helping countries meet interim goals, while paving the way for systemic shifts that yield persistent emission declines. But how should all this be institutionalised? Institutionalisation requires harmonised international rules, strong national embedding, robust data systems, and independent oversight to ensure credibility, comparability, and climate integrity.

²⁷ IPCC, *Climate Change 2022: Mitigation of Climate Change* ch. 3, at 200 (2022) [hereinafter IPCC, *Climate Change 2022*].

C. *Market Options*

Carbon markets may be further integrated into the international legal and governance system under the UNFCCC in several other ways. One option is by incorporating the private sector and the voluntary market under a unified framework. The private sector drives significant demand for carbon credits. Many companies seek offsets to claim ‘net-zero’ progress. Without a credible reference point, voluntary markets risk creating parallel regimes with varying quality. The Integrity Council for the Voluntary Carbon Market seeks to establish common principles, but linking these efforts to UNFCCC standards can create powerful synergies.²⁸

If voluntary standards align with the Paris Agreement’s Article 6.4 methodologies, corporate buyers gain clarity and confidence. Over time, the boundary between voluntary and compliance markets may blur, as robust UNFCCC-endorsed methodologies shape the entire landscape. This alignment can mobilise private finance at scale, directing resources to projects that deliver real climate benefits and sustainable development co-benefits. Moreover, building capacity and ensuring equity in market participation is a further option. Carbon markets should not become the preserve of a few sophisticated players. Many developing countries struggle to access these markets due to limited institutional capacity, technical expertise, and financial resources. The UNFCCC framework can coordinate capacity-building initiatives that help these countries design projects, run MRV systems, and negotiate fair deals for ITMO transfers.

Equity considerations extend to how projects affect local communities. Market activities must respect human rights, engage local stakeholders, and deliver sustainable development benefits.²⁹ By setting minimum social and environmental safeguards, the UNFCCC can ensure that carbon market activities do not harm vulnerable populations. Equity also implies that no party can simply buy its way out of ambitious action. Rather, capacity-building and fair access ensure that all can participate, contribute, and benefit from carbon finance.

Harmonising standards and methodologies is yet another option. Fragmented standards and methodologies hinder trust and efficiency. Without harmonisation, investors face uncertainty and project developers must navigate a maze of rules. The Paris Agreement’s Article 6.4 Supervisory Body can provide default methodologies for common project types, incorporating best practices, drawing on

²⁸*Core Carbon Principles*, 5 INTEGRITY COUNCIL FOR THE VOLUNTARY CARBON MARKET (2022), <https://icvcm.org>.

²⁹ Paris Agreement, *supra* note 26, art. 6.4(c).

the latest science, and reflecting input from experts. Harmonisation does not mean one-size-fits-all. Some flexibility is needed to reflect regional differences. A common set of principles and criteria can guide adaptation. Regular expert reviews ensure that methodologies remain up-to-date and robust.³⁰ Over time, a coherent methodological framework reduces transaction costs and fosters a stable, predictable environment for all actors.

1. Addressing Critiques and Counterarguments

Sceptics argue that carbon markets deviate the focus from direct reductions at source. They fear that cheap offsets will allow countries and companies to delay tough measures. Others worry about greenwashing, where claims of climate leadership rest on questionable credits. These critiques warrant serious attention. Critics of carbon markets argue that reliance on offsets can divert attention from direct emission reductions, allowing entities to delay necessary climate actions. Key concerns include:

- Greenwashing: Offsets may enable companies to appear environmentally responsible without making substantive emission cuts.
- Lack of Additionality: Many offset projects might not result in actual emission reductions beyond what would have occurred naturally.
- Delayed Action: Dependence on offsets can postpone the implementation of direct emission reduction measures.

These concerns have been highlighted by various organisations and experts, emphasising the need for more stringent regulations and a focus on tangible emission reductions.

A well-structured legal and governance framework can mitigate these risks. If additionality criteria are strict, baselines conservative, and prices of high-quality credits significant, buyers face real incentives to cut emissions at home. Transparent oversight and independent verification reduce greenwashing. Carbon markets then become a tool that accelerates, rather than displaces, domestic mitigation.

Critics also note the complexity of negotiations. Integrating carbon markets into the UNFCCC architecture takes time and effort. Yet fragmentation is not easier. Without a unifying framework, each country and region must reinvent the wheel, increasing administrative burdens. Over time, a coherent international regime streamlines participation, raises ambition, and increases certainty for all stakeholders.

As for how carbon markets may be improved, one can scale up ambition with proper market integration. As the climate crisis intensifies, higher ambition becomes

³⁰ IPCC, Climate Change 2022, *supra* note 27, ch. 16, at 1700.

non-negotiable. Integrated carbon markets can accelerate the pace of decarbonisation. By providing transparent and credible price signals, they mobilise private finance, spur technology transfer, and enhance policy coherence.

Initially, markets help parties achieve near-term targets by tapping lower-cost options abroad. As more countries pursue clean energy and low-carbon infrastructure, these options become cheaper and more accessible. Eventually, what once required carbon finance to be viable becomes the new normal. Markets thus catalyse a virtuous cycle — early support builds scale and learning, which drives down costs and fosters universal adoption.³¹ Over time, carbon markets evolve from stopgap measures into engines of long-term, structural transformation.

Moreover, one can ensure policy coherence and avoid fragmentation. Policy coherence matters at both international and domestic levels. Internationally, aligning mechanisms like the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) with Article 6 of the Paris Agreement rules avoids competing regimes that confuse market participants and inflate claims.³² Domestically, parties must ensure that carbon taxes, emissions trading systems, and ITMO transfers reinforce each other rather than create loopholes or distortions. A unified UNFCCC-driven framework encourages policy coherence. It provides a set of reference points against which parties can judge their policies. Over time, parties can fine-tune domestic policies to integrate seamlessly with international markets, producing a coherent policy mix that drives sustained emissions reductions.

In addition, one can protect integrity in a dynamic global context. The global context never stands still. Political priorities change, technology evolves, and market conditions shift. A robust carbon market architecture under the UNFCCC must remain adaptive. Permanent bodies, such as the Article 6.4 Supervisory Body, can monitor market trends, identify emerging risks, and propose reforms. Regular review cycles can incorporate new scientific findings from the Intergovernmental Panel on Climate Change (IPCC).³³ Insights from implementation—both successes and failures — can guide rule adjustments. Civil society organisations can highlight problems early, enhancing accountability and responsiveness. By embracing adaptive governance, carbon markets remain relevant and effective in a fast-changing world.

³¹ *Id.* at 1500.

³² *Carbon Offsetting and Reduction Scheme for International Aviation and its Relationship with the Paris Agreement*, INTERNATIONAL CIVIL AVIATION ORGANIZATION 2-3 (2019), <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-and-the-Paris-Agreement.aspx>.

³³ IPCC, *Climate Change 2022*, *supra* note 27, Summary of Policy Makers, at 36.

Furthermore, one can drive long-term transformation. Carbon markets can serve as catalysts for long-term transformation. Early projects supported by ITMOs can establish supply chains for clean technologies in developing regions. Over time, as these technologies mature and costs fall, reliance on credits diminishes. Ambitious policies and stable price signals push entire sectors toward net-zero pathways.

This transformation is not automatic. Policymakers must design rules that tighten baselines, limit cheap offsets, and encourage progressive decarbonisation.³⁴ By phasing out weaker credits and raising quality standards, the global community ensures that markets evolve from short-term compliance instruments into engines of long-term change.

Likewise, one can expand the role of digital technologies and data integrity. Digital technologies can enhance data quality and reduce administrative burdens. Blockchain-based registries, satellite monitoring, and advanced analytics can streamline MRV.³⁵ These tools help detect anomalies, verify project performance, and ensure proper tracking of credits. The UNFCCC can encourage pilot projects that test digital solutions, develop best practices, and integrate them into the Paris Agreement's Article 6 guidance.

However, equitable access to these technologies' matters. Capacity-building must ensure that all parties can benefit from digital innovations. Without such support, the digital divide could reinforce existing inequities. The aim is to make verification faster, cheaper, and more accurate, improving integrity for all participants. When it comes to the balance between integration and equity in climate market mechanisms, as global carbon markets and cooperative approaches under Article 6 of the Paris Agreement become more integrated, it is essential to ensure that such integration does not reinforce existing inequities between countries. Market access must not be skewed toward nations with greater technical capacity, advanced MRV systems, or dominant private-sector participation. Instead, the institutional architecture must prioritise equitable participation by supporting capacity-building, simplifying access procedures, and ensuring fair benefit-sharing. Without these safeguards, developing countries — especially Least Developed Countries and Small Island Developing States — may be marginalised in market-based mechanisms, undermining both fairness and global climate ambition.

Moreover, one can enhance synergy with non-market approaches. Markets are not the only game in town. The Paris Agreement recognises non-market approaches (Article 6.8) that include policy measures, capacity-building initiatives, and technology-sharing arrangements. These approaches can complement carbon

³⁴ Michaelowa, *supra* note 18, at 8–12.

³⁵ *State and Trends of Carbon Pricing*, 35 WORLD BANK (2021).

markets. For instance, robust national policies — such as renewable energy subsidies — can reduce reliance on offsets while laying the groundwork for deeper mitigation.

The UNFCCC can foster dialogues on blending market and non-market instruments. A country might use ITMOs to fill short-term gaps while scaling up domestic policy reforms. Another might rely primarily on regulatory measures and only dabble in markets to access advanced mitigation technologies. Flexibility allows parties to craft tailored strategies that reflect their unique circumstances while still adhering to principles of transparency and integrity.

Further, one could engage stakeholders and civil society. Civil society organisations, indigenous communities, and local stakeholders must have a voice in shaping carbon market rules and project selection. Transparent consultation processes, grievance mechanisms, and participatory monitoring can ensure that projects deliver sustainable development co-benefits rather than imposing external solutions. The UNFCCC architecture can require stakeholder engagement as part of project approval under Article 6.4 of the Paris Agreement on Climate Change. Reports detailing consultations, benefit-sharing arrangements, and safeguards for human rights can enhance legitimacy. Incorporating diverse voices also improves the quality and durability of outcomes.

Furthermore, enhancing dispute resolution mechanisms is a further option. As carbon market participation expands, disputes may arise over baseline settings, additionality assessments, or credit transfers. A transparent and fair dispute resolution mechanism under the UNFCCC framework can address these conflicts. Mediators or expert panels could review contested cases, reference agreed standards, and issue reasoned decisions. This reduces uncertainty and fosters trust among parties and private actors alike. Establishing such mechanisms draws lessons from other international regimes, such as the World Trade Organization (WTO), which has a well-defined dispute resolution process.³⁶ While climate policy differs, the principle of resolving disagreements through impartial review can ensure that carbon markets remain rule-based and predictable.

Lastly, promoting regional and sectoral pilots is yet another option. Pilot initiatives can test how the Paris Agreement's Article 6 rules work in practice. For example, a group of countries might design a regional pilot focusing on renewable energy projects, applying harmonised baselines and MRV protocols. Another pilot could target a specific sector — such as cement or steel production — where mitigation faces technological and cost barriers. These pilots can uncover practical challenges, demonstrate how digital tools enhance MRV, and show which capacity-building

³⁶ *Understanding the World Trade Organization*, 56 WORLD TRADE ORGANIZATION (2015).

efforts yield the best results. Lessons learned can feed back into the UNFCCC process, informing rule adjustments and methodology improvements. Pilots also demonstrate that well-governed markets attract investment and yield tangible environmental and social benefits.

2. Exploring future options

One future governance option is balancing flexibility and stringency. Striking the right balance between flexibility and stringency remains a core governance dilemma. If rules are too rigid, they may stifle innovation or exclude promising mitigation activities. If they are too lax, they open doors to abuse and greenwashing. The UNFCCC framework must find a middle ground that encourages creativity while maintaining environmental integrity.

Adaptive governance techniques³⁷ — regular reviews, stakeholder input, expert panels — help find this balance.³⁸ Over time, as parties gain experience and markets mature, the rules can evolve toward greater stringency. Initial flexible approaches can tighten as trust builds and data improves. This incremental approach fosters buy-in and continuous improvement.

A further option is linking carbon markets with the Sustainable Development Goals (SDGs). Carbon markets do not operate in a vacuum. Many parties aim to align climate action with the broader SDGs. By integrating SDG metrics into baseline methodologies or project selection criteria, carbon markets can deliver multiple benefits.

The UNFCCC can encourage project developers to report co-benefits alongside emission reductions. For example, a reforestation project might also enhance food security or protect watersheds, contributing to SDG 2 (Zero Hunger) and SDG 6 (Clean Water).³⁹ Transparent reporting of these co-benefits increases the appeal of credits for buyers interested in holistic climate solutions, raising both environmental

³⁷ Adaptive governance techniques are flexible, inclusive, and learning-based approaches to managing complex and uncertain environmental challenges—like climate change. These techniques emphasise continuous learning and feedback (e.g., revising policies based on new data); stakeholder participation (involving communities, scientists, and policymakers); decentralised decision-making (local and regional solutions tailored to context); and policy experimentation and iteration (testing and adjusting strategies over time). They are especially useful in systems where uncertainty is high and conditions change rapidly, making rigid policies ineffective.

³⁸ IPCC, Climate Change 2022, *supra* note 27, ch. 2, at 50.

³⁹ *Climate-Smart Agriculture: Policies, Practices and Financing for Food Security, Adaptation and Mitigation*, 30 FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (2010), <https://www.fao.org/4/i1881e/i1881e00.htm>.

and social dividends. Moreover, one can leverage private finance and ESG alignment. The surge in environmental, social, and governance (ESG) investing reflects growing private sector interest in climate solutions. Carbon credits that align with UNFCCC-sanctioned standards and additionality criteria gain credibility, attracting ESG-focused investors. Linking carbon markets to global ESG frameworks can improve market liquidity and encourage corporate accountability.

Financial institutions, including banks and insurers, increasingly consider climate risks in their portfolios.⁴⁰ Aligning credits with recognised standards reduces reputational risks. Over time, robust carbon credits can serve as reliable ESG instruments, allowing firms to communicate their climate commitments to shareholders, regulators, and consumers. This alignment strengthens market stability and promotes widespread adoption of best practices.

In addition, mobilising philanthropic capital and blended finance is a further option. Climate Investor One is a strong example of how blended finance — combining concessional and commercial capital — can scale up clean energy investments, while addressing project risk and financing gaps in developing countries.⁴¹ Philanthropic organisations and foundations can also play a role in strengthening carbon markets. They can fund capacity-building programs, support the development of new methodologies, or subsidise advanced MRV technologies.⁴² By addressing early-stage barriers, philanthropic capital can accelerate market maturity and facilitate entry for developing countries. Blended finance strategies, where public grants or concessional loans leverage private investment, can also reduce risks and attract commercial players. If International Financial Institutions (IFIs) and development banks back projects that meet UNFCCC standards, they send a signal of confidence, lowering financing costs and scaling up climate solutions.

Furthermore, one could integrate Agriculture, Forestry, and Other Land Uses (AFOLU). AFOLU activities offer significant mitigation potential but also pose unique challenges. Emission reductions in this sector must consider permanence, leakage,⁴³ and local livelihoods.⁴⁴ Harmonising methodologies for AFOLU credits

⁴⁰ *Net Zero by 2050: A Roadmap for the Global Energy Sector*, 45 INTERNATIONAL ENERGY AGENCY (2021), <https://www.iea.org/reports/net-zero-by-2050> [hereinafter IEA 2021].

⁴¹ Green Climate Fund, *FP099: Climate Investor One*, Green Climate Fund (Oct. 20, 2018), <https://www.greenclimate.fund/project/fp099>.

⁴² *Lessons from the Montreal Protocol*, 10-15 UNITED NATIONS ENVIRONMENT PROGRAMME (2012) [hereinafter UNEP 2012].

⁴³ See Droege et al., *Tackling Carbon Leakage: Sector-Specific Solutions for a World of Unequal Carbon Prices*, CARBON TRUST (2009); see also Maria Wang & Tero Kuusi, *Trade Flows, Carbon Leakage, and the EU Emissions Trading System*, 134 ENERGY ECON. 107556 (2024).

⁴⁴ UNEP 2012, *supra* note 42, at 12.

within the UNFCCC architecture can unlock large-scale investment in nature-based solutions. Forests and soils act as carbon sinks, aligning with both climate goals and SDGs related to biodiversity and rural development. The Food and Agricultural Organisation (FAO) highlights climate-smart agriculture as a path to improved yields and resilience.⁴⁵ Embedding these approaches in carbon market frameworks ensures that AFOLU projects receive support, encourage best practices, and generate multiple benefits over time.

Likewise, one can draw insights from energy transitions.⁴⁶ The energy sector sits at the heart of climate mitigation. Rapid shifts toward renewable energy, electrification, and energy efficiency align with carbon market objectives. The International Energy Agency (IEA) outlines net-zero pathways that depend on robust international cooperation.⁴⁷ Integrating carbon markets into these pathways can channel finance to emerging technologies like green hydrogen, advanced storage, and low-carbon cement. Carbon finance has helped deploy several emerging technologies, particularly in developing countries, by providing revenue streams that improve project bankability. For example, clean cookstoves in Kenya and India, where carbon credits have supported the distribution of low-emission cookstoves, reducing deforestation, and indoor air pollution.

By reflecting evolving energy costs and performance in baseline methodologies, the UNFCCC framework ensures that carbon credits remain truly additional. Over time, as clean technologies achieve economies of scale, reliance on carbon offsets diminishes, cementing permanent shifts in energy systems that align with IPCC-recommended emission trajectories.

Additionally, one can build trust among non-state actors. Non-state actors, including cities, companies, and civil society networks, shape the broader context

⁴⁵ Food and Agriculture Organization of the United Nations, *Climate-Smart Agriculture: Policies, Practices and Financing for Food Security, Adaptation and Mitigation* (Food and Agriculture Organization of the United Nations 2010) 32-35.

⁴⁶ On energy transitions, *see generally* R. LEAL-ARCAS ET AL., *ELECTRICITY DECENTRALIZATION IN THE EUROPEAN UNION: TOWARDS ZERO CARBON AND ENERGY TRANSITION* (2d ed., 2023); R. LEAL-ARCAS ET AL., *THE GREAT ENERGY TRANSITION IN THE EUROPEAN UNION*, 1 (2020); R. LEAL-ARCAS ET AL., *THE GREAT ENERGY TRANSITION IN THE EUROPEAN UNION*, Vol. 2 (2020); Tanya Shaar & R. Leal-Arcas, *Fuel Subsidy Reform, Decentralized Electricity Markets and Renewable Energy Trade: Evidence for a Successful Energy Transition in the Middle East and North Africa Region*, 1 J. WORLD ENERGY L. & BUS., 112-126 (2023); R. Leal-Arcas et al., *International Trade, Energy Transition and Climate Change Obligations: The perspective of small Pacific islands and the Caribbean Community*, 13(2) TRADE L. & DEV. 198-263 (2021) [hereinafter R. Leal-Arcas et al., 2021]; R. Leal-Arcas, *Citizens at the center of the energy transition: A new governance model*, ENV'T L. & ECON. 231-244 (2019).

⁴⁷ IEA 2021, *supra* note 40, at 100-105.

in which carbon markets operate. Many cities have pledged net-zero targets, and companies have set science-based reduction goals.⁴⁸ By providing a credible, internationally recognised standard for carbon credits, the UNFCCC architecture helps these actors avoid fragmented or dubious offset schemes. Trust-building measures, such as transparent registries and independent accreditation bodies, reassure non-state actors. They know that credits purchased meet a consistent standard. In turn, non-state actors can lobby national governments to strengthen NDCs, creating a positive feedback loop between public policy and private initiative.

Enhancing compliance and enforcement mechanisms is a further option. A robust carbon market regime under the UNFCCC must include compliance and enforcement mechanisms. That said, clear penalties, temporary suspensions, or the revocation of trading privileges can deter non-compliance. While punitive measures should remain a last resort, their existence strengthens confidence that all participants follow the rules. Compliance committees, expert review teams, and transparent dispute resolution processes ensure fairness and predictability. Such mechanisms reinforce the credibility of carbon markets and encourage parties to uphold their commitments.

A further option is responding to emerging climate risks and co-benefits. As climate impacts intensify, carbon markets must also consider the resilience of projects. Some mitigation activities face risks from extreme weather or ecosystem collapse. Adjusting methodologies to account for these risks ensures that credited reductions remain robust over time. Projects that strengthen climate resilience, such as restoring mangroves or improving soil health, offer adaptation co-benefits.⁴⁹ By recognising and rewarding adaptation synergies, carbon markets become part of a broader climate-resilient development strategy. The UNFCCC framework can encourage methodologies that credit both mitigation and adaptation outcomes, aligning with the Paris Agreement's emphasis on balanced, integrated approaches.

In addition, one could incorporate the best available science and continuous learning. The science of climate mitigation evolves as researchers refine models, improve data collection, and discover new mitigation options. The IPCC provides periodic assessments that guide policy.⁵⁰ Incorporating updated scientific findings into carbon market rules ensures alignment with the latest understanding of climate thresholds, carbon cycles, and technology performance. Continuous learning means that no rule remains static. Periodic methodological reviews, open consultations, and pilot evaluations help refine standards. This culture of continuous improvement

⁴⁸ IPCC, *Climate Change 2022*, *supra* note 27, ch. 17, 1800.

⁴⁹ *Id.*, ch. 7, at 500.

⁵⁰ *Id.* at 36.

prevents ossification, ensures resilience against unforeseen challenges, and empowers the UNFCCC to keep carbon markets at the cutting edge of climate action.

Lastly, future research can deepen understanding of how integrated carbon markets influence cost trajectories, technology diffusion, and innovation rates. Detailed sectoral studies can identify where credits catalyse breakthrough solutions. Cross-country comparisons can reveal which governance structures yield the highest trust, and which capacity-building strategies best empower developing countries. On the policy side, parties can advance pilot projects that test digital MRV tools, multi-country ITMO trading platforms, or integrated adaptation-mitigation crediting. International financial institutions can scale up support for countries seeking to enter carbon markets, fostering an environment where all parties benefit from global cooperation.

III. CLIMATE DOLLARS AT THE BORDER: CBAMS FOR CLIMATE JUSTICE

This part attempts to analyse how climate financing can be integrated into trade-related measures such as the EU's and UK's CBAMs. It explores the potential for CBAMs to function both as climate policy tools and as mechanisms for enhancing climate finance through economics, ethics, and governance lenses. Allocating CBAM revenues to climate finance would establish a sustainable funding stream for mitigation, adaptation, and resilience projects in vulnerable regions, aligning these mechanisms with global equity goals and the objectives of the Paris Agreement.

A. *Governing Climate Finance and CBAMs*

1. Climate Finance: Closing the Gap Between Promises and Progress

Climate change is one of the major threats to the health of our planet and as a result climate finance becomes more important in providing a potential solution to save our planet.⁵¹ According to the UNFCCC, climate finance is defined as financial resources flow from developed countries to developing countries for the purpose of supporting mitigation and adaptation actions.⁵² Climate finance has a significant role in addressing the inequities between developed and developing countries, and

⁵¹ *Climate Finance Provided and Mobilized by Developed Countries in 2013-2022*, 11 OECD (2024), <https://www.oecd-ilibrary.org/docserver/19150727-en.pdf?expires=1733833032&id=id&accname=guest&checksum=A0E30051BA66AAAF4F241D95C13BFFB6>.

⁵² *Copenhagen Accord, Report of the Conference of the Parties on its fifteenth session*, 6 UNFCCC (2009), <https://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf>.

therefore, becomes a powerful tool in that it bridges financial gaps encountered by developing countries. The Paris Agreement on climate change established climate finance as a fundamental element of global climate action, with developed countries committing to mobilising \$100 billion annually by 2020 to assist developing nations in their climate efforts.⁵³

At the COP29 in Baku in 2024, developed countries committed to giving at least \$300 billion annually by 2035, reaching at least \$1.3 trillion. Unfortunately, these commitments have not been met, as developed countries have continuously failed to achieve the 100 billion US dollars level and that raised concerns over the clarity, sufficiency, and equity of the distribution of global climate finance. These shortfalls incorporate the critical need for alternative and new sources of climate finance, involving mechanisms which include the private sector as well, so that the funds are directed towards achieving sustainability and climate resilience, especially in vulnerable areas and regions.⁵⁴

2. Trade Policies vs. Climate Change: A Complex Relationship:⁵⁵

One of the biggest challenges of climate change is balancing trade policies with climate ambitions.⁵⁶ Trade liberalisation definitely has boosted the global economy, but it has also caused a phenomenon known as carbon leakage, whereby industries relocate to nations with less stringent environmental regulations.⁵⁷ This compromised the efforts undertaken by those states that pursue more stringent climate change policies. In this regard, the CBAM becomes an appropriate relevant policy to achieve the balance between trade and climate. CBAM implements the cost of carbon on the imports so that foreign goods arriving from lower climate ambition countries face similar carbon pricing as domestic goods face in high climate ambition countries. CBAMs are designed to maintain a level playing field for countries with stricter environmental requirements and promote reductions of

⁵³ *Id.* at 7.

⁵⁴ *Annual Results Report*, GREEN CLIMATE FUND, 9 (2021), <https://www.greenclimate.fund/sites/default/files/document/20220412-arr2021.pdf>.

⁵⁵ See *What Future for Climate and Trade? Scenarios and Strategies for Carbon Competitiveness*; WORLD ECON. FORUM (2023); R. LEAL-ARCAS, CLIMATE CHANGE AND INTERNATIONAL TRADE (2013).

⁵⁶ Aaron Cosbey et al., *Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature*, 13(1) REV. ENV'T. ECON. & POL'Y 3,7-8 (2019).

⁵⁷ Junji Ishikawa & Toshihiro Okubo, *Greenhouse-Gas Emission Controls and International Carbon Leakage Through Trade Liberalization*, RIETI Discussion Paper Series 09-E-008 (2009), <https://www.rieti.go.jp/jp/publications/dp/09e008.pdf>.

global emissions by exercising a direct pressure on trading partners to adopt strong environmental policies.⁵⁸

3. CBAM and Climate Finance: Driving a Greener Tomorrow

Giving a good account of how climate finance can be engineered, CBAMs are perhaps the most eloquent models. CBAM revenues from carbon-intensive industries and imports can finance climate adaptation and resilience projects in developing countries that are hard hit by the consequences of climate change. Such revenues directed to climate finance initiatives will help curb the shortfall in the funding and ensure that developing countries, which are most vulnerable to climate change but have been the least to contribute to it, have the necessary resources to adapt to climate change and reduce its effects. According to the United Nations Environment Program (UNEP), there is a significant shortfall in adaptation finance, with current international public finance flows to developing countries being substantially lower than the estimated needs.⁵⁹ Moreover, CBAMs create the need for trading partners to uphold higher environmental standards for them to be able to gain access to rich markets such as the EU's market and U.K.'s market, which leads to further emission reductions worldwide.⁶⁰ Such measures not only serve the interests of the implementing countries by shielding their industries, but also advance global emission reduction which enhances global participation in climate transition.

B. *Development of Climate Finance*

Climate finance came out as a priority in international climate negotiations during the UNFCCC in 2009 and again in 2010 when developed countries pledged to raise \$100 billion each year by 2020 to help the developing countries with their mitigation and adaptation strategies. This pledge, integrated into the Paris Agreement, recognised the fact that climate change has a disproportionate effect on developing countries who have played in history a negligible role in gas emissions.⁶¹ Climate finance aims at investing in areas that are prone to climatic stress, ensuring those

⁵⁸ European Commission, *Carbon Border Adjustment Mechanism* (2021), https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.

⁵⁹ *Adaptation Gap Report: Underfinanced, underprepared, inadequate investment and planning on climate adaptation leaves world exposed*, 8 UNEP (2023), https://wedocs.unep.org/bitstream/handle/20.500.11822/43796/adaptation_gap_report_2023.pdf?sequence=1&isAllowed=y.

⁶⁰ *How CBAM-driven reinvention of your supply chain may foster a competitive advantage*, PRICEWATERHOUSECOOPERS (2024), <https://www.pwc.com/gx/en/issues/esg/carbon-border-adjustment-mechanism.html>.

⁶¹ Paris Agreement, *supra* note 26, art. 9.

who contribute the least to the emissions are the ones who are given the necessary assistance to adapt and be more resilient in the future. It has two basic functions as per the climate change narrative—the first is mitigation, which refers to sustained efforts that aim at lowering the levels of GHG emissions, and the second, the adaptation, which are the efforts aimed at resilience building to the effects of climate change.⁶²

International funds, including the Green Climate Fund (GCF),⁶³ created in 2010, and the Global Environment Facility (GEF),⁶⁴ created in 1991, were meant for enabling flow of resources from developed countries to developing & underdeveloped countries for climate projects such as renewable energy, sustainable agriculture, and disaster resilience. However, progress towards reaching the goal of mobilising up to \$100 billion annually has been difficult, with developed countries not fulfilling their end of the bargain. It remains to be seen whether developed countries will fulfil the new commitment of \$300 billion annually resulting from COP29. The shortfall has raised concerns regarding adequacy, transparency, and governance of climate finance, especially as the needs of adaptation in the developing countries are only increasing.⁶⁵ The climate change impacts will be directed toward these regions and hence integrating the revenue streams obtained from the CBAMs into the climate finance may provide a sustainable revenue stream in the impacted areas.⁶⁶

1. Development of CBAMs in the EU and the U.K.

The EU's CBAM, introduced as part of 'Fit for 55' strategy on emissions reductions, seeks to limit emissions of greenhouse gases by more than 55% by 2030 as compared to levels of emission recorded in the year 1990.⁶⁷ The EU's CBAM has

⁶² IPCC, Climate Change 2022, *supra* note 27, at 123.

⁶³ *Timeline*, GREEN CLIMATE FUND, <https://www.greenclimate.fund/about/timeline> [hereinafter GCF].

⁶⁴ *The GEF at a Glance*, GLOBAL ENVIRONMENT FACILITY, <https://www.thegef.org/newsroom/publications/gef-glance> [hereinafter GEF].

⁶⁵ OECD, *Climate Finance Provided and Mobilised by Developed Countries in 2013-2022*, Climate Finance and the USD 100 Billion Goal, OECD Publishing (2024), <https://doi.org/10.1787/19150727-en>.

⁶⁶ Suranjali Tandon & Kevin Le Merle, *Evaluating the Impact of CBAM on Developing Countries*, FOUNDATION FOR EUROPEAN PROGRESSIVE STUDIES (2022), <https://feps-europe.eu/publication/evaluating-the-impact-of-cbam-on-developing-countries> [hereinafter Suranjali].

⁶⁷ European Commission Press Release IP/21/3541, European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions, (July 14, 2021); see also R. Leal-Arcas et al., *Green Bills for Green Earth: How the international trade and climate regimes work together to save the planet*, 31(1) EUR. ENERGY & ENV'T L. REV. 19-40 (2022).

been implemented to deal with carbon leakage by providing carbon costs for high-carbon imports like cement, iron, steel, aluminium, and fertilisers. The target is to level the playing field of competition as imports will be subject to the same integrated carbon pricing mechanism as goods produced locally and therefore block countries from relocating their industries to countries with less stringent control. At this time, the EU's CBAM is applied on a voluntarily basis (entered its transitional phase as of October 2023) and its full enforcement is planned to start in January 2026 as declared by the European Commission. Likewise, the CBAM system has also been adopted in the United Kingdom (UK) based on UK's Emission Trading System (UK's ETS) Framework which further supports UK's climate objectives.⁶⁸ Although UK's CBAM is still in development, expected to be launched in January 2027 as declared by the UK government, it will help to counteract the threat of carbon leakage and protect domestic industries from competing unfavourably in the global market.

2. CBAMs and Climate Finance: A Dual Approach to Climate Resilience

CBAMs and climate finance are two separate but interconnected aspects in the climate change battlefield. On the one hand, equity and fairness are brought forward by climate finance when it deals with resource insufficiencies for both mitigation and adaptation in the poorest and most disadvantaged countries, people, and regions. On the other hand, CBAMs work as a carbon border control type of instrument embedded in the market that helps in minimising emissions through a carbon cost associated with goods entering the EU and UK market, creating an incentive for emissions reduction globally.⁶⁹ Integrating climate finance into CBAMs is a potential game changer in the battle against climate change. This will create a fair and sustainable source of revenue that can be used to bridge the funding gaps in climate initiatives. Such an approach achieves a fair allocation of financial burden which, in turn, could encourage greater international cooperation in tackling climate change issues.

This brings us to an analysis of policy foundations for climate finance integration with CBAMs. Integrating climate finance with trade measures such as the EU's and the UK's CBAMs is critical for aligning economic, environmental, and ethical objectives of global climate framework. This integration is best approached through

⁶⁸ HM TREASURY & DEP'T FOR ENERGY SEC. & NET ZERO, *Factsheet: UK Carbon Border Adjustment Mechanism*, UK GOVERNMENT (Dec. 18, 2023), <https://www.gov.uk/government/consultations/addressing-carbon-leakage-risk-to-support-decarbonisation/outcome/factsheet-uk-carbon-border-adjustment-mechanism>.

⁶⁹ *Report of the High-Level Commission on Carbon Pricing and Competitiveness*, WORLD BANK (2019), <https://documents1.worldbank.org/curated/en/486921568877882882/pdf/Report-of-the-High-Level-Commission-on-Carbon-Pricing-and-Competitiveness.pdf>.

various theoretical lenses that offer practical advice as to how to enhance the effectiveness of CBAMs in delivering international climate finance ambitions. The following outlines three major theories that support the integration of climate finance into CBAMs:

i. Climate Justice Theory

Climate justice theory emphasises fairness and equity in relation to developing countries that have been more vulnerable to climate change because they are still the least contributors to its effects.⁷⁰ The theory suggests that the nations that contributed the least to the impacts of climate change are the least responsible for its causes, then they must be reasonably compensated in their efforts to adapt and mitigate the effects of climate change.⁷¹ Common but differentiated responsibilities (CBDR) principle, which is a key feature of international commitments to climate change such as the Paris Agreement (2015), articulates that developed countries have an obligation to take the lead in the provision of climate finance to developing countries that are most vulnerable to climate change impacts.⁷²

ii. Global Public Goods Theory

Global public goods theory offers a moral basis for the integration of climate finance with trade measures as it characterises global climate stability as a global public good, it is non-rivalrous and non-excludable, which means every country and nation is a beneficiary of climate stability regardless of their emissions level.⁷³ This theory suggests that developed countries with their historical emissions have an outstanding obligation to funds' request from developing countries for both mitigation and adaptation strategies.⁷⁴

iii. Political Economy Theory

Political economy theory is essential in explaining the political dynamics of climate measures like CBAMs. This theory examines how various political actors such as

⁷⁰ *Principles of Climate Justice: Share Benefits and Burdens Equitably*, MARY ROBINSON FOUNDATION CLIMATE JUSTICE, <https://www.mrfcj.org/principles-of-climate-justice/share-benefits-and-burdens-equitably/>.

⁷¹ *Climate Change Is a Matter of Justice: Here's Why*, UNITED NATIONS DEVELOPMENT PROGRAM (2022), <https://climatepromise.undp.org/news-and-stories/climate-change-matter-justice-heres-why>.

⁷² Paris Agreement, *supra* note 26, art. 2(2), 4(3), 9(1), 10(6).

⁷³ INGE KAUL & PEDRO CONCEICAO, PROVIDING GLOBAL PUBLIC GOODS: MANAGING GLOBALIZATION 78-82, 139-141 (2003).

⁷⁴ Peter C. Frumhoff et al., *The Climate Responsibilities of Industrial Carbon Producers*, 132 CLIMATE CHANGE 157-171 (2015).

industries, governments, NGOs, and interest groups influence policymakers' responses to climate change.⁷⁵ Carbon-intensive industries (or countries) may resist the application of such CBAMs in fear of putting their businesses and markets at competitive disadvantage. However, political economy theory shows that it is always possible to go through the political bargaining, diplomatic negotiations, and coalition-building processes that help overcome such challenges and drive the essential reforms forward.⁷⁶

3. Challenges of Climate Finance Integration with CBAMs

The convergence of climate finance with instruments such as the CBAM has been put forward to fill the gaps in the resources available for international climate change adaptation and mitigation activities. Yet, even with continuing obligations, the global climate finance architecture is characterised by various constraints including governance, accountability, sufficiency, and fairness.⁷⁷ Stiglitz argued that politics and economics are deeply connected, emphasising the notion that economic decisions cannot be divorced from political decisions.⁷⁸ The following outlines the major challenges facing the integration of CBAMs into climate finance:

i. Funding Shortfalls

Most of the climate finance instruments are usually linked to international Agreements. Particularly, under the Copenhagen Accord (2009) and the Paris Agreement (2015), both of which featured promises from developed countries to mobilise \$100 billion annually by 2020 to finance climate adaptation and mitigation in developing countries⁷⁹. Such a target, however, was never reached despite the existence of funding sources like the Green Climate Fund (GCF) and the Global Environment Facility (GEF). Failure of international community to provide the pledged \$100 billion has prevented them from reaching the target that would have

⁷⁵ Richard Baldwin, *Multilateralising Regionalism: Spaghetti Bowls as Building Blocs on the Path to Global Free Trade*, (Nat'l Bureau of Econ. Rsch., Working Paper No. 12545, 2006).

⁷⁶ Bart Le Blanc & Isaac De Leon Mendoza, *Potential Conflicts Between the European CBAM and the WTO Rules* (2023), <https://www.nortonrosefulbright.com/en/knowledge/publications/9c5d9ec6/potential-conflicts-between-the-european-cbam-and-the-wto-rules>.

⁷⁷ *Policy Brief: Enhancing Transparency and Accountability of International Public Climate Finance*, CLIMATE FINANCE NETWORK (2024).

⁷⁸ Joseph E Stiglitz, *Where Modern Macroeconomics Went Wrong*, 132 NATIONAL BUREAU OF ECONOMIC RESEARCH (2017), https://business.columbia.edu/sites/default/files-efs/imce-uploads/Joseph_Stiglitz/The%20Overselling%20of%20Globalization_0.pdf.

⁷⁹ *Climate Finance in the Negotiations: The Big Picture*, UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (2023), <https://unfccc.int/topics/climate-finance/the-big-picture/climate-finance-in-the-negotiations>.

been allocated for the Global South to finance their climate initiatives. This gap highlights the difficulty in obtaining adequate funds to cope with the ever-growing climate change requirement in areas most vulnerable to the effects of climate change but bear the least responsibility for emissions of greenhouse gases.

ii. *Governance and Equity Challenges*

The governance and equity issues in climate finance stem from the complex interplay between funding mitigation and adaptation projects, alongside the diverse interests of sovereign states.⁸⁰ Developed countries that are among the main donors of these funds usually promote mitigation projects that are reducing emissions and will most likely help them with their carbon commitments as opposed to funding adaptation projects that would address climate vulnerabilities in developing countries directly. In 2021, the Organisation for Economic Co-operation and Development (OECD) reported that mitigation finance was 60% of the total climate finance provided and mobilised, while adaptation was less at 27% which shows a significant skew towards mitigation efforts.⁸¹ This posed notable concerns over governance and equity of allocation of funds since the adaptation needs are underfunded, thus leaving many developing countries at greater risks.

4. Mechanisms for Integrating Climate Finance into CBAMs

Integrating CBAM revenues with climate finance involves ensuring sufficient mechanisms for equitable and efficient cross-country allocation of funds. Equitability is concerned with addressing the needs of the most disadvantaged economies, while efficiency is concerned with achieving the maximum possible impact in terms of emissions reduction and sustainable development.⁸² Transparent governance, as well as robust monitoring, MRV systems, and inclusive decision-making are critical to ensure the success of CBAM revenue integration with climate finance. The following outlines three proposed mechanisms for integrating CBAM revenues and climate finance:

⁸⁰ Prabin Maharjan, *Policy Brief: Multilevel Governance for Climate Change Mitigation and Adaptation*, U.N. DEPT OF ECON. AND SOC. AFF. (Aug. 23, 2024), <https://desapublications.un.org/policy-briefs/un-desa-policy-brief-no-162-multilevel-governance-climate-change-mitigation-and-adaptation>.

⁸¹ OECD, *Climate Finance Provided and Mobilised by Developed Countries in 2013-2021*, CLIMATE FINANCE AND THE USD 100 BILLION GOAL, OECD PUBLISHING (Nov. 16, 2023), <https://doi.org/10.1787/e20d2bc7-en>.

⁸² Ely Sandler & Daniel Schrag, *Leveraging Border Carbon Adjustments for Climate Finance: Matching Carbon Tax Assets with Carbon Tax Liabilities*, SCIENCE, TECHNOLOGY, AND PUBLIC POLICY PROGRAM, BELFER CENTER (Dec. 02, 2024), <https://www.belfercenter.org/research-analysis/cbam-climate-finance> [hereinafter Ely].

i. *Direct Financing Channels*

Direct financing means that funds raised through CBAMs are allocated to the climate finance efforts in developing countries, especially those targeting adaptation and resilience activities.⁸³ The approach is straightforward, funds are derived directly from CBAM revenues and then channelled to climate projects. Adaptation funding, as previously noted, often experiences delays compared to mitigation funding. Therefore, dealing with direct channels will guarantee that these funds provide support for both mitigation and adaptation initiatives in areas with the greatest climatic vulnerability.⁸⁴ Existing frameworks such as the GCF, the GEF and the UNFCCC-related initiatives could be used by the EU and the U.K. as channels through which the revenues generated from CBAMs can be transferred to the developing nations.⁸⁵ However, many developing countries expressed their concerns over the accountability and transparency of the actions in fund distribution by the GCF and other similar institutions and accused them of following bureaucratic procedural requirements and red tape practices.⁸⁶

ii. *Market-Based Mechanisms*

The integration of CBAM revenue into climate finance can also take place through market-based mechanisms. In that sense, CBAMs could be implemented within the framework of carbon trade markets whereby the revenues raised from the import of high-carbon products would be invested in global climate change mitigation and carbon removal initiatives.⁸⁷ For instance, CBAMs revenues could be utilised for sustainable agricultural and renewable energy initiatives in poorer countries such as Africa and South Asia. However, the carbon market has been criticised for lack of

⁸³ Andrei Marcu et al., *The Use of CBAM Revenues*, EUROPEAN ROUNDTABLE ON CLIMATE CHANGE AND SUSTAINABLE TRANSITION (June 24, 2024), <https://ercst.org/the-use-of-cbam-revenues/>.

⁸⁴ *State and Trends in Climate Adaptation Finance*, 6-7 GLOBAL CENTER ON ADAPTATION, CLIMATE POLY INITIATIVE (Apr. 18, 2024), <https://gca.org/wp-content/uploads/2024/04/State-and-Trends-in-Climate-Adaptation-Finance-2024.pdf>.

⁸⁵ *Thematic Brief on Adaptation*, GREEN CLIMATE FUND, <https://www.greenclimate.fund/sites/default/files/document/thematic-brief-adaptation-2.pdf>.

⁸⁶ *Transparency International Calls on Green Climate Fund to Strengthen Protection of Whistleblowers*, TRANSPARENCY INT'L (Oct. 21, 2024), <https://www.transparency.org/en/press/transparency-international-calls-green-climate-fund-to-strengthen-protection-of-whistleblowers>.

⁸⁷ *How CBAM-Driven Reinvention of Your Supply Chain May Foster a Competitive Advantage*, PRICEWATERHOUSECOOPERS, <https://www.pwc.com/gx/en/issues/esg/carbon-border-adjustment-mechanism.html>.

robust monitoring, MRV systems, possibility of double counting of costs, and insufficient emissions reductions.⁸⁸

iii. *Public-Private Partnerships*

PPPs present an additional pathway to leverage CBAM revenues for climate finance by engaging both public and private sector players within a framework of PPPs, focusing on generating and utilising of the funds brought about by CBAMs.⁸⁹ Such measures will encourage more private funds into climate projects, creating a multiplier effect that increases the overall pool of available finance for climate initiatives. PPPs might work better for large-scale climate initiatives focusing on infrastructure and other renewable sources of energy which may require more than just public procurement of funds.⁹⁰ This will not only have the potential to enhance funding available but also promote innovation and capacity development within areas where the climate change mitigation and adaptation needs are high. Still, workable PPPs would depend on the existence of governance structures and regulations that would guarantee convergence of private sector investments with climate objectives since market players do not usually prioritise social or environmental concerns.⁹¹

iv. *Comparative Benefits and Challenges of Each Mechanism*

Three integration mechanisms have their own merits and challenges. Direct financing channels do present relative ease in funding particular priority requirements for climate projects and initiatives but may be challenged for their red tapes and bureaucratic practices.⁹² Market-based mechanisms enable flexibility in mitigation and emission reduction across borders but enforce robust MRV systems to ensure compliance with carbon reductions and to control double counting of

⁸⁸ Subodh Mishra, *Carbon Credits: An Overview of a Climate Controversy*, HARVARD L. SCH. F. ON CORPORATE GOV. (Dec. 05, 2024), <https://corpgov.law.harvard.edu/2024/12/05/carbon-credits-an-overview-of-a-climate-controversy/>.

⁸⁹ Ely, *supra* note 82.

⁹⁰ *Id.*

⁹¹ *Innovative Governance for Private Sector in Just Energy Transition*, UNITED NATIONS DEVELOPMENT PROGRAM (June 18, 2024), <https://www.undp.org/sites/g/files/zskgke326/files/2024-06/undp-innovative-governance-for-private-sector-in-just-energy-transition.pdf>.

⁹² *COP29 Must Deliver an Ambitious Climate Finance Deal*, INTERNATIONAL INST. FOR ENV'T AND DEVELOPMENT (Nov. 08, 2024), <https://www.iied.org/cop29-must-deliver-ambitious-climate-finance-deal>.

costs.⁹³ PPPs offer an opportunity in the prospect of scaling climate finance function through the help of private investments, but strong safeguarding policies and sound governance frameworks must be in place to ensure the needs of both public and private sectors are balanced out.⁹⁴

To ensure proper integration of the climate finance with CBAMs, all three discussed mechanisms could be adopted. For example, funds collected by CBAMs could be transferred through direct channels to satisfy immediate needs for adaptation while at the same time investing in carbon markets for the purposes of future emissions reduction. PPPs models will also secure funding to the climate efforts as well, particularly for large-scale initiatives that require considerable amount of funds. With such a mix of mechanisms, CBAMs could present a broader and sustainable climate finance paradigm that responds to both the immediate and the deeper climate change problems in more vulnerable parts of the world.

C. Policy Recommendations for Effective Integration of Climate Finance into CBAMs

To integrate CBAMs with climate finance, it is essential to have specific policies that address reductions in emissions and efficiency in climate finance allocation. These measures include the need for transparency, support for vulnerable regions, coherence with the international climate policy frameworks, and effective actors' engagement.⁹⁵ The aim of these measures is to maximise the potential of CBAMs as a tool for both mitigating climate change and fostering global climate resilience.

1. Recommendations

The following outlines the major policy recommendations to achieve an efficient and trustworthy integration between CBAMs and climate finance:

i. Allocate CBAM Revenues for Climate Finance in Vulnerable Regions

⁹³ *What You Need to Know About the Measurement, Reporting, and Verification (MRV) of Carbon Credits*, WORLD BANK (July 27, 2022), <https://www.worldbank.org/en/news/feature/2022/07/27/what-you-need-to-know-about-the-measurement-reporting-and-verification-mrv-of-carbon-credits>.

⁹⁴ *Climate-Smart PPP Legal and Regulatory Framework*, WORLD BANK, <https://ppp.worldbank.org/public-private-partnership/climate-smart/climate-smart-clean-technology-ppps/climate-smart-ppp-legal-and-regulatory-framework>.

⁹⁵ He Xiaobei et al., *The Global Impact of a Carbon Border Adjustment Mechanism: A Quantitative Assessment*, GLOBAL DEV. POLY CENTER, BOSTON UNIV. (Mar. 11, 2022), <https://www.bu.edu/gdp/2022/03/11/the-global-impact-of-a-carbon-border-adjustment-mechanism-a-quantitative-assessment/>.

CBAM revenue could help to finance adaptation and resilience measures in low-income regions that are hardest hit by climate impact including Sub Saharan Africa, Pacific Islands and South Asia.⁹⁶ These regions already face some of the most pressing challenges of climate change, including the frequency and intensity of weather events, sea-level rise, and prolonged droughts.⁹⁷ Funds raised from EU's and UK's CBAMs can be used to finance renewable energy, smart agriculture, forestry development, and green technology initiatives in these areas. CBAM funds can also assist in providing a fair transition for the workers of carbon-intensive industries, meet climate finance obligations in the international arena, advance energy resources in disconnected areas, and help trading partners decarbonise their industries.⁹⁸ As discussed before, policymakers can protect financial resources for the most pressing areas by channelling CBAM revenues through reliable mechanisms such as the GCF which improves accountability and fosters confidence across borders. Other than that, very robust and clear accountability systems should be put in place to trace the movement of the money and how it impacts climate change resilience in highly vulnerable areas.

ii. *Develop Transparent Revenue Allocation Mechanisms*

Countries should proactively engage with international organisations such as the GEF as well as the GCF in setting up a strong in-and-out revenue tracking system.⁹⁹ This system should be able to guarantee that all revenues earned from CBAMs are allocated to duly climate change initiatives and not for other supranational trade issues. Reports made available to the public, transparent monitoring by independent bodies, and assessments provided by third parties would increase public trust in the system and ensure funds are available only for the needs of climate change.¹⁰⁰ These

⁹⁶ *State and Trends in Climate Adaptation Finance*, 1-2 GLOBAL CTR. ON ADAPTATION, CLIMATE POLICY INITIATIVE (2024), <https://gca.org/wp-content/uploads/2024/04/State-and-Trends-in-Climate-Adaptation-Finance-2024.pdf>; see also R. Leal-Arcas et al., 2021, *supra* note 46.

⁹⁷ *What Climate Change Means for Africa, Asia, and the Coastal Poor*, WORLD BANK (2013), <https://www.worldbank.org/en/news/feature/2013/06/19/what-climate-change-means-africa-asia-coastal-poor>.

⁹⁸ Kateryna Holzer, *Reflections on the Use of Revenues from the EU CBAM*, CTR. FOR CLIMATE CHANGE, ENERGY AND ENV'T L. (2024), <https://sites.uef.fi/cccel/reflections-on-the-use-of-revenues-from-the-eu-cbam/>.

⁹⁹ See generally *Processes and Policies of the GEF and the GCF: A Comparative Analysis to Foster Complementarity and Coherence*, GLOB. ENV'T FACILITY (May 31, 2023), <https://www.thegef.org/documents/processes-and-policies-gef-and-gcf-comparative-analysis-foster-complementarity-and>.

¹⁰⁰ *Policy Brief: Enhancing Transparency and Accountability of International Public Climate Finance*, 5 CLIMATE FINANCE NETWORK,

mechanisms would also aid in achieving the international climate finance goals and make CBAMs become a powerful tool in the international climate finance regime.

CBAM, while primarily a trade and emissions tool, could offer valuable lessons for improving fund governance transparency in climate finance institutions such as the GCF and the GEF. CBAM governance, with its data-driven, standardised, and trade-integrated approach, offers valuable tools for closing transparency and accountability gaps in global climate funds. Applying CBAM-style MRV, traceability, and equity mechanisms could significantly enhance the effectiveness and credibility of institutions such as the GCF and GEF.

iii. Align CBAM Policies with International Climate Agreements

To prevent disputes in international trade and complement the global climate framework, the CBAMs integration with climate finance should take into consideration international agreements such as the Paris Agreement (2015). This consideration is crucial to protect the CBAM policies and ensure that such policies are designed to be a part of an international climate strategy rather than an economic protectionist weapon against non-compliant nations.¹⁰¹ Moreover, the integration of CBAM's carbon price with world carbon price should facilitate global acceptance of CBAM policies reinforcing the relationship between carbon pricing and climate finance.¹⁰² In addition, ensuring that CBAM revenue distribution aligns with the UNFCCC's climate finance objectives will position CBAM as a cooperative global initiative that inspires all countries to adopt similar carbon pricing mechanisms and meet their climate commitments.

iv. Support Capacity-Building Programs for Developing Nations

Developing countries, especially those dependent on the export of carbon-intensive goods, require considerable assistance to ensure compliance with the CBAM policies. CBAM funds would make it possible to redirect investments into building greener economies in these countries without undermining their growth potential.¹⁰³ Such measures may involve assisting these countries in utilising greener

https://www.undp.org/sites/g/files/zskgke326/files/2024-06/international_climate_public_finance_brief.pdf.

¹⁰¹ See generally Ilaria Espa, *Reconciling the Climate/Industrial Interplay of CBAMs: What Role for the WTO?*, AM. J. INT'L L. (2022).

¹⁰² Anatole Boute, *Accounting for Carbon Pricing in Third Countries Under the EU Carbon Border Adjustment Mechanism*, 23(2) WORLD TRADE REV. 169 (2024) [hereinafter Anatole].

¹⁰³ See generally Pascal Lamy et al., *Turning the EU's Carbon Border Adjustment Mechanism into a Green Development Tool*, EUROPE JACQUES DELORS (2024),

technologies, developing clean energy technologies, as well as offering compliance technical help.¹⁰⁴ The goal is to enable such countries to integrate the changes into their economies and at the same time keep them competitive in the global market. Such investments into capacity-building will enable the developing world to engage more efficiently in international climate processes and shield them from negative impacts that trade measures such as CBAM might have on their economies.

v. Promote Public-Private Partnerships

As previously mentioned, while public funding remains essential, private investments can leverage the scale and outreach of CBAM funds effectively. Through promoting private capital in renewable energy projects, low-emission technologies and projects on climate change adaptation, public-private investments in climate finance can be more favourable. These partnerships should place an emphasis on projects that can have a long-term impact on the climate such as low-carbon transport and low-emissions agriculture which are likely to be profitable to private investors.¹⁰⁵ By channelling private capitals through PPPs, additional resources for the implementation of climate projects will be broadened, promoting technological advancement and green growth, and enhancing the effect of the CBAM instrument within climate financing.

vi. Conduct Regular Policy Reviews with Stakeholders

To make CBAM policies operational over the long-term, it is significant to engage in periodic reviews and consult with relevant stakeholders such as developing countries, Non-Governmental Organizations (NGOs) and private entities. Such reviews should examine the economic impact of CBAM, its effectiveness in reducing emissions and its achievements in promoting climate resilience. It will therefore be necessary to collect reviews from various actors in the policy development and implementation so that such policies can be adjusted to consider the global climate status and achieve the desired objectives as intended. Such reviews will make sure that CBAM policies are responsive to the global climate

https://europejacquesdelors.cdn.prismic.io/europejacquesdelors/Zi-v993JpQ5PTPsS_GT16_CBAMGreenDevelopment.pdf.

¹⁰⁴ European Union Foreign Policy Instruments, *EU Solutions in Low Carbon Technologies and Circular Economy Markets in the Americas*, EUROPEAN UNION FOREIGN POLICY INSTRUMENTS (Jan. 20, 2022), https://fpi.ec.europa.eu/stories/eu-solutions-low-carbon-technologies-and-circular-economy-markets-americas_en.

¹⁰⁵ Hamid Samandar et al., *The Role of Public-Private-Philanthropic Partnerships in Driving Climate and Nature Transitions*, MCKINSEY & COMPANY (Nov. 20, 2023), <https://www.mckinsey.com/capabilities/sustainability/our-insights/the-role-of-public-private-philanthropic-partnerships-in-driving-climate-and-nature-transitions>.

trends as well as the economic challenges in the developing countries so that the policies remain relevant and able to attain the global climate objectives.

2. Stakeholder Analysis

The integration of CBAMs with climate finance poses consequences for several stakeholders, including developed and developing countries, NGOs, and the private sector.¹⁰⁶ Such actors, as shown in Table 1, have different interests, standpoints and worries with respect to the CBAM policies which will affect the applicability and achievement of these policies as well as the climate financing goals in general. Within these groups, however, there are veto players who have the power to block or delay the implementation of CBAM policies, making them critical to consider in any discussion of CBAM policy integration.

Table 1: Power-Interest Matrix for different actors

Power/ Interest	High Interest	Low Interest
	Manage	Satisfy
High Power	Developed Countries/Regions (e.g., EU, UK) Non-Governmental Organizations (NGOs) Climate Advocacy Organizations	Major Trade Partners (e.g., U.S., China, India) non-participating or opposing trade economies
	Inform	Monitor
Low Power	Developing Countries Low-Carbon Private Sector Climate-Vulnerable Nations	Carbon-Intensive Private Sector Non-Aligned Trade Partners Industries affected by compliance costs Opposing Trade Groups

i. High Power, High Interest (Manage Quadrant)

¹⁰⁶ Francisco Renteria et al., *Bridging Mechanisms for Synergistic Impact*, HFW (Aug. 12, 2024), <https://www.hfw.com/insights/bridging-mechanisms-for-synergistic-impact/>.

Developed countries, especially those that currently implement or plan to implement CBAMs like the EU and the UK have both high power over and interest in the CBAM-climate finance integration. These countries, positioned in the ‘manage quadrant’ of the power-interest matrix, are responsible for pushing the CBAM agenda forward, as they are willing to cut emissions but are not willing to let their domestic industries be at risk of carbon leakage. These countries are potential veto players as well as their policies can significantly influence the process of CBAM implementation and its efficiency.¹⁰⁷ For example, EU’s implementation of CBAM integrates trade and environment goals, as previously discussed, by obligating carbon costs on imports so that non-EU producers must meet equal or better carbon standards than EU producers. On the contrary, these countries’ power also implies that they can block the use of CBAM revenues into climate finance or prevent its integration with the broader global climate finance system if not aligned with their interests.

ii. *High Power, Low Interest (Satisfy Quadrant)*

However, countries such as China and the U.S., despite their economic might, have been placed in the ‘satisfy quadrant’ of the matrix. While they do not explicitly implement CBAMs yet, they are major import partners of countries that implement CBAM policies, which means they can significantly influence the implementation of such policies. China,¹⁰⁸ and the U.S.,¹⁰⁹ the major players in world trade, are mainly interested in ensuring that CBAM policies do not impose restrictions on trade, or economic difficulties. While these countries may not care much about the specifics of CBAM policies, they are very crucial due to their economic strength, and their approval or disapproval will determine whether CBAMs are accepted or not. As veto players, this means that these countries can block or just not support CBAM policies, and this can hinder the global adoption of these policies affecting the flow of climate finance.

iii. *Low Power, High Interest (Inform Quadrant)*

¹⁰⁷ Kateryna Holzer, *Reflections on the Use of Revenues from the EU CBAM*, CENTRE FOR CLIMATE CHANGE, ENERGY AND ENV'T L., UNIV. OF EASTERN FINLAND (May 22, 2024), <https://sites.uef.fi/ccel/reflections-on-the-use-of-revenues-from-the-eu-cbam/>.

¹⁰⁸ OECD, *Climate and carbon: Aligning prices and policies*, OECD Environment Policy Paper 6, No. 1, OECD (Oct. 9, 2013) <https://doi.org/10.1787/5k3z11hjc6r7-en>.

¹⁰⁹ *Id.* at 11.

Developing countries are the low power high interest players in the mechanism for the CBAM climate finance integration process. Such nations are dependent on carbon-intensive exports to developed countries' markets and may find it difficult economically if CBAMs turn out to be major trade barriers.¹¹⁰ The exporters likewise worry that the implementation of the CBAM would result in lowered market access and competitiveness.¹¹¹ If there is no reasonable redistribution of CBAM funds the countries will most likely view the policy as 'green protectionism' rather than a platform for promoting global climate balance.¹¹² Even with their limited ability to participate in the policy-making cycle, their consolidated voice as members of international structures like UNFCCC can advocate for a better CBAM revenue distribution.

iv. Low Power, Low Interest (Monitor Quadrant)

Carbon-intensive private industries and non-aligned countries in world trade, to some degree based on their gross behaviour, are most likely to fall under the monitor quadrant. These parties have a definite stake in the economic impact of CBAM, though they have limited capacity to influence the policy.¹¹³ Some industries such as steel, cement and aluminium among other carbon-intensive industries are likely to suffer from compliance costs.¹¹⁴ However, these industries do not have the capacity to block the provisions of CBAM but could influence the political landscape through lobbying efforts.

3. Risks and Limitations

Reinforcing climate finance mechanisms through CBAMs appears to be an effective approach for achieving equitable emission reductions; however, it entails several risks and limitations that need to be considered before applying it. Policymakers will have to target these risks and challenges to ensure that CBAM policies reach their environmental and equity goals without causing negative consequences on economy or politics. The following outlines the major risks that need to be addressed to

¹¹⁰ Suranjali, *supra* note 66.

¹¹¹ *On the Borderline: The EU CBAM and its place in the world of trade*, 4 CAMBRIDGE INST. FOR SUSTAINABILITY LEADERSHIP (2021), https://www.cisl.cam.ac.uk/files/cbam_report.pdf.

¹¹² Tim Gore et al., *What can Least Developed Countries and other climate vulnerable countries expect from the EU Carbon Border Adjustment Mechanism (CBAM)?*, 1 INSTITUTE FOR EUROPEAN ENV'T POL'Y (June 25, 2021), <https://ieep.eu/wp-content/uploads/2022/12/What-can-climate-vulnerable-countries-expect-from-the-EU-CBAM-IEEP-et-al-briefing-002.pdf>.

¹¹³ Elisabetta Cornago & Aslak Berg, *Learning from CBAM's transitional phase: Early impacts on trade and climate efforts*, CENTER FOR EUROPEAN REFORM (Dec. 03, 2024), <https://www.cer.eu/publications/archive/policy-brief/2024/learning-cbams-transitional-impacts-trade>.

¹¹⁴ *Id.*

effectively combine CBAMs with climate finance initiatives along with their mitigation plans:

i. Trade Imbalances

Risk: The integration of CBAM with climate finance comes with a risk of creating trade imbalances, especially with countries that depend substantially on carbon-intensive exports.¹¹⁵ CBAM requires additional costs on imports from countries with less stringent emissions regulations, which may reduce competitiveness of exporters from developing countries. As discussed earlier, sectors such as steel, cement, and aluminium, which have high-carbon footprints, could be significantly affected, leading to a reduced market share for these products in the EU and UK markets.

Mitigation Strategy: Phased CBAM implementation plan can help developing countries to mitigate these trade imbalances. This gradual implementation will allow exporters in developing countries to adjust to the new regulations. Moreover, CBAM revenues may be directed towards capacity building programs that would help these countries in meeting emissions standards, reducing the economic burden on their exports.

ii. Political Resistance and Trade Disputes

Risk: There are chances that CBAM might face opposition, especially from countries that regard it as a trade protectionist measure rather than an environmental policy.¹¹⁶ Countries subject to CBAM fees may claim that the mechanism constitutes an unjustified restriction on access to the market and interferes with international trade leading to possible trade disputes and retaliatory tariffs. Such a situation may undermine collaboration on global climate goals as CBAM may be construed to favour the interests of the developed countries over the developing ones.

Mitigation Strategy: To lessen political resistance, CBAM policies should align with international climate agreements such as the Paris Agreement. Ensuring that CBAM is framed as part of a cooperative climate policy can reduce trade disputes. Open communication, transparent CBAM revenue distributions, and consultation with affected countries can build trust and reduce the perceptions of protectionism.

¹¹⁵ Benjamin Parkin, *EU's carbon border tax plans trigger alarm in India*, FINANCIAL TIMES (June 21, 2024), <https://www.ft.com/content/6f324116-2707-440d-8808-c98749f8bc87>.

¹¹⁶ Kate Abnett, *Trade demands clash with climate agenda at COP29 talks*, REUTERS (Nov. 21, 2024), <https://www.reuters.com/sustainability/trade-demands-clash-with-climate-agenda-cop29-talks-2024-11-21/>.

iii. *Carbon Leakage*

Risk: Despite the aim of CBAM policies to prevent the risk of carbon leakage, there exists a possibility that companies may relocate business activities to countries that do not impose a similar carbon pricing regime. Such relocation would undermine the efforts of emission reductions around the world, even if the EU and the UK meet their domestic emission targets.

Mitigation Strategy: To put it another way, the aim of CBAM should be to prevent carbon leakage by incentivising trade partners to apply more stringent emission laws. One way could be to adjust the fees of CBAM based on the achievement of trading partners in meeting their emissions targets. Another way could be to provide them with assistance in greening their production methods.

IV. REFINING THE EU'S CBAM FOR GREATER ENVIRONMENTAL EFFICACY, POLITICAL VIABILITY, AND COMPATIBILITY WITH THE GATT

There has been a lot of debate going on since the EU announced its CBAM.¹¹⁷ Key discussions include talks about its environmental efficacy, political viability, and compatibility with the General Agreement on Tariffs and Trade (GATT), which we analyse in this part and argue that CBAM is an ineffective policy measure.

A. *Evaluating CBAM challenges*

1. Environmental efficacy

CBAM does not account for pricing measures different from direct carbon pricing.¹¹⁸ This rigidity may force countries to adopt measures that may not be effective for their specific context, ultimately reducing the likelihood of successful climate action.¹¹⁹ This is problematic because there is still uncertainty surrounding the impact that carbon prices can have on reducing carbon intensity during production.¹²⁰ This is because in theory, firms can still operate in the same way as long as they pay the fees.¹²¹ It is important to note that carbon prices do not directly solve the issue of greenhouse gas emissions, rather they serve as an incentive for

¹¹⁷ R. Leal-Arcas et al., 2022, *supra* note 8; see also Jiarui Zhong & Jiansuo Pei, *Carbon Border Adjustment Mechanism: A Systematic Literature Review of the Latest Developments*, 24 CLIMATE POL'Y 228 (Mar. 17, 2023).

¹¹⁸ Anatole, *supra* note 102.

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *Id.*

industries to adopt environmentally friendly production methods, which is not even guaranteed in the first place.¹²² Therefore, it is more beneficial to allocate this money towards the development and implementation of green technologies. Below are examples of alternative methods to reduce emissions for each product covered under CBAM:

- Hydrogen: use of renewable energy in the hydrogen production process instead of natural gas;¹²³
- Aluminium: recycling aluminium reduces energy use in the production process by 95%;¹²⁴
- Cement: energy consumption can be reduced by using geopolymers instead of cement;¹²⁵
- Iron and steel: use of scrap steel during the production process prevents the release of 1.5 tons of carbon dioxide;¹²⁶
- Electricity: utilisation of renewable energy sources can help reduce carbon dioxide emissions;¹²⁷ and
- Fertilizers: deployment of improved efficiency fertilizers.¹²⁸

The examples outlined above are just a few of the scientifically proven methods that can effectively reduce emissions from the products covered under CBAM. This shows that CBAM is not the only way to mitigate climate change. Investing in promising technology could be more environmentally efficacious.

2. Political viability

CBAM is not politically viable because it is not aligned with Article 3.1 of the United Nations Framework Convention on Climate Change which states that, the parties

¹²² *Id.*

¹²³ *Hydrogen*, IEA (2024), <https://www.iea.org/energy-system/low-emission-fuels/hydrogen>.

¹²⁴ *Aluminium Recycling Plant*, FORREC, <https://www.forrec.eu/plants/aluminum-recycling-plant/>.

¹²⁵ Nabila Shehata et al., *Recent Progress in Environmentally Friendly Geopolymers: A Review*, 762 SCIENCE OF THE TOTAL ENV'T 143166 (2021).

¹²⁶ *Climate Change and the Production of Iron and Steel*, WORLDSTEEL.ORG, <https://worldsteel.org/climate-action/climate-change-and-the-production-of-iron-and-steel/>.

¹²⁷ *How to Transform Energy System and Reduce Carbon Emissions*, IRENA (2019), <https://www.irena.org/Digital-content/Digital-Story/2019/Apr/How-To-Transform-Energy-System-And-Reduce-Carbon-Emissions>.

¹²⁸ *Discussion Document: Reducing Emissions Arising from the Application of Fertilizer in Canada's Agriculture Sector*, AGRICULTURE.CANADA.CA, <https://agriculture.canada.ca/en/departement/transparency/public-opinion-research-consultations/share-ideas-fertilizer-emissions-reduction-target/discussion>.

should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.”¹²⁹ According to this article, CBAM is not an equitable mechanism as it expects compliance from all countries despite significant variabilities in their capabilities. Table 2 showcases the relative CBAM exposure index for the top five countries most impacted by CBAM.¹³⁰ This index measures the added cost exporters from these countries face compared to those operating in the EU.¹³¹ The data is obtained from the World Bank and the country categorisation is based on the recent ‘World Economic Situation and Prospects 2024’ report that was published by the United Nations Department of Economic and Social Affairs (UN DESA).¹³²

Table 2: Top 5 Countries with the Highest Relative CBAM Exposure Index by Product¹³³

Product	Country	Relative CBAM exposure index
Aluminium	Mozambique	0.059
	Kazakhstan	0.040
	Egypt, Arab Rep.	0.014
	Cameroon	0.012
	Venezuela	0.013
Cement	Belarus	0.31
	Ukraine	0.24
	Malaysia	0.03
	Saudi Arabia	0.01
	Tunisia	0.01

¹²⁹ United Nations Framework Convention on Climate Change, May 9, 1992, S. Treaty Doc. No. 102-38, 1771 U.N.T.S. 107; *see also* Gracia Durán & Joanne Scott, *Global EU Climate Action and the Principle of Common but Differentiated Responsibilities and Respective Capabilities*, (EUI Dep’t L. Working Paper No. 2024/02 2024).

¹³⁰ World Economic Situation and Prospects 2024, UNITED NATIONS (Jan. 04, 2024), https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP_2024_Web.pdf [hereinafter World Economic Situation]; *see also* *Relative CBAM Exposure Index*, WORLD BANK (June 15, 2023), <https://www.worldbank.org/en/data/interactive/2023/06/15/relative-cbam-exposure-index> [hereinafter Relative CBAM Exposure Index].

¹³¹ *Id.*

¹³² *Id.*

¹³³ *Id.*

Electricity	Russian Federation	0.23
	Turkey	0.21
	Ukraine	0.19
	Belarus	0.10
	United Kingdom	0.03
Fertilizer	Ukraine	0.08
	Georgia	0.08
	Belarus	0.05
	Trinidad and Tobago	0.04
	Russian Federation	0.03
Iron and steel	Zimbabwe	0.092
	Ukraine	0.045
	India	0.044
	Albania	0.043
	Egypt, Arab Rep.	0.024

Legend	Developed economies	Economies in transition	Developing economies
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Table 3: Top 5 Countries with the Highest Aggregate Relative CBAM Exposure Index¹³⁴

Country	Aggregate relative CBAM exposure index
Zimbabwe	0.087
Ukraine	0.053
Georgia	0.046
Mozambique	0.045
India	0.031

Legend	Developed economies	Economies in transition	Developing economies
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As illustrated in Tables 2 and 3, countries with developing economies or economies in transition are among the list of countries most adversely affected by CBAM. This could in turn impede their development and limit their ability to address other urgent challenges that require immediate action. Below are some of the challenges these countries are facing:

¹³⁴ *Id.*

- Zimbabwe: political unrest, hyperinflation, and increase in poverty.¹³⁵
- Ukraine: \$486 billion is needed to rebuild lost infrastructure due to the Russian war on the country.¹³⁶
- Georgia: low-productivity workforce and a lack of high-quality job opportunities.¹³⁷
- Mozambique: high levels of underemployment, and uneven distribution in basic healthcare and educational services.¹³⁸
- India: Consumption inequality, and high levels of child malnutrition.¹³⁹

This is also inequitable given the fact that these countries have had minimal contribution to the cumulative global carbon dioxide emissions.¹⁴⁰ Figure 1 shows the cumulative carbon dioxide emissions for the EU and the countries most affected by CBAM, as identified in Table 3.¹⁴¹

Figure 1: Graph showing the historical cumulative CO₂ emissions¹⁴²

¹³⁵ *Country Analysis: Zimbabwe*, ACAPS (Mar. 31, 2025), <https://www.acaps.org/en/countries/zimbabwe#>.

¹³⁶ *Ukraine Overview: Development News Research Data*, WORLD BANK (Mar. 19, 2025), <https://www.worldbank.org/en/country/ukraine/overview>.

¹³⁷ *Georgia Overview: Development News, Research, Data*, WORLD BANK (Oct. 23, 2024), <https://www.worldbank.org/en/country/georgia/overview#1>.

¹³⁸ *Mozambique Overview: Development News, Research, Data*, WORLD BANK (Oct. 18, 2024), <https://www.worldbank.org/en/country/mozambique/overview>.

¹³⁹ *India Overview: Development News, Research, Data*, WORLD BANK (Sep. 16, 2024), <https://www.worldbank.org/en/country/india/overview>.

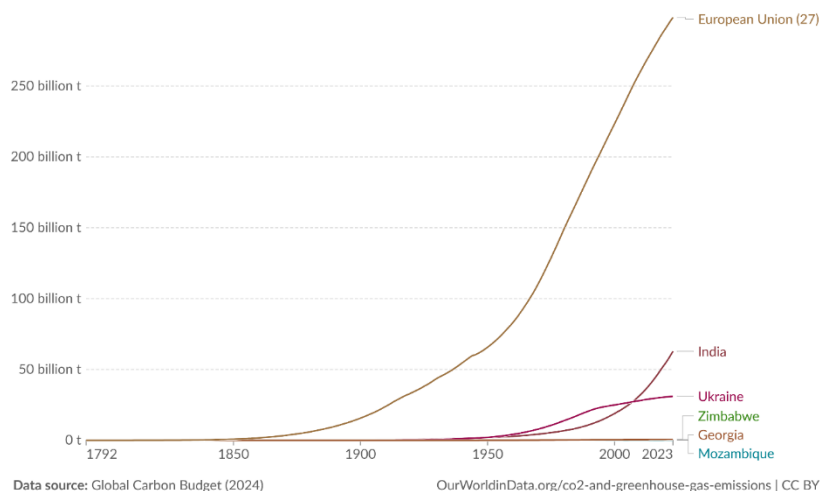
¹⁴⁰ Hannah Ritchie, *Who Has Contributed Most to Global CO₂ Emissions?* (2019), OUR WORLD IN DATA <https://ourworldindata.org/contributed-most-global-co2>.

¹⁴¹ *Id.*; World Economic Situation, *supra* note 130; CBAM Exposure Index, *supra* note 130.

¹⁴² *Cumulative CO₂ emissions GCB data*, OUR WORLD IN DATA (2024), <https://ourworldindata.org/grapher/cumulative-co-emissions>.

Cumulative CO₂ emissions

Running sum of CO₂ emissions produced from fossil fuels and industry¹ since the first year of recording, measured in tonnes. Land-use change is not included.



1. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO₂) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO₂ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

This graph further emphasises the stark difference in contributions between these two groups. The total cumulative carbon dioxide emissions of the EU amount to 298,450,500,000 tons, which is more than three times the combined emissions of the five other countries (India, Zimbabwe, Ukraine, Georgia, and Mozambique), totalling 95,659,918,250 tons only.¹⁴³

3. Compatibility with the General Agreement on Tariffs and Trade

CBAM may be in violation of Article I, 'Most-Favoured-Nation Treatment', of the General Agreement on Tariffs and Trade because it discriminates against similar imported products by giving them a different carbon price based on their country of origin.¹⁴⁴ It may also be in violation of Article III, 'National Treatment on Internal Taxation and Regulation', because it discriminates between domestic and

¹⁴³ *Id.*

¹⁴⁴ General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194 [hereinafter GATT 1947]; *Implications for African Countries of a Carbon Border Adjustment Mechanism in the EU*, THE AFRICAN CLIMATE FOUNDATION (Mar. 07, 2024), <https://africanclimatefoundation.org/research-article/implications-for-african-countries-of-a-carbon-border-adjustment-mechanism-in-the-eu/> [hereinafter African Climate Foundation].

international products.¹⁴⁵ This is evident by the CBAM exposure indices mentioned earlier that showed an added cost to international producers compared to EU producers.¹⁴⁶

Those in favour of CBAM argue that it is compatible with the General Agreement on Tariffs and Trade because addressing climate change falls under one of the exceptions mentioned in Article XX, namely GATT Article XX(b): ‘necessary to protect human, animal or plant life or health.’¹⁴⁷ However, one could argue that CBAM does not fall under this exception because it is not the only way to protect humans from climate change. For their argument to be valid, evidence needs to be provided to showcase that CBAM is the only available option to address climate change, which is not true, given the alternative options discussed earlier in the paper. While CBAM may pass the necessity test under Article XX(b) by targeting a legitimate climate goal with transparent methodology, it must be carefully implemented to avoid discrimination or disguised trade restrictions—especially against developing countries. Its ultimate WTO compatibility may hinge on how equitably and flexibly it is applied, and whether it complements broader global climate finance and cooperation. In addition, the discriminatory nature of CBAM could put it in a similar situation to the US-shrimp case.¹⁴⁸ In 1989, the United States imposed a ban on shrimp imported from countries that did not use turtle excluder devices.¹⁴⁹ The WTO ruled this as a violation of Article XI and that it couldn’t be justified as an exception under Article XX due to its discriminatory nature.¹⁵⁰

B. *Exploring alternative perspectives*

Those who agree with the implementation of CBAM argue that it will be effective in decreasing carbon leakages.¹⁵¹ The European Parliament published a paper claiming that by 2030 CBAM will reduce global emissions by 0.3% and reduce carbon leakage by 29%.¹⁵² Current countries that support CBAM include Japan and

¹⁴⁵ GATT 1947, Art. III.

¹⁴⁶ Relative CBAM Exposure Index, *supra* note 130.

¹⁴⁷ GATT 1947, art. XX(b); African Climate Foundation, *supra* note 144.

¹⁴⁸ See generally Oesch Matthias, *US–Shrimp Case*, in MAX PLANCK ENCYCLOPAEDIA OF PUBLIC INT’L L. (2014)

¹⁴⁹ *Id.*

¹⁵⁰ *Id.*

¹⁵¹ Cecilia Bellora & Lionel Fontagné, *EU in Search of a Carbon Border Adjustment Mechanism*, 123 ENERGY ECON. ART. 106673 (2023).

¹⁵² Morgado Simões Henrique Andre, *EU Carbon Border Adjustment Mechanism Implications for Climate and Competitiveness*, EUROPEAN PARLIAMENTARY RESEARCH SERVICE (June 13, 2023),

[https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/698889/EPRS_BRI\(2022\)698889_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/698889/EPRS_BRI(2022)698889_EN.pdf).

Canada, but their support can be attributed to the minimal impact the mechanism will have on their economies.¹⁵³ For instance, the Japanese economy is not expected to face any threats from CBAM, possibly due to its existing carbon tax, the ‘Tax for Climate Change Mitigation.’¹⁵⁴ Similarly, Canada has had an operational trading system for emissions since 2019.¹⁵⁵

On the other hand, some people believe that CBAM should be refined before it is implemented.¹⁵⁶ For instance, some scholars argue that the revenues generated from CBAM should be given to developing countries.¹⁵⁷ However, this approach is not ideal because many of these countries are facing other urgent and pressing challenges that could benefit significantly from such financial help.

V. CONCLUSION

In Part II, we have seen that carbon markets can support global climate goals if integrated into a strong, transparent, and equitable governance architecture under the UNFCCC. The Paris Agreement’s Article 6 provides the scaffolding for this integration, but detailed rules, careful oversight, capacity-building, and continuous improvement is required to realise their full potential. Policymakers must clarify accounting, strengthen additionality, harmonise methodologies, and ensure that markets complement, rather than replace, ambitious domestic action.

By incorporating private initiatives under a unified framework, building capacity in developing countries, fostering policy coherence, embracing digital innovations, and linking markets to SDGs and ESG principles, the global community can create a trustworthy and dynamic carbon market regime. Over time, these markets can accelerate technology diffusion, mobilise finance, and guide economies toward net-zero trajectories. With careful design, steady improvement, and unwavering commitment, carbon markets can help deliver a stable climate future grounded in fairness, ambition, and shared prosperity.

The world cannot afford half measures. Properly governed carbon markets can close the emissions gap, empower developing regions, enhance climate resilience, and inspire confidence in multilateral cooperation. The UNFCCC stands at a decisive juncture. By strengthening the integration of carbon markets into its legal

¹⁵³ Gary Hufbauer et al., *EU Carbon Border Adjustment Mechanism Faces Many Challenges*, PETERSON INST. INT’L ECON. (2022), <https://www.piie.com/publications/policy-briefs/2022/eu-carbon-border-adjustment-mechanism-faces-many-challenges>.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ Anatole, *supra* note 102.

¹⁵⁷ *Id.*

and governance architecture, it can ensure that these instruments not only meet today's challenges but also anticipate tomorrow's needs, guiding humanity toward a just and sustainable low-carbon world.

Further, Part III has explored how climate finance can be integrated into trade measures such as EU's and U.K.'s CBAMs to foster equity and global emission reductions, advancing environmental and economic objectives. By aligning CBAM with climate finance, stakeholders can drive sustainable climate action, while addressing the disparities between developed and developing nations. This approach offers a roadmap for aligning trade policies with climate finance to build global climate resilience and equitable development.

The integration of CBAMs and climate finance offers a remarkable opportunity for addressing climate issues equitably while promoting low emissions. As countries around the world strive to meet their climate obligations, CBAMs, such as the EU's and the UK's, appear to be a source of funding that could expand the current availability of climate funds, especially in developing countries. Directing CBAM revenues towards climate projects will provide considerable support to the regions and countries that suffer from climate impacts. Furthermore, this aligns with the UNFCCC's principle of 'common but differentiated responsibilities,' which recognises that while all countries share a common responsibility to address climate change, their obligations differ based on their historical emissions and their respective capabilities.

To make full advantage of CBAMs such as EU's and U.K.'s, it is important that the mechanism be closely compatible with existing climate agreements, particularly with the Paris Agreement. By bringing the CBAM policies closer to the objectives of the Paris Agreement, developed countries and developing countries will be able to strengthen collaboration and ensure that both climate change and economic fairness are granted. This will help transform CBAMs from a potential trade barrier to a beneficial mechanism aimed at global emissions reduction, within the interests of both developed and developing countries. Furthermore, incorporating CBAM measures with the objectives of the Paris Agreement diminishes the likelihood of international trade conflicts, and encourages international stakeholders to embrace the CBAM policies. Placing an emphasis on the role of CBAM within climate change efforts will make the world become more effective, coordinated and equitable in addressing the climate challenges the world is facing.

Moving forward, the challenges related to design and the deployment of CBAM policies need to be tackled to ensure CBAM policies become sustainable in the long run. Some critical challenges include administrative costs, impacts on trade, and compliance costs for developing economies that depend highly on carbon-intensive industries. Thus, CBAM strategies should include progressive compliance policies

which provide gradual phasing in and consideration of varying development levels of nations and sectors. One way is to look at developing nations' climate obligations and their capabilities to achieve them and then set up relevant initiatives for them so they can gradually transition to a low emission economy without putting undue pressure on their economies. Furthermore, the creation of standard monitoring, reporting and verification (MRV) systems for small and medium size enterprises (SMEs) will assist in collection of information and submission of reports.

CBAM can also draw attention to the need for fostering PPPs. CBAM revenues have the potential of drawing private funds on climate adaptation and mitigation investments in low-income countries. This partnership could increase the financial scope of the CBAM and facilitate investments for large scale renewable energy and other climate projects. The private sector has shown, when supported with appropriate regulations, to be a key factor in scaling up climate finance efforts. Such partnerships between government organisations and private sector can ensure adequate funding making projects viable and practical.

The Stakeholder Analysis shows the differing interests and influences of various actors in CBAM and climate finance integration. High power and interest stakeholders such as developed countries (e.g., the EU and U.K.) and NGOs, drive CBAM implementation and integration. High power and low interest nations, such as the U.S. and China, can influence CBAM policies but prioritise trade impacts over climate goals. Developing nations, despite their high interest, have limited power and view CBAM as a potential trade barrier if funds are not equitably redistributed. Carbon-intensive industries and non-aligned trade partners, with low power and interest, primarily monitor developments but may lobby against CBAM costs.

Ultimately, the constructive integration between CBAMs and climate finance might provide a perspective for rationalising a more effective and fairer international climate policy. Provided that CBAM revenues are used for climate adaptation and mitigation efforts in the regions that need it and that these efforts are consistent with global climate agreements, CBAMs can be extremely valuable tools against climate change. This approach will ensure that the world's shift to a low-carbon economy is not only eco-efficient, but also economically and socially equitable, helping to build a world where both developed and developing countries are pleased to engage themselves as well as their people in a sustainable and resilient global climate policy.

Lastly, the analysis contained in Part IV demonstrates that although CBAMs can be extremely valuable tools against climate change, the implementation of CBAM raises significant concerns regarding its environmental efficacy, political viability, and compatibility with the General Agreement on Tariffs and Trade. While

addressing climate change is extremely important for the world, developed countries are better positioned to tackle this issue compared to developing countries, who still face many other pressing challenges that limit their ability to engage in such measures. The introduction of CBAM risks further disadvantaging these countries. The analysis made in this paper concludes that CBAM is environmentally ineffective, politically unviable, and potentially incompatible with the General Agreement on Tariffs and Trade.