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The EU's Carbon Border Adjustment Mechanism and developing countries: Threats, opportunities and strategic responses

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The EU's Carbon Border Adjustment Mechanism (CBAM) represents a major shift, connecting global trade and environmental policies. CBAM is a key component of the EU climate strategy. It aims to address carbon leakage by applying an EU-equivalent carbon price on imports. European policymakers see it as a key enabler for decarbonisation, and a way to nudge other economies to adopt similar measures. However, developing countries view it as a unilaterally imposed measure that risks disrupting their industrialisation plans. This paper discusses the impact of CBAM on developing economies and suggests four response strategies — decarbonise, emulate, challenge and avoid.

In considering these four options, developing countries have limited leeway. To maintain the status quo they must 'decarbonise' and prepare their industries to meet CBAM requirements, ensuring compliance with new trade conditions while avoiding (if possible) internalising the penalties. As part of a 'challenge' response, they should engage diplomatically to advocate for adjustments that reflect their unique economic realities. Over the long term, however, the real challenge lies in reshaping their industrial and trade strategies to align with a decarbonising global – not just EU – economy, investing in green technologies, and positioning themselves for a more sustainable future. Developing country governments should also seek to transcend the fragmented, bilateral discussions and assert their own agenda on carbon pricing and carbon leakage. Rather than simply reacting to the terms set by wealthier nations, they need to shape the conversation around the specific challenges and opportunities of low-carbon, energy-intensive industries.

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Acronyms

AfCFTA	Africa Continental Free Trade Area
CBAM	Carbon Border Adjustment Mechanism
(EU) ETS	(European) Emissions Trading System
BCA	Border Carbon Adjustment
EU	European Union
GDP	Gross Domestic Product
LDCs	Least Developed Countries
LICs	Low Income Countries
UNCTAD	United Nations Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organization

1. Introduction

The European Union (EU)'s Carbon Border Adjustment Mechanism (CBAM) is as divisive as it is novel. Where you stand, depends on where you sit. But whatever one's position it is important to understand the implications and the potential response options of countries with affected industries. This discussion paper looks at those options, specifically for developing countries.

For European policymakers, CBAM reflects the EU honouring its Paris Agreement commitments, 'leading by example' to lower carbon emissions where others lag behind, at no small cost to its own economy. European industries see it as applying the same rules to others that they are already subject to within the EU market.

For affected non-Europeans, the CBAM reflects a unilaterally imposed EU measure, with minimum consultation with 'partner' countries, arguably outside World Trade Organization (WTO) rules. They portray the EU as *overreaching* to protect its own industries while imposing the costs of lowering global carbon emissions on other less well-off countries, undermining their industrialisation ambitions in a context of already low manufacturing employment and rapidly expanding populations. CBAM is seen as blind to the resources available to developing countries to decarbonise, and going against the more country-driven process of Nationally Determined Contributions. Characterised by some as a 'green squeeze' on countries dependent on energy-intensive exports to the EU for export earnings and employment, the EU's response that CBAM is not a trade measure but a climate measure rings hollow (Keane 2023). If it looks, acts and sounds like a tax, they say, its name matters little.

The launch and operationalisation of the world's first Border Carbon Adjustment (BCA) (Campbell et al. 2021) has been called the EU's biggest climate experiment yet (Reynolds 2023), as it seeks to double down on carbon pricing within the EU while trying to set a standard for others to follow and adopt ambitious decarbonisation and carbon pricing mechanisms. In practice, the EU is taking a gradual approach to implementation. The CBAM entered into force in October 2023, complementing the reform of the European Emissions Trading System (ETS). During the 'transition period' until 2025, importers of goods in six 'hard-to-abate' sectors - cement, steel, aluminium, fertiliser, electricity and hydrogen - are expected to report on embedded emissions without any payments. This will be followed by a gradual introduction of paid certificates as the EU phases out ETS free allowances.

Yet while the CBAM has moved into a more operational phase, concerns and frustrations remain. South African representatives regularly decry the EU's unilateral approach and failure to account for different levels of development.[1] Indian officials have also repeatedly said the country will retaliate against unfair taxes imposed by CBAM, invoking the United Nations

[1] While there is no official position by South Africa's government, South African trade minister Ebrahim Patel recently confirmed they are considering a formal WTO complaint, citing the protectionist nature of CBAM, and its failure to recognise differential levels of development (Yermolenko 2024).

Framework Convention on Climate Change (UNFCCC) principle of Common But Differentiated Responsibilities (UNFCCC Na.).

Much of the criticism is therefore linked to the design choice of the ETS-CBAM setup, namely a unilateral -albeit indirect- imposition of the EU's carbon price on foreign imports. This is seen as unfair to developing countries, and a constraint to their industrial development options. At the same time, public debate on CBAM is highly charged and prone to anecdotal, and often inaccurate information, on the implications, timelines, and future direction of the scheme.

This demands further analysis and discussion of the options facing affected countries, and how they can respond to CBAM in an effective manner.

While the CBAM is seen as a trade barrier by many, it may also be seized as an opportunity by some. Those able to invest in producing low-carbon industrial goods will, in the medium to long term, enter the EU market with a competitive advantage, and ultimately, the CBAM may provide further incentives for investments in energy intensive industries where renewable electricity, and especially hydrogen may be produced at the cheapest possible rates.

Yet the key challenge with CBAM is a fundamental misalignment between the internal and external objectives of the mechanism. Within the EU, things are clear: the objective is to shield EU producers from increasing carbon leakage risks by charging an equivalent carbon price on imports. In this sense, the CBAM protects the European market from higher-carbon/lower-cost imports, regardless of the effect that will have on exporters.

Externally, however, things are far less straightforward. The regulation and European policymakers emphasise that beyond addressing carbon leakage, CBAM should encourage accelerated decarbonisation and the adoption of more ambitious carbon pricing worldwide. Yet at the same time, it imposes an EU-defined carbon price, and -according to some- an unrealistically compressed timeline, raising challenges for future interoperability between EU, multilateral and developing country mechanisms for carbon pricing.

In order to position themselves in this debate, and to effectively respond, developing countries need to take action on multiple levels. Building on interviews and discussions at a closed-door roundtable on the topic, this discussion paper explores policy options and room for manoeuvre by means of four potential responses:

1. *Decarbonise* the affected industries
2. *Emulate* the CBAM with own carbon tax
3. *Challenge* the legality of the CBAM
4. *Avoid* the EU market

These strategies are not mutually exclusive, so countries might decide to pursue more than one at a time. The actual response, and combination of responses by affected countries will

depend on a range of economic but also political factors that relate to the specific industries and the country in question and thus steer more towards one option or another.

While exploring the response options for affected countries, overall we conclude that the room for manoeuvre for low-income countries and late industrialising economies is very limited. None of the four strategies offers an easy solution to the challenges CBAM introduces, and all entail new risks. Developing countries are therefore faced not only with the challenge of adapting to new externally imposed regimes, but must also rally behind a shared carbon pricing agenda that is compatible with their economic and industrial development needs, and move beyond the fragmented, bilateral diplomacy and wait-and-see approach that has marked the rollout of CBAM until today.

2. A *hybrid* design logic

As Nobel laureate William Nordhaus put it, "Raising the price of carbon is a necessary and sufficient step for tackling global warming. The rest is largely fluff." (Nordhaus 2007:29).

The EU introduced its Emissions Trading System[2] for industries in 2005, under which a carbon price is set by a market mechanism linked to the availability of (free and paid) allowances. It gradually strengthened its ETS over time, increasing sector coverage and introducing a EU-wide cap in 2013. More recently, in 2023, the EU also increased the annual percentage reduction of that cap, and initiated the phaseout of free allowances for industries - emissions certain industries do not need to pay for - by 2034. These measures effectively raise the price of (future) carbon emissions for key energy-intensive industries operating in its internal market. This 'ratcheting' is meant to gradually increase the incentive for firms to decarbonise their production. Yet it also increases the risk of 'carbon leakage', which would occur if high-emitting industries moved their production to more lenient jurisdictions. The phaseout of free allowances is of particular importance, as it entails a shift in how the EU addresses the risk of carbon leakage: rather than giving at-risk industries a free pass, it will require those companies to either reduce emissions more aggressively or purchase more allowances on the ETS market. This will then be synchronised with the phase in of CBAM.

The CBAM, therefore, is not a standalone measure but is inherently linked to the EU's efforts to reduce emissions internally. It was always seen as a key condition for the acceptance by member states and industries of further ETS reform to meet the EU's emissions reduction targets. By introducing a 'border adjustment charge', the CBAM seeks to 'level the playing field' for EU firms vis-à-vis those subject to lower carbon costs outside the EU.

Eventually, the CBAM will require certificates to be bought for imports into the EU of the six identified carbon-intensive goods, with prices set according to the cost of carbon within the ETS. It is therefore framed as contributing to decarbonisation ambitions *within* the EU single

[2] More info on the EU ETS can be found *here*.

market, thus essentially addressing an internal political EU issue (albeit to address global climate change), but has external consequences.

The internal logic is often summarised by EU officials as follows:

1. the CBAM does not seek to reduce carbon emissions as such, but rather to limit carbon leakage - carbon taxes paid in the exporting country will be acknowledged if they can satisfy certain criteria;
2. the CBAM applies to production facilities not countries - implying potentially differential effects across production facilities from the same company in the same country, but also making state-business relations important in how governments respond (or not);
3. the CBAM burden is on importers to the EU who will have to purchase CBAM certificates and report on carbon emitted during production - and who may have limited knowledge or control over where exactly their CBAM products come from depending on supply chain complexity.

Yet the CBAM also has an *external logic*, which is linked to promoting carbon pricing globally. The main instrument for this is article 9 of the CBAM regulation (EU 2023), which allows for a carbon price paid at the source to be deducted from any CBAM payment. This can be seen as a more implicit way to project the EU's regulatory power externally, and promote the adoption of the EU's own model of competitive industry decarbonisation within a gradually tightening ETS.

This *external logic* is often summarised by EU officials as follows:

1. The EU is *leading by example*, creating incentives for a higher standard in emissions reductions across the world. With CBAM it is creating a *global reference point* for other nations to adopt similar systems (EU 2023).
2. The CBAM is *not a scheme to raise revenue,* instead, in an ideal world, no payments would need to be made, if countries adopt ambitious carbon pricing and decarbonisation policies.
3. The EU is committed to *support international carbon pricing and markets*, and supporting countries to develop their own systems.

Box 1: Anticipating carbon leakage risk

The CBAM's primary stated goal is to address the carbon price disparity between EU-produced and imported goods, mitigating the risk of firms relocating pollution to countries with weaker environmental policies.

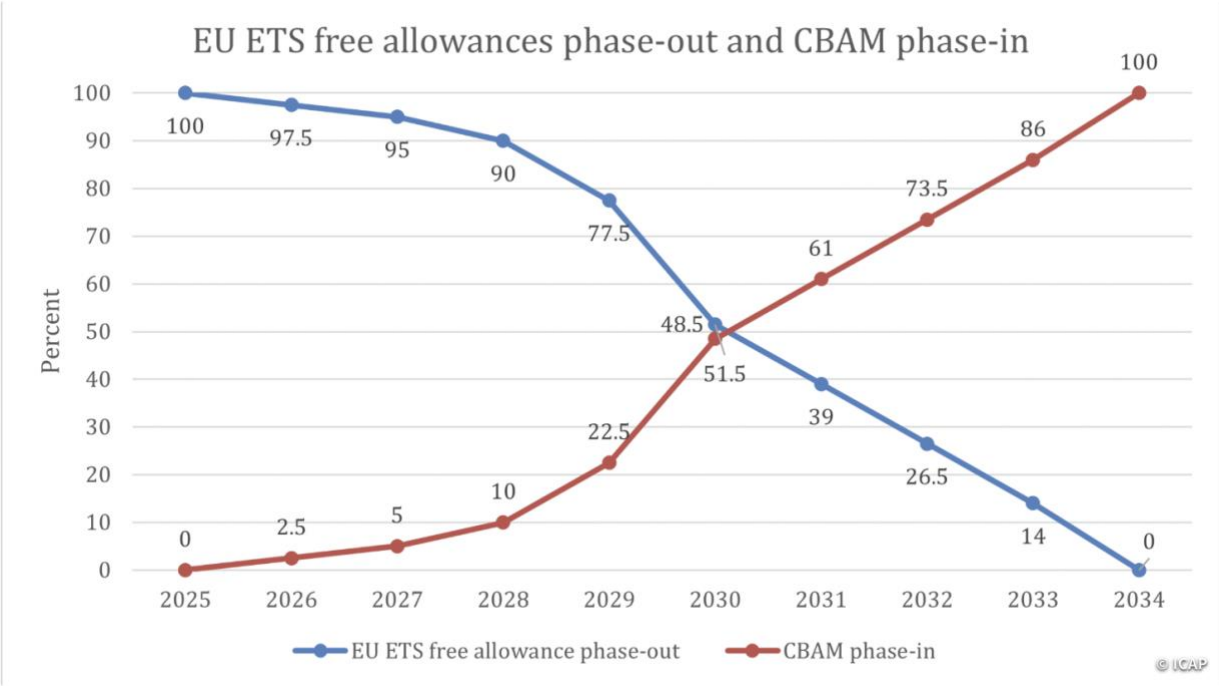
Evidence of carbon leakage today is mixed: Ben-David et al. (2020) show some firms relocate pollution, while Dechezlepretre et al. (2022) find no displacement of emissions due to the EU ETS. Estimates of CBAM's impact vary: Branger and Quirion (2013) project a 10% reduction in leakage,

and United Nations Trade and Development (UNCTAD) (2021) models show that a $44 per tonne carbon border adjustment charge reduces leakage by over half, compared to no CBAM.

But at the same time, it is difficult to make reliable calculations based on past data. Most historical analyses predate changes in the EU's ETS, which entered into its third phase only in 2013. While the EU's carbon price only recently surged from €20 to over €100 between 2020 and 2023, and averages above €60 today, the effect of the most recent (2023) reform of the ETS is yet to be reflected. This includes an 4.3% annual reduction of the ETS cap and an accelerated phaseout of free allowances (ICAP 2023).

The threat of carbon leakage, therefore, is largely in anticipation of the effects of ETS reform, and the forecasts of a steady increase in the EU's carbon price (to around €200 per ton) in the coming decade (BNEF 2024). This means that the need for an EU CBAM today may be limited, but conditions are set to change this quickly. The phase-in of CBAM is therefore also directly synchronised with the foreseen phaseout of free emissions allowances in the ETS (Figure 1).

Figure 1: EU ETS free allowances phase-out and CBAM phase-in



Source: ICAP 2023 based on European Commission

This hybrid logic can be difficult to navigate for developing countries, not least because on one hand, the CBAM extends an invitation for engagement to work towards a mutually beneficial outcome, for example, by developing a homegrown carbon tax or ETS. Yet on the other hand, by mirroring the carbon price of the ETS, it limits their room for manoeuvre to do so.

In addition to the hybrid logic, there are several notable sources of conceptual confusion in discussions with third countries, as well as several critical unresolved questions.

These include:

1. **Deductible carbon price paid at the source:** A key design feature of CBAM is that a domestic carbon price paid in exporting countries may be deducted from future CBAM obligations. This is meant to avoid double carbon pricing, but also to incentivise carbon pricing uptake outside of the EU. The future rules, as to what the EU will consider to be 'effectively paid', however, have been subject to much discussion and are yet to be defined in detail (EU 2023).
2. **Producers but also countries:** The CBAM obligation is targeted at imported products but especially the production process behind them - making it plant-specific. That means that the value paid on imports of the same product from the same company and country can be subject to different amounts of carbon certificates, thus putting the burden on exporting firms to lower their carbon footprint, or else lose market share when importers look to import more cheaply. Yet CBAM also explicitly targets countries and governments in that it seeks to create incentives for raising ambitions in emissions reductions, as well the adoption of ETS-inspired policies by exporting nations.
3. **The EU as the reference point:** While in part the design of CBAM is centred around (a) real, facility-specific emissions, and (b) countries' homegrown decarbonisation and carbon pricing mechanisms, the EU acts as a benchmark in different ways. By applying the EU's internal carbon price on imports, it projects a price that reflects EU internal dynamics onto producers in third countries. Similarly, in the absence of real and verifiable emissions data, CBAM declarants are also required to use default (emissions) values, which are also based on emissions values of the EU's own worst facilities (EU 2023).
4. **Unclear scope for differentiation:** One of the major criticisms is that CBAM does not differentiate between countries at different income levels. The EU chose not to include exemptions for Least Developed Countries (LDCs) (Pleeck and Mitchell 2023). At the same time it did commit to analysing the effects on developing countries and LDCs as one of the main priorities for the transition period, while avoiding locking itself into any form of differential treatment or accompanying measures.
5. **Unclear commitment to supporting decarbonisation of affected industries in developing countries:** Although proposals to earmark CBAM revenues to help affected countries in their energy transition were dropped during trilateral discussions between the EC, European Parliament and European Council, as Marcu et al. (2024) point out, some of the language of those was retained in the preamble to the regulation which states that the EU is "committed to working with and supporting low and middle-income third countries towards the decarbonisation of their manufacturing industries". Apart from the above mentioned commitment to analyse the effects of CBAM on developing countries, there is no mechanism to specifically target industry decarbonisation efforts in those countries.

All this makes for a difficult conversation with third countries, but it also means that there is no one easy solution to the issues that a full CBAM implementation raises. Countries and producers will need to engage the EU both on a technical level, and on a diplomatic level to

ensure a mutual understanding of the CBAM's rules and objectives, as well as to address potential trade frictions and unintended effects for developing countries.

3. Estimated effects and reactions from third countries

Estimates on the effects of CBAM on developing economies vary widely, partially because the real mid-to-long term effects are difficult to assess based on trade statistics of the past, but also because many studies preceded the adoption of the final regulation, and therefore specific details of the scope and setup of the CBAM. Some include scenarios of a CBAM covering all export products, anticipating a product expansion that seems unlikely to occur (Aggad et al. 2023).

What is clear, however, is that while CBAM-covered imports from developing countries may be relatively limited for the EU, exports of CBAM-covered goods to the EU, are in some cases a significant portion of total exports for developing countries (IEEP 2022). Acknowledging the caveats above, estimates suggest that the total value of CBAM-affected products imported into the EU27 was €53 billion in 2019, or just 3% of total EU imports (Simola 2021).[3] Imports from LDCs specifically represent an even smaller share. This is illustrated by the UNCTAD Trade and Development Board where it was stated by EU officials that "our studies indicate that exports from LDCs to the EU in the sectors covered by the CBAM are very limited", with the implication that LDC country concerns may be overblown (UNCTAD 2023). The EU's Joint Research Centre (JRC) study on Greenhouse Gas Emission Intensities for CBAM sectors in Partner Countries cites the very small share of South African steel imports in overall EU imports in 2018, representing just 0.9% of total imports (Vidovic et al. 2023).

However, even if EU import shares from Africa of fertiliser and aluminium are higher, the question for CBAM-affected countries is not their share in EU imports, but the proportion of EU-destined exports in CBAM-affected sectors and their importance for exports, employment and foreign exchange generation. In most cases, however, developing countries also do not simply seek to maintain their current exports, but have plans to (significantly) grow and modernise their industrial production. This means that, just like the EU is developing CBAM as an anticipatory policy, looking to contain *future* carbon leakage, many developing countries evaluate CBAM against their *future* exposure in line with industrialisation plans, as well as their *current* exposure from existing exports.

According to one study, the direct effects of CBAM on output of affected sectors could be quite high for Mozambique but also Zimbabwe, São Tomé e Principe and South Africa. If one takes account of industrial linkages, the indirect effects on output are even higher (Magacho et al. 2022). Even where the economic effect appears low, as Jakob et al. (2024) point out for Southern Mediterranean countries, "concentrated impacts on specific economic sectors might, however, impose social hardships on certain social groups, such as workers in emission-intensive industries". North-African exports, particularly from Egypt are likely to be affected by

[3] More than half of this was steel (65%) followed by aluminium (23%) and fertilisers (8%) (Perdana Vieille 2022).

CBAM - iron, steel and fertilisers accounted for 9.9% and 8.3% of Egyptian exports to the EU in 2021 (Eurostat 2022). Zambia and Zimbabwe's iron and steel exports account for 30,8% and 14,9% of their total export value to the EU in 2021. A recent paper from the South African Presidential Climate Commission estimates that the CBAM could affect 28,000 jobs and $2 billion of South African exports of iron and steel to the EU (PCC 2023a).

Focusing only on Africa, Aggad et al. (2023) find that although the CBAM will have only a moderate impact on the economies of African countries even when carbon is priced at €87/tonne, the impact on African countries will be larger as a share of gross domestic product (GDP) than other regions because of their reliance on exports to the EU. According to their figures, the EU accounts for 26% of Africa's exports of fertiliser, 16% of iron and steel, 12% of aluminium and 12% of cement (Aggad et al. 2023). They therefore estimate that CBAM could cause a fall in total exports from Africa to the EU of aluminium by up to 13.9%, iron and steel by 8.2%, fertiliser by 3.9% and cement by 3.1% though some could shift to other destination markets such as China and India, a point we return to below.

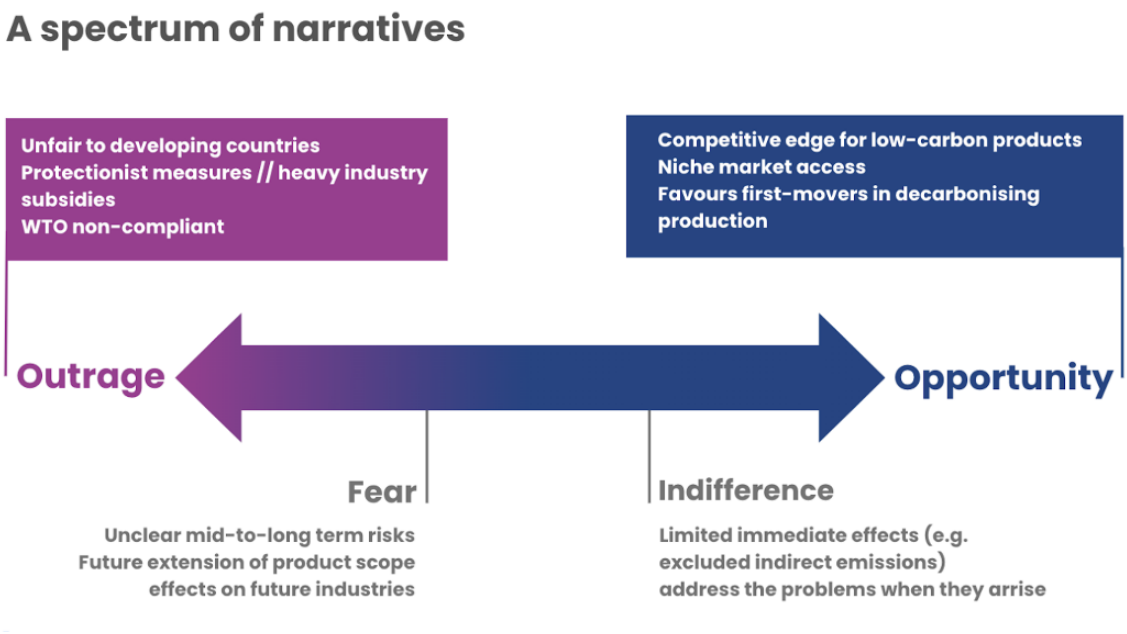
While all these studies have their limitations, they all share a similar concern, cited by many (for example, Perdana Vieille 2022; Oxfam 2021) that the CBAM shifts the economic burden to non-European countries, including low income countries.

Reactions and (lack of) consultation

Given these concerns, the CBAM formulation process has been accompanied by calls to support the most-affected countries. In line with Aggad et al.'s (2023) observation that the CBAM "departs from the principles of just transition and Common but Differentiated Responsibilities (CBDR) and Respective Capacities", there have been various calls for excluding low income countries (LICs) from the CBAM or exempting imports from the 46 countries that benefit from the EU's Everything But Arms trade scheme (Brandi 2021). Although these were discussed in the European Parliament, along with proposals to channel CBAM revenues towards climate finance in affected countries, these were ultimately rejected as part of the political compromise, reflecting differing views on the need to earmark revenues for specific uses (Marcu et al. 2024).

This has led to a range of reactions from third countries, depending on their exposure to CBAM in terms of current production and trade patterns. But reactions are also shaped by whether governments and the private sector see an opportunity to seize the 'green windows of opportunity' (Lema et al. 2020). Figure 2 illustrates the range of third country reactions to CBAM, ranging from outrage at one end, particularly at the unilateral nature in which CBAM was designed and likely effect of the policy, where South Africa stands out as being quite vocal (Roelf and Abnett 2024); to the opportunity seen at the other end of the spectrum by the likes of the government and firms in Morocco (for example, Jakob et al. 2024); and variants of fear and indifference in the middle. Fear and outrage are arguably the main sentiments, as very few producers or countries are in a position to decarbonise production within the timeline set by the CBAM.

Figure 2: The spectrum of reactions to CBAM



Source: Authors

These reactions reflect on the way in which the CBAM has been prepared and contribute to wider concerns that 'just transition' principles are being ignored, as well as those of Common but Differentiated Responsibilities as agreed at the Paris COP (UNFCCC 2021). With limited to no consultation with affected countries, the CBAM risks creating political fallout among its partner countries. Already in 2020, a European Parliament report on likely EU trade partner responses pointed to "the fact that, so far, they have had no dialogue with EU officials about the EU CBA[M] mechanism, either bilaterally or multilaterally", and drew the conclusion that the EU should expect "very strong negative reactions to measures that trading partners perceive as violating their sovereignty", even where countries agree with the CBAM measure in principle (EP 2020).

Overall, the reactions coming from developing countries signal that the EU's approach to CBAM has not well, or insufficiently taken into account the unique conditions of developing versus industrialised countries. This includes - in some cases - an outsized reliance on the EU as an export market for certain industrial goods, the, often, unique position of heavy industries in their economies (and their importance for access to foreign currencies), deeply uneven access to capital markets, and often more limited bureaucratic capacity to respond to externally imposed measures. All these factors constrain the ability of developing countries in their response, in different ways than industrialised ones.

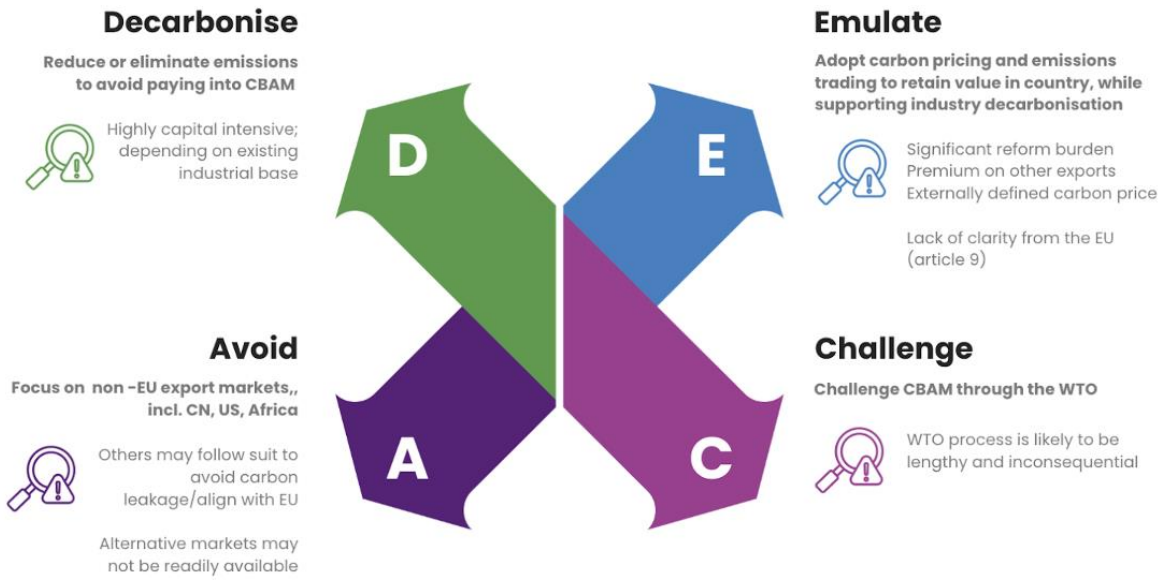
4. Third country responses for developing countries

Looking across countries, we explore four potential responses, summarised in Figure 3. The remainder of this section discusses each in turn.

Countries can use more than one strategy at a time, and can seek to strengthen their position by combining and or sequencing strategies over time. A country may, for example, focus on challenging, and avoiding in the short term, while also preparing to emulate - developing carbon pricing - in the medium term, and building a long-term pathway for decarbonisation and green industrialisation.

A fifth potential strategy we do not discuss is to 'do nothing'. Governments can choose to accept the outcome of CBAM, and allow their carbon-intensive exports to become less competitive on the European market, either directly, or in the event of more indirect emissions being included in the future. They may seek to absorb some of the costs by compensating affected businesses.

Figure 3: Four responses to CBAM



Source: Authors

D - Decarbonise

The first option, in line with the CBAM regulation objectives discussed above, is to adapt production methods and energy usage (and sources in case indirect emissions are included) to lower carbon emissions and thus limit exposure to the CBAM on exports to the EU.[4] Even if CBAM is unlikely to be the *main driver* of decarbonisation policies in third countries, with governments instead seeking cost-savings, environmental benefits and potential economic opportunities (Jakob et al. 2024), the CBAM arguably alters the cost calculation for investments

[4] In the preamble of the CBAM regulation it states: "While the objective of the CBAM is to prevent the risk of carbon leakage, this Regulation would also encourage producers from third countries to use technologies that are more efficient in reducing greenhouse gases so that fewer emissions are generated. For that reason, the CBAM is expected to effectively support the reduction of greenhouse gas emissions in third countries" (EU 2023).

related to carbon-intensive industries. In some cases, decarbonising early may even provide easier market access for low-carbon industrial goods.

Some countries may seek to industrialise in a green way from the start, leveraging their renewable energy potential to prioritise and attract investments into (export oriented) clean industrial production. This is the tone of a number of plans like the Africa Green Industrialisation Initiative (AGII), spearheaded by the government of Kenya, which seek to establish developing country-driven green growth pathways (Government of Kenya 2023), and is part of the hydrogen economy plans from countries like Morocco, Egypt and Namibia, which seek to establish new hubs of green energy intensive activities across the African continent focusing on both exports and future domestic and regional markets. However the ability to turn CBAM into a (future) competitive advantage, or to mitigate its effects by accelerating decarbonisation varies significantly across countries, and often depends on pre-existing energy transition policies and the ability to mobilise large scale infrastructure investments.

Morocco's fertiliser industry, for example, is advancing rapidly in the development of a 'green ammonia' plant using solar and wind energy to produce low-carbon fertiliser. Since Morocco lacks natural gas reserves, the state-owned OCP Group is dependent on imported natural gas-derived 'grey ammonia', facing high price volatility in recent years. In 2023, OCP announced a 7 billion dollar investment in on-site green ammonia production, which is reportedly entering into Front-End Engineering Design (FEED) phase late 2024 (Enterprise 2024), to start production in 2027. In April 2024, OCP successfully raised $2 billion through corporate bonds for its green investment programme, which includes its green ammonia plans (Laraki 2024). Moving into green ammonia production not only allows it to hedge against high natural gas prices (grey ammonia represented 21% of OCPs purchases in 2021) (Reed 2024), it could also position the company as an early mover in low carbon fertilisers, potentially creating opportunities for expanding into the EU market.

While Morocco is often used to illustrate the potential beneficial effects of CBAM, it is clear that very few, if any, other African countries are able to raise the necessary capital to rapidly decarbonise their industrial production.

In some cases, however, the prospect of CBAM may create new opportunities for renewable energy infrastructure development. **Mozambique**, for example, exports 97% of its aluminium production to the EU (Maliszewska et al. 2023). While CBAM will for the time being only cover direct emissions,[5] and not the electricity used in smelting, it has reportedly renewed interest in further investment in hydropower generation. Talks have been reopened to finance a new hydropower plant at Mphanda Nkuwa on the Zambezi river downstream of the existing Cahora Bassa dam where the potential CBAM effect on aluminium exports improves the likely commercial viability of the dam (Machado 2023). While Mozambique today already exports

[5] CBAM initially excludes indirect emissions for aluminium, iron and steel, and hydrogen, as certain compensation measures are in place to offset additional carbon cost paid by industries on electricity. Climate groups, however, are actively advocating for ways to include indirect emissions, as especially for aluminium these are a major part of embedded emissions.

hydropower to South Africa, its 950MW aluminium smelter Mozal currently imports coal fired electricity from Eskom in South Africa, based on a contract that expires in 2026. In anticipation of a future inclusion of indirect emissions in CBAM, sourcing electricity from hydropower, and investing in the necessary transmission infrastructure to connect available hydropower in the North with the demand from Mozal in the South of the country could position Mozambique as an important green aluminium producer, though this again requires large capital investments.

Yet it is also clear that many countries will struggle to leverage renewables for industry decarbonisation. In **South Africa**, Mozal's Australian parent company, South32, which owns and operates the Hillside Aluminium smelter, is also in need of lower-carbon electricity inputs. More broadly, South African iron, steel and aluminium industries are "woefully underprepared to comply with the CBAM during the transition period" with the carbon intensity of South Africa's metals exports far exceeding other metal-exporting countries such as India, Russia, and China (Maimele 2024). At the same time, in 2022, the South African iron and steel value chain employed 261,598 people directly and contributed some 1.5% to the South African GDP in 2015 (Maimele 2024). Even if South Africa is in the process of preparing a South Africa National Renewable Energy Master Plan (PCC 2023b), the above points reflect the importance of structural factors and path dependency - the degree to which access to renewable or fossil fuels has shaped energy policies in the past - but also the place of those resources in current politics, where the challenges of reducing reliance on fossil fuels in South Africa are multiple as Vanheukelom (2023) lays out.

But beyond addressing deeply ingrained economic and political structures, the transitions required to decarbonise entail long timelines and large investments. This leads to questions on how to best lower the cost of capital for renewable energy projects in developing countries, whether through 'financial de-risking', by transferring risk through financial mechanisms, or 'policy de-risking' (Lebdioui 2024). But the challenge for many countries is large, with debt costs adding as much as 24%–32% to the cost of utility-scale wind and solar projects (Lebdioui 2024). Overall, developing countries, including in Sub Saharan Africa are expected to spend a higher share of their GDP to achieve net-zero emissions by 2050 than advanced economies (Krishnan et al. 2022). Green hydrogen projects, crucial for the decarbonisation of iron and steel and fertilisers, also face much higher capital costs in developing countries than in Europe, which in the case of South Africa and Mauritania, for example more than offsets the comparative advantage they may have from solar irradiation and wind power potential (Agora Industry 2024). All this underlines the need for addressing the structural barriers to access to capital, and rethinking the international financial architecture to ensure fair opportunities between developing and developed countries (Stiglitz and Rodrik 2024)

Overall, the 'decarbonisation' response to CBAM may be one desired outcome of the EU, but is unlikely to be enough to trigger a change in investment, while the timescales necessary to adapt existing energy and production structures and raise investment for alternative production methods and energy sources likely means that laggards will be punished through the CBAM. Where countries are more prepared, this is a result of wider structural and political

factors that have already triggered a push towards renewable energy and decarbonising production but will give them a competitive advantage in the EU market.

The additional complication is that CBAM has been explicitly designed as a global measure, excluding any tools for differentiation in the application of CBAM. This creates a risk of creating conditions for 'competitive decarbonisation', but without any means to support the laggards, or economies that are less well positioned to decarbonise industries or attract investment in new green industrial production. This can further deepen inequalities, but also hold back industrialisation in low-income countries that lack the financial resources, technological capacity, and infrastructure to reposition their industries and industrialisation efforts to minimise the effects of CBAM.

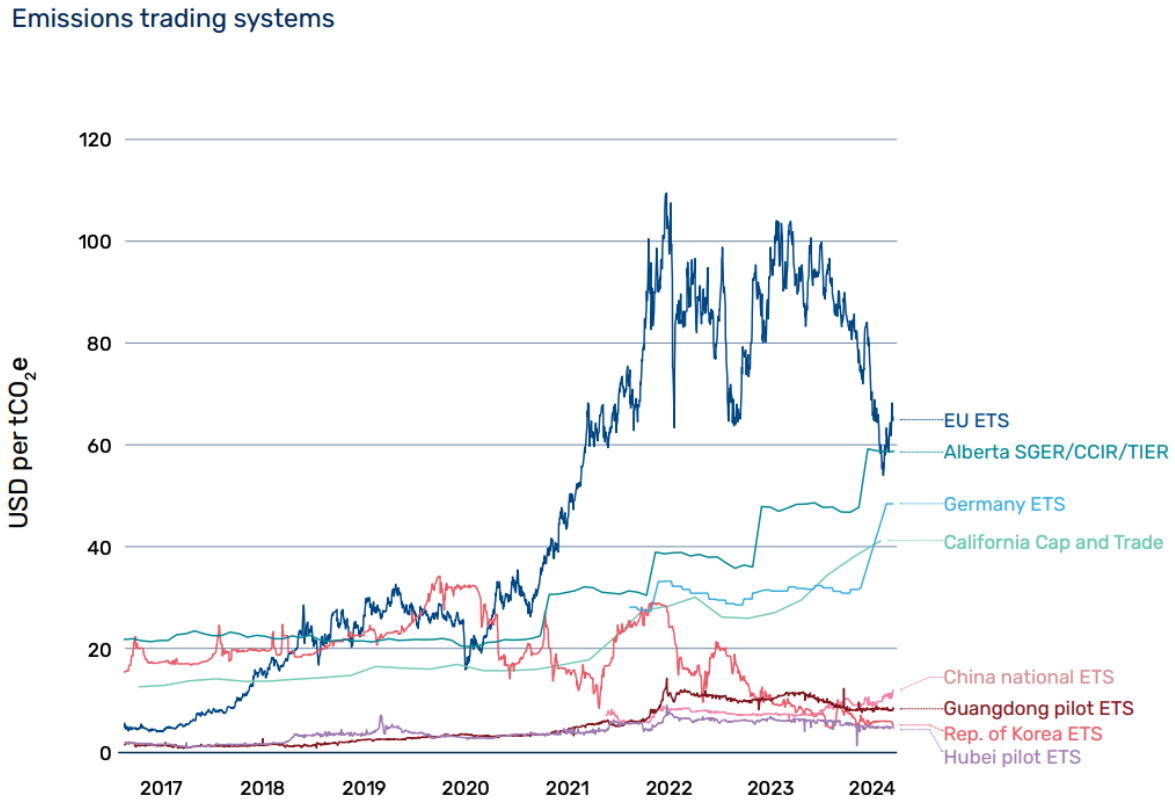
E - Emulate

A second strategy for CBAM-affected countries is to 'emulate' the EU ETS by adopting their own domestic carbon price. This would have the benefit of retaining carbon pricing revenues in the producing country and in some ways meet another EU objective of encouraging carbon pricing as a model for decarbonisation outside of the EU.

According to Article 9 of the CBAM regulation, an importer can offset "the carbon price paid in the country of origin for the declared embedded emissions. The reduction may be claimed only if the carbon price has been *effectively paid* in the country of origin." (EU 2023, italics added). The wording of 'effective payment' is important as the article also states that any rebates will be taken into account. Nonetheless, this opens up the opportunity for affected countries to tax and retain revenues on their CBAM-affected exports to the EU.

Some countries already have such a carbon tax, including South Africa. The challenge, and indeed one of the complaints against the EU, is that CBAM certificate prices will be set according to the carbon price in the EU, while domestic carbon prices reflect a different set of underlying factors. The South African domestic carbon tax is cited as being around $10/t of CO2 in January 2024, with expectations that it will rise to $30/t by 2030 and $120/t beyond 2050 (Maimele 2024). Given the EU carbon price averaged approximately $90/t in 2023 (ICAP 2024), and though it has been somewhat lower in early 2024 (Statista 2024a), the South African domestic carbon price is a fraction of the EU levels (Figure 4). The amounts needed to raise the carbon price to be comparable with the EU would therefore come with considerable financial and political cost, not least given the challenges already faced in those sectors in South Africa, including irregular electricity supply from the power utility.

Figure 4: Price of carbon across different Emissions Trading Systems (2017-2024)



Source: World Bank 2024

The prospect of the EU's CBAM gave a renewed sense of urgency to the development of India's own compliance market, which is set to be phased in over the next few years (Jaspal and Mukherjee 2024). First steps have been taken in its formulation in the form of a Carbon Credits Trading Scheme in 2023. Other countries like Morocco have announced plans to roll out a carbon tax, making reference to the EU's CBAM, while others yet like Botswana and Senegal are also considering this option (Baker et al. 2022).

Yet introducing an ETS (or even a domestic carbon tax) does not in itself ensure compatibility with the CBAM. Beyond the major price difference between the EU ETS and other carbon markets, the challenges are partly technical (for example, how to align standards, methodologies and reporting schedules), but also relate to different objectives and starting points. The EU's current phase of the ETS is directly linked to its 2050 net-zero emissions target, meaning it seeks to reduce both total emissions and emissions per unit of production. In most developing countries, however, the purpose of carbon pricing is first and foremost to limit emissions per unit of production, and maximising energy efficiency as industrial production is being scaled up (Jaspal and Mukherjee 2024; Jaspal and Miller 2024). These different timelines and objectives may have an effect on what is considered an optimal market mechanism, and critical parameters like emissions ceilings and timed (e.g., annual) reduction factors in order to bring down emissions. India's current net-zero target, for example, is 2070, 20 years after the

EU's target date. Finding a mutually beneficial arrangement between CBAM and nascent carbon markets in developing countries will therefore be a difficult task.

While CBAM compliance can be built into the design of third country systems to some extent, taking it as the starting point may not be the most suitable basis for creating a functional domestic carbon market. First, developing country carbon pricing mechanisms tend to have different objectives than the EU ETS. Rather than focusing on emissions reductions, developing countries often see carbon pricing as a mechanism for generating tax revenue, or a way to attract green investments and build market competitiveness. Second, in order to effectively incentivise low-carbon technologies, carbon pricing mechanisms and ETS' need to reflect the energy and socio-economic conditions, as well as the industrialisation and decarbonisation pathways and priorities for the countries in question. These will have a critical effect on design choices and calculations, including market stability mechanisms (price managements), and phase-in periods for new carbon markets. Simply put, the price of carbon needs to be high enough to matter for businesses, creating incentives and competition for lowering emissions, but low enough to be manageable and commercially viable so as to not interfere with industrialisation objectives. In the EU, for example, the carbon price was very low for a long period of time. This gave firms a chance to adapt through time, yet oversupply in the early stages also meant that effectiveness remained limited, leading to the introduction of a Market Stability Reserve, to regulate the supply of allowances and mitigate extreme price fluctuations (Dimitrova 2024b). Finding a mutually beneficial arrangement between CBAM and nascent carbon markets in developing countries will therefore be a difficult task.

The EU recently increased its Carbon market diplomacy efforts. The European Commission's Taxation and Customs Union (DG TAXUD), in July 2024 visited India, reiterating the EU's willingness to listen to third country concerns, and even explore efforts to "adapt and improve the CBAM measure" (EC 2024). The Commission also recently launched an international task force on international carbon pricing and markets diplomacy under its climate action Directorate General, to structure its engagement and provide assistance to third countries (Simon 2024), but it is not yet clear if (and how) this task force will engage on CBAM.

While for large economies, like India, the rollout of their own ETS, may be a viable option, and a basis to enter into negotiations on compatibility with the EU, for smaller economies, this is less likely to make sense. For many African economies, for example, which produce relatively small amounts of CBAM covered goods, often in one or two main sectors, introducing their own ETS could be a major administrative challenge and if it is done in an uncoordinated fashion, it could lead to further policy fragmentation across the continent. In those cases, a domestic carbon tax may be a more manageable option. Developing countries could also consider a regional approach to developing carbon pricing and emissions trading.

Overall, the *external logic* of CBAM is starting to come into play, both in the reactions of third countries looking to emulate the ETS, so as to mitigate the adverse effects of CBAM, and in the external engagement of the European institutions during the CBAM transition period. What remains unclear, however, is what the room for negotiation is on alignment between EU and third country systems, especially since the terms of *internal logic* of the CBAM (ETS carbon

price, synchronisation with the phaseout of free allowances) is so central to the design of the mechanism. The risk therefore is that on CBAM, engagement may be limited to more technical, secondary issues, while the likely high difference in the cost of carbon between the EU and other countries remains off the table.

This then begs the question whether the external logic in fact offers genuine opportunities for most developing countries, and whether emulation is a viable option for countries looking to industrialise today.

C - Challenge

Although the difficulties of decarbonising and emulation strategies themselves have the potential to partially offset the effects of the CBAM, there is a deeper sense that not only has the communication around the CBAM been lacking, but that it also goes against international rules and the underlying principle of offering special and differential treatment for low-income countries. Indeed, the 2021 European Parliament resolution on the CBAM made explicit reference to least developed countries and small island developing states and their need for "special treatment in order to take account of their specificities and the potential negative impacts of the CBAM on their development" (EP 2021).

Much hinges on the UNFCCC agreement and WTO rules. As Marcu et al. (2024) raise, according to Article 3.5 of the UNFCCC, "measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade." To some observers, the CBAM is a disguised non-tariff barrier to trade, designed to protect EU industries, thus offering the WTO as a channel to challenge the EU.

Aggad et al. (2023) cite four sets of relevant rules under the GATT that could be invoked to challenge the CBAM, depending on whether it is considered an internal tax or regulation, or rather a border measure, where it could be challenged on the basis of whether or not it discriminates between 'like' products. However, regardless of the interpretation of those rules, Article XX of the GATT offers exceptions for measures that are "necessary to protect human, animal or plant life or health (b), or natural resources" (WTO 1995) - this is arguably the way in which the EU intends to defend its use. Interestingly, though the aim here is not to discuss CBAM revenue use, Marcu et al. (2024) suggest that "channelling CBAM revenues internationally… strengthens CBAM's case under Article XX, while options that retain revenues within the implementing jurisdiction will fare worse in a GATT Article XX defence", where options that retain revenues domestically might be interpreted as evidence that the CBAM aims to protect competitiveness more than it aims to protect the environment.

Nonetheless, some suggest that affected countries should start by submitting a formal complaint to the EU and explore disputing the CBAM at the WTO, even while recognising the current weaknesses of the WTO dispute settlement mechanism (for example, Maimele 2024; Baker et al. 2022). Although South Africa is not the only country to be considering this route, the

hope expressed by some is that individually, or collectively with other affected countries, there may be a way to negotiate with the EU and other important trading partners about measures like CBAM by building up pressure through a combination of formal complaints and diplomacy (Maimele 2023).

One part of the challenge, raised by Baker et al. (2022) and Lamy (2023) is the lack of a suitable forum to discuss the interlinkages between climate, trade and development between the EU and developing countries. And while countries may seek to challenge the EU, as Baker et al. (2022) point out, CBAM or similar measures are also being considered by other major economies such as Japan, the US, UK and Canada. That then links to the final strategy - the possibility of diverting exports from the EU to other markets.

The other part of the challenge is that outside the WTO forum, most of the diplomatic engagement on CBAM takes place bilaterally. This is linked to the non-discriminatory nature of CBAM, in that it does not provide a basis for differentiation, but while there are dedicated diplomatic channels for major economies,[6] for developing countries this can emphasise uneven power relations. India, South Africa, Indonesia, for example have all been vocal about their fundamental concerns and opposition regarding CBAM (Creamer 2024; Reed et al. 2024; Bounds 2024), including the options of operationalising article 9, yet there is no collective platform through which they engage the EU on the practicalities of CBAM implementation, and shared concerns between developing countries.

An ad-hoc coalition between major developing countries (for example, Brazil, India, South Africa, and Indonesia) would send a powerful signal, and may be easier to develop common positions, than through existing platforms like the BRICS and G20, which also include China. Another way to address this could be through regional organisations. On the African side, the Africa Continental Free Trade Area (AfCFTA) could be a platform to organise a collective response to CBAM and other unilateral trade measures, however at the moment it does not have the mandate, or official competences to do so.

In short, while some efforts have been made to challenge the CBAM, through the WTO, or bilaterally, these have not been successful in channelling developing country concerns. Bilateral channels exist, yet without a clear coalition of developing countries, fragmented efforts are unlikely to move the needle with the EU.

A - Avoid

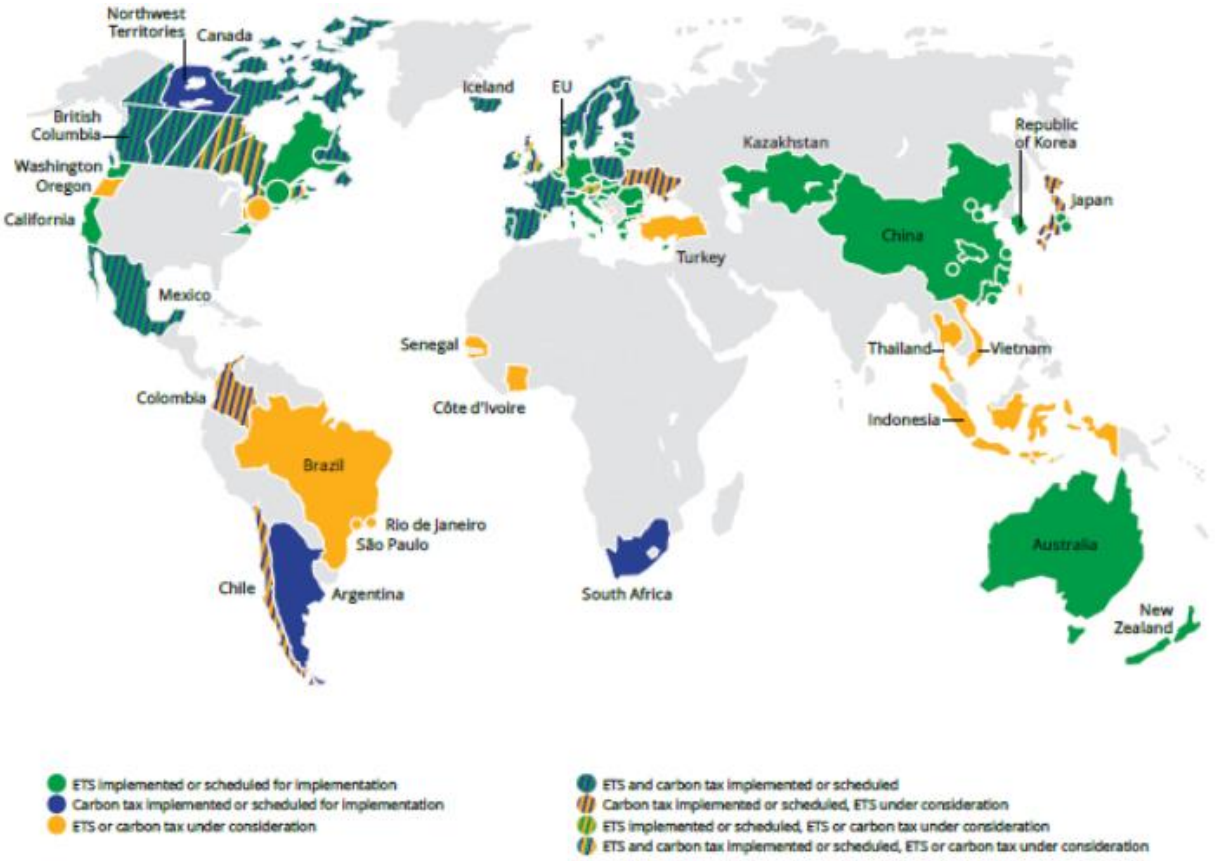
If no other strategy is adopted, then exports from low income countries of CBAM-affected goods will lose their competitiveness as importers seek low-carbon (and thus low-CBAM) producers, shifting demand from high-carbon producers of CBAM-products, thus forcing them

[6] India has a direct line with the EU through the Trade and Technology Council, which in 2023 reportedly served as a forum for discussions on CBAM, identifying it as a part of the workstreams for the platform (Suneja 2023). The United States, engages in formal discussions with the EU as part of the negotiations for a Global Arrangement on Sustainable Steel and Aluminum (Mulholland et al. 2024), while with China, multiple high-level discussions have been organised on China (EEAS 2023).

to shift their supply to less demanding markets. Aggad et al. (2023) suggest that "a reasonable share of those commodity exports" would shift to other markets, especially China and India. In their model, "Africa's exports of fertiliser to China and India are expected to increase by 0.30% and 5.14%, and exports of iron and steel to these countries by 9.34% and 12.82%", with their global model implying a net benefit for the Chinese economy as it can take advantage of competitive (but carbon intensive) CBAM-affected goods. Indeed, a glance at global markets for aluminium show that although the EU is a major market, other major importers include China, South Korea, India, Turkey and other 'smaller' importers (Statista 2024b) that nonetheless might absorb African aluminium exports. Similarly for fertiliser, demand outside the EU is on the rise, offering potential alternative markets (Growth Lab 2024a).

However, as Maimele (2024) points out, altering supply chains is expensive and time-consuming for firms, and may hit multiple other barriers, including limited industrial capabilities for further processing (outside existing industrial centres), and logistics challenges, especially to smaller importers. Further, CBAM-like measures or carbon taxes are being proposed in countries around the world (Figure 5) reducing the scope for finding new markets without combining this with some degree of decarbonisation over the medium term.

Figure 5: Existing, emerging and potential regional, national and subnational carbon pricing initiatives (ETS and tax)



Source: CTC 2024

Paradoxically, a combination of the CBAM and the African Continental Free Trade (AfCFTA) could help trigger greater intra-African trade in CBAM-related products as the continent seeks to industrialise through the creation of regional value chains, including for automobiles and fertiliser-fed agriculture, for example. Some indeed suggest that the AfCFTA may offer a means to offset some of the potential CBAM effects, by increasing intra-African demand for CBAM covered goods (e.g., Rumble and Gilder 2024). Yet demand for CBAM covered goods from African countries today is just a small share of total global demand. African countries represent just $2.1 billion of $35 billion global imports of nitrogen fertilisers (including from other African countries), and $5 billion of the global import market of $230 billion for aluminium and $20 billion of global imports of $545 billion for iron and steel (Growth Lab 2024b). With AfCFTA implementation and accompanying investments, this demand could further rise.

Overall, while diverting exports from the EU to other markets may offer a short-term solution for those firms able to find new customers, the gradual move of more and more countries towards carbon taxes and similar instruments suggests that in the medium term, the space for such a strategy is likely to diminish. Conversely, trade diversion in carbon intensive goods, may also not be in the interest of the EU, as it would also lead to further concentration of trade dependencies on countries like China and the US, at a time when the EU is looking to diversify its trade relations. As such, 'avoid' appears to be an unattractive, or high-risk strategy for all parties involved.

5. Conclusions and recommendations

The introduction of CBAM has been a consistently divisive issue. The transition period, while meant to create the time and space for countries to adapt to the changing environment, is often seen as offering an unrealistic timeline for many developing countries to develop policies to mitigate the effects of CBAM. As developing countries contemplate their response strategies, they need to think both *short term* - how to prepare their industries for trade under CBAM from 2026 onward, as well as *long term* - how to position their industrial and trade policy in a decarbonising global economy.

CBAM however presents a number of major problems, especially for low-income countries. As a global, non-discriminatory measure, CBAM sets terms that will equally apply to imports from major industrial centres like the US and China, as well as countries that have one or two CBAM covered exports, like Mozambique, and nations that are in the process of expanding industrial production, like Indonesia and India. This one-size-fits-all approach, while understandable, from a carbon leakage point of view, creates the perception of an unfair disadvantage for those countries, with the EU 'kicking away the ladder' (Chang 2002), for industrialisation, or imposing constraints that will further deepen inequality between industrialised and developing countries.

Part of the challenge lies in a misalignment between internal and external objectives of the CBAM. While the EU's internal logic - shielding European producers against carbon leakage by applying the ETS price at the border - is straightforward and predictable, the external logic -

creating incentives for carbon pricing and exporting the EU's model of industry decarbonisation - is not. For some developing countries, 'emulating' European systems, applying a carbon price (or tax), could be a viable strategy in principle, yet in practice, the design of CBAM leaves very little space for effective policy design, by predefining both the timeline, and the price of carbon to be used.

The space for adapting CBAM is likely to be rather narrow. EU officials emphasise that the transition period serves as a 'pilot and learning phase' for all involved, yet any proposal for differentiation will likely be met with strong pushback from European industries. CBAM is one of the cornerstones of the reformed EU ETS, which is set to increase the cost of carbon - and therefore the risk of carbon leakage considerably. This means that while a lot needs to be clarified on *how* CBAM is to be implemented, there may be less options for changing *what* will be required, and *who* will be targeted.

All this has strategic implications for developing countries and how they respond to the roll-out of CBAM, both in the short and long-term. In the short term, they must prepare their industries to meet CBAM requirements, ensuring compliance with new trade conditions while avoiding (if possible) internalising the penalties. Simultaneously, they should engage diplomatically to advocate for adjustments that reflect their unique economic realities, such as longer transition periods or differentiated policies. Over the long term, however, the real challenge lies in reshaping their industrial and trade strategies to align with a decarbonizing *global* - not just EU - economy, investing in green technologies, and positioning themselves for a more sustainable future.

Although this paper has examined potential different response mechanisms, developing country governments should seek to transcend the fragmented, bilateral discussions and assert their own agenda on carbon pricing and carbon leakage. Rather than simply reacting to the terms set by wealthier nations, they need to shape the conversation around the specific challenges and opportunities of low-carbon, energy intensive industries. This calls for:

1. Coalitions to advocate for fairer, context-specific solutions, such as flexible timelines and alternative frameworks for addressing carbon leakage. Given the shortcomings of the WTO, countries could call for a new (ad-hoc) forum, or make use of existing regional fora, such as the AfCFTA. One challenge will be to develop scenarios that do not lead to a lowering of ambition to decarbonise EU industries, some of which are calling for greater flexibility in the EU ETS on Carbon Capture, Utilisation and Storage (CCUS), or even a slower phaseout of free allowances.
2. More research on the unique risks posed to developing economies caused by introduction of the CBAM, but also on the (climate) finance requirements for a low-carbon industrialisation pathway in those countries.
3. Developing country-driven scenarios for carbon pricing mechanisms, recognising the different starting points and unique conditions of developing economies, while also exploring other ways to recognise (and price) efforts towards decarbonisation.

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