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Zero Carbon Analytics

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Carbon Border Adjustment Mechanisms require coordinated global action

Key points:

- A Carbon Border Adjustment Mechanism (CBAM) charges a tariff on imports based on their emissions. Paired with a domestic carbon price, it aims to prevent carbon leakage – companies moving their emitting activities to other countries – and lead to an overall reduction in emissions.
- In 2023, the EU started its CBAM – the first to be implemented globally. This was met with a strong reaction from other countries, such as China, South Africa, India and Brazil, which criticised the mechanism for placing an unfair burden on developing countries and for breaking WTO rules.
- The EU CBAM will likely only reduce emissions slightly on top of the EU emissions trading system currently in place. An EU carbon price of USD 88 on all emissions reduces emissions by 21%, and the introduction of the CBAM only adds another 1.3 percentage points.
- Modelling suggests that the EU CBAM could cost developing countries USD 10.2 billion, with some countries, like Zimbabwe and India, most exposed.
- The introduction of the EU CBAM has led to the announcement of more climate and international trade measures worldwide as countries try to limit their exposure to it. Thus far, this has resulted in an uncoordinated and confusing policy landscape.
- To ensure that climate and trade policies work to reduce global emissions, they should be aligned with UNFCCC principles and should provide exemptions to avoid placing additional burdens on developing countries.

A Carbon Border Adjustment Mechanism is a carbon tariff on imports

A Carbon Border Adjustment Mechanism (CBAM) is a policy that charges a carbon price on certain types of imports based on the amount of carbon emissions associated with their production.

When paired with domestic carbon pricing, it aims to "level the playing field": A CBAM aims to ensure that when a carbon price is put in place, the higher prices for carbon-intensive domestic goods do not lead to more imports of cheap, carbon-intensive goods from countries where carbon taxes are not in place. It aims to prevent 'carbon leakage', where carbon-intensive activities are moved to another location with less regulation on emissions, instead of being reduced, resulting in no overall decrease in emissions.

In the absence of domestic carbon pricing, a CBAM functions as a border tariff targeting carbon-intensive production and is not likely to contribute to further emissions reductions.

EU CBAM has sparked discussions on climate and trade

In 2023, the European Union started implementing the EU CBAM, the first to be implemented globally. It is designed to ensure EU policies limiting emissions in specific sectors are not undermined by the import of carbon-intensive goods from outside the EU. The European Union writes that the CBAM also aims to "contribute to the promotion of decarbonisation in third countries."

This has led to a wide range of reactions from different countries, including the development of new CBAMs and other trade policies, as well as harsh criticism.

At COP28 in Dubai, countries expressed their concerns over the EU CBAM. There was an attempt by the BASIC group of countries – made up of Brazil, South Africa, India and China – to introduce "unilateral trade measures related to climate change" as a point on the COP agenda, which "could have resulted in an impasse in the climate talks." The proposal received support from 134 countries, including key developing country negotiating blocs and the G77, but was not included in the final agenda. However, according to E3G developing countries' sentiment towards CBAM and similar initiatives was included in the COP28 final text: "Unilateral measures should not lead to unjustifiable or arbitrary discrimination or restriction in international trade."

Throughout 2024 and in the lead-up to COP29, discussions on trade measures and climate policy have ramped up. In June 2024, the BRICS group of countries[1] released a statement condemning the introduction of trade policies "under the pretext of environmental concerns," such as "unilateral and discriminatory" CBAMs. This statement was also included in the declaration for the BRICS Summit in October 2024.

Additionally, the BASIC group, chaired this year by China, is again pushing to have trade agreements on the agenda at COP as a separate agenda item, potentially resulting in disputes over trade stalling climate negotiations.

Application of the EU CBAM is ramping up

The EU CBAM was introduced as a component of the European Green Deal, a package of policy initiatives aiming to help the EU reach climate neutrality by 2050. As part of this package, the EU has implemented an emissions trading scheme (ETS), which is a cap-and-trade system to reduce emissions by putting a price on carbon. The ETS allocates a specific amount of emissions allowances to different participants in different industries, including electricity producers, heavy industry and intra-EU aviation. Over time, the cap is lowered and the amount of GHGs these industries are allowed to emit is reduced.

Currently, some ETS participants receive free emissions allowances as they are considered exposed to external trade. The allocation of free allowances means these businesses do not have an incentive to reduce their emissions and can even profit from selling their emissions allowances, if, for example, production levels fall.

The implementation of the EU CBAM is "aligned with the phase-out of free allowances" under the EU ETS, as both moves reduce opportunities for 'free' emissions and therefore"support the decarbonisation of EU industry." It will take until 2034 for the EU CBAM to be fully phased in and for the free allowances to be fully phased out.

[1] The BRICS group of countries is made up of Brazil, Russia, India, China, South Africa, Iran, Egypt, Ethiopia and the United Arab Emirates.

The CBAM entered its 'transitional phase' on October 1 2023, which will end at the end of 2025. During this time, importers of affected goods are required to report on emissions but nothing will need to be paid for embedded emissions, which refers to the carbon emissions generated in the production of goods.

From the start of 2026, the 'definite period' will begin and importers will have to purchase and "surrender" certificates corresponding to the carbon emissions embedded in imported goods impacted by the mechanism. This will start off as a small obligation, with businesses only needing to purchase certificates equivalent to 2.5% of their emissions in 2026, and will gradually be ratcheted up to cover 100% of emissions in 2034.

At first, the CBAM will apply to imports "whose production is carbon intensive and at most significant risk of carbon leakage: cement, iron and steel, aluminium, fertilisers, electricity and hydrogen." When the CBAM is fully phased-in, this will account for over 50% of emissions in sectors covered by the ETS. It is also expected that the number of industries included in the CBAM will expand following further assessment to include, for example, ceramics and paper industries.

The complexity of global trade interlinkages and national policies means that the understanding of what exactly the CBAM would mean is varied and impacts are not always well understood. While a resolution adopted by the European Parliament "stresses that Least Developed Countries and Small Island Developing States should be given special treatment" as the CBAM could potentially impact their development, current CBAM regulation does not provide exemptions from the mechanism for any developing countries.

The EU CBAM is projected to only slightly reduce emissions

The EU CBAM is anticipated to slightly reduce emissions when implemented in alignment with a domestic carbon price.

A 2021 study conducted by UNCTAD estimated that a carbon price set at USD 88 per tonne of carbon would result in CO2 emissions being reduced in the EU by 704 million tonnes.[2] A CBAM implemented on top of this would reduce emissions outside the EU by 59 million tonnes, but would *increase* emissions in the EU by 13 million tonnes - a net reduction in emissions of just 45 million tonnes. Therefore, a CBAM results only in a slightly improved overall emissions reduction - equivalent to 6% of the emissions reductions from the carbon pricing mechanisms itself. While an EU carbon price of USD 88 reduces global emissions by 21%, the introduction of the CBAM only adds another 1.3 percentage points.

However, at the same carbon price, a CBAM would reduce carbon leakage by more than half (55%), from 15.1% when only carbon pricing is used to 6.9% when a CBAM is in place.

Other studies have shown similarly modest reductions in emissions:

- The Asian Development Bank (ADB) calculated that implementing both the ETS and CBAM with a 100 euro carbon price would reduce global carbon emissions by 1.26%, with the CBAM contributing approximately 0.2% of these emissions reductions, and this would be accompanied by a 0.4% reduction in global exports to the EU.
- The African Climate Foundation and the London School of Economics (LSE) calculated that, with a carbon price of 87 euros covering all products, a CBAM would only result in a 0.002% additional reduction in global carbon emissions. This

[2] Note: The model does not consider the knock-on benefits from a CBAM, like incentivising clean energy investment. Additionally, the model used considers slightly different products than those covered in the CBAM and has implemented exemptions for Least Developed Countries and Small Island Developing States. The modelling assessment was also done prior to the UK leaving the EU.

suggests that a CBAM encourages a shift in carbon-intensive production between countries more than it encourages an overall reduction in emissions.

- The European Commission estimated in 2021 that its initial proposed CBAM design would reduce emissions from affected EU industries by 1% by 2030, while global emissions from these industries would be cut by 0.4% over the same timeframe.
- A 2009 study by the Brookings Institution and Syracuse University found that any emissions reduction resulting from a CBAM would occur not by incentivising the trade of less carbon-intensive goods, but primarily due to decreased international trade.

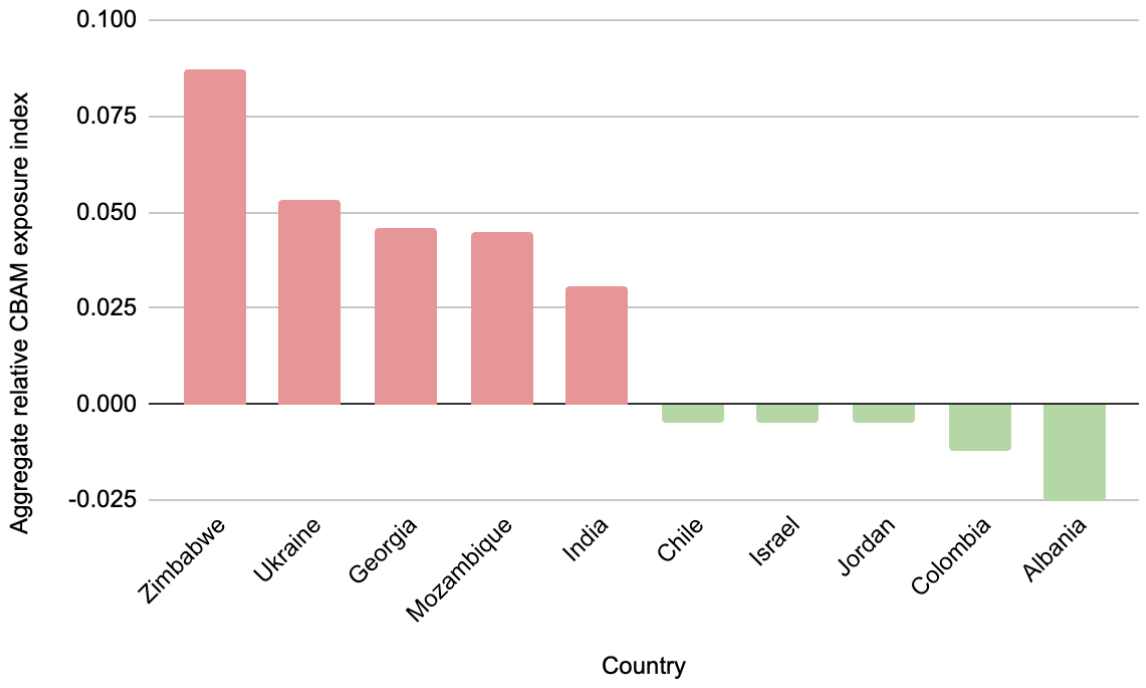
In the studies above, estimates of overall global emissions reductions do not consider the knock-on benefits from a CBAM, such as incentivising clean energy investment.

Projected economic impact of the EU CBAM

A fully implemented CBAM should incentivise investment in emissions reductions for carbon-intensive exporters, so they are not required to pay as high tariffs at the EU border. Additionally, it allows exporters whose production of goods is relatively 'cleaner' or less carbon-intensive to capture higher margins.

Based on current emissions intensities, the World Bank's Relative CBAM Exposure Index shows that Zimbabwe, Ukraine, Georgia, Mozambique and India will be the countries most exposed to the CBAM. Countries such as the US, Australia and the UK will likely have little-to-no exposure to the CBAM. Some countries, such as Colombia and Albania, are anticipated to gain more competitiveness as they produce products covered by CBAM in a way that is cleaner than the EU average.

Figure 1. Countries most and least exposed to the EU CBAM



Source: World Bank, 2023

The 2021 UNCTAD study highlighted that developing countries could lose USD 10.2 billion in income due to the implementation of the EU CBAM. Non-EU countries are anticipated to lose USD 14.2 billion, while the EU gains USD 5.9 billion. Overall, there is a net income loss of USD 8.3 billion.

Anticipated impacts in other regions include:

- **China**: Despite accounting for less than 2% of its total exports to the EU, China's exports of CBAM-covered products are worth around USD 7.2 billion. China's steel and aluminium sector would be most affected, with an estimated 4-6% - equivalent to USD 200 to 400 million - increase in export costs for the steel industry.
- **Korea**: Korean steelmakers argue it will cost USD 2.2 billion to align with the EU's CBAM, necessitating government support.
- **India**: CBAM-covered goods to the EU comprised 9.91% of India's total exports in 2022-2023. The Centre for Science and Environment calculates that with carbon priced at EUR 100 per tonne, the CBAM would impose a tax of 25% on average, which could cost India USD 1.7 billion, or 0.05% of its GDP.
- **UK**: The UK Steel industry estimated the EU CBAM would cost steel importers 37.50 euros a tonne.
- **Africa:** A study conducted by the African Climate Foundation and the London School of Economics - and cited by Akinwumi Adesina, president of the African Development Bank, in criticism of the EU CBAM - estimates that, once fully implemented, the EU CBAM could reduce African GDP (at 2021 levels) by 0.91%, equivalent to USD 25 billion, according to one model. Another model also used in the study anticipated smaller impacts, with the CBAM "forecast to reduce the GDP of no single African country by more than 0.18%".

Ultimately CBAM's impact on other economies will depend on how other players globally respond to its implementation. The more countries decarbonise their exports to the EU, the less they will feel its impacts and the greater their margins. Some countries are already considering carbon pricing and other mechanisms that will reduce their exposure to the CBAM.

Announcement of the CBAM has sparked strong reactions

While the EU supports the introduction of the CBAM as a mechanism to increase climate ambition both within and outside the EU, not all countries share this perspective.

The CBAM has been perceived as a protectionist measure, particularly by the African negotiating group and BRICS. Criticisms have focused on two areas: the EU CBAM possibly being in violation of World Trade Organization (WTO) rules and burdening developing countries.

While the EU CBAM has been designed to be compliant with WTO rules, not all countries agree. Countries such as China, Brazil, India and South Africa have criticised the EU CBAM at international fora, including the WTO, for being a unilateral measure – the EU intends to implement it independently and "without requiring consensus or agreement from other countries."

India's Finance Minister Nirmala Sitharaman has denounced the CBAM as a "trade barrier". Brazil has strongly opposed the policy due to it being "discriminatory" and has warned that it may hamper global climate efforts. However, the EU is "confident the measure would survive a possible challenge at the World Trade Organization because it applies to domestic producers as well imports," according to the Financial Times.

Developing countries have argued that they are disproportionately burdened by the CBAM, hindering economic growth and "further take[ing] away the ability of developing countries to finance decarbonisation". As a major exporter, China also strongly opposes the policy. The EU CBAM will expose a lot of Chinese exports to tariffs and it is likely that "similar measures from other countries including the US, UK, Canada and Japan may amplify the exposure of Chinese exports to border adjustment taxes."

The domino effect

The introduction of the EU CBAM has triggered, both directly and indirectly, a cascade of carbon pricing announcements from other countries. Countries are aiming to reduce their exposure to the CBAM by introducing their own carbon pricing mechanisms and incentivising the production of less carbon-intensive products.

Resources for the Future wrote that implementation of a CBAM could "lead to a virtuous cycle, where more and more countries adopt carbon pricing".

The carbon taxes and emissions trading schemes currently in effect worldwide cover almost a quarter of all global emissions. As of September 2024, there were "78 different carbon pricing and taxation mechanisms in the world," according to WTO Director-General Ngozi Okonjo-Iweala. Between 2009 and 2022, the WTO was notified of over 5500 trade measures linked to climate objectives.

Box 1. Policy responses to the EU CBAM

United Kingdom

In October 2024, the UK government confirmed that it will introduce a CBAM for some sectors from January 2027, with the primary aim of addressing the risk of carbon leakage. The UK CBAM will operate similarly to the EU CBAM but with some differences in the sectors covered. For example, the UK CBAM will not cover imported electricity.

There have been calls for better alignment with the EU CBAM, "suggesting that this would reduce the economic risk to the UK." Already the UK steel and energy industry has successfully demanded the UK government align EU and UK mechanisms more closely following the closure of Port Talbot steel works in 2024.

United States

There has been ongoing debate in the US about potentially implementing a CBAM. However, without a unified domestic carbon pricing mechanism a CBAM would not be able to accurately reflect the emissions-related costs borne by US producers. Without carbon pricing, it would likely only work as a tariff costing foreign exporting countries without requiring domestic producers pay the same fees – therefore not contributing to overall emissions reductions.

There has been much activity in Congress focused on implementing a CBA-like mechanism. Multiple bills to enact a US version of a CBAM have been introduced, including the Republican-endorsed Foreign Pollution Fee and the Democrat-sponsored Clean Competition Act. Recent statements from Republicans Donald Trump and JD Vance have defended tariffs against dirtier producers to protect US industry.

Canada

The Canadian government launched a consultation to explore establishing its own CBAM in 2021.

Australia

In Australia, the government launched a review to assess the potential of a CBAM to prevent carbon leakage. The recommendations are due to be presented before the end of 2024.

Fraying trade relationships between major blocs are driving developed and developing economies to consider their own CBAMs and carbon taxes. The EU has suggested that India consider setting its own carbon price or CBAM to reduce tariff payments to the EU. Malaysia's Investment, Trade and Industry Ministry has been advised to "think about adopting a carbon tax or carbon pricing more broadly, but also consider adopting its own Malaysian CBAM," with a pilot in the steel industry.

However, only one of 80 low and lower-middle income countries has implemented a carbon price. Implementing a carbon price could help countries avoid paying higher CBAM fees as exporters will be incentivised to reduce the carbon-intensity of their goods. This raises concerns that they are unprepared for the end of the EU CBAM transition phase in 2025.

Lacking coordination

The rapid introduction of various carbon pricing mechanisms has so far lacked coordination, resulting in an increasingly confusing global trade landscape. There are also wide disparities in carbon pricing among countries, ranging from as low as USD 6 per tonne in South Korea to around USD 80 per tonne in the UK and EU in June 2024.

Governments and stakeholders have expressed concerns that the "evolving patchwork" of national plans could undermine climate action, by fragmenting trade and "fail[ing] to provide businesses with the predictability and assurances they need to drive transformation of production and supply chains."

The International Institute for Sustainable Development (IISD) warns that because every CBAM regime will be different to comply with national policies, there is a risk that exporters will have to comply with many different requirements, including the measurement, reporting and verification of the carbon embedded in their goods.

This would make it difficult for developing countries and small producers to meet the high cost of compliance, potentially excluding them from the marketplace. This could restrict international trade, with knock-on impacts for poverty alleviation and sustainable development.

Box 2. Not all CBA mechanisms are made the same

The label 'CBA' (carbon border adjustment) can be applied to a wide range of mechanisms. The IISD suggests six key factors in how a CBAM is developed that can greatly affect its potential impact:

1. **Trade scope:** Will the tariff be charged only for imports, or also provide rebates for exports?
2. **Country exceptions:** Will there be any tariff exceptions for specific countries, such as developing countries or countries with more ambitious climate policies?
3. **Scope of coverage:** Will the mechanism cover only 'direct' emissions, or also 'indirect' emissions from energy used in the production of products and 'precursor' product emissions embodied in imported CBAM goods?
4. **Carbon accounting methodologies:** How will the carbon intensity of products be measured and defined?
5. **Credit for foreign action:** If a foreign producer is already subject to a carbon price or climate-related fee in their own country, will this be considered and compensated for?
6. **Use of revenues:** How will the funds generated from the CBAM be used? Sending the money back sends a strong signal that the regime was not about protecting domestic producers and could compensate for the need for compliance.

A CBA mechanism would need to be designed to complement distinct national policies, as well as inevitable costs for foreign producers arising even in the "most thoughtfully crafted BCA regime."

Moving discussions on climate and trade forward

As in previous years, trade-related climate measures are likely to be brought up during discussions at COP29, as countries express their differing views.

There is a need to create a clearer understanding of the impacts of implementing the EU CBAM, as well as other potential climate and trade measures. International cooperation can help set agreed on principles and best practices for the development of CBA mechanisms, helping to prevent future trade frictions. Without a unifying trade-climate framework, this will lead to prohibitively high costs that disproportionately burden the poorest countries and smaller firms.

Climate and trade goals can be aligned in a way that prioritises fair economic relations and embodies the UNFCCC principles, including "common but differentiated responsibilities and respective capabilities and their social and economic conditions."

The WTO released a report in October 2024 that outlines "pathways for coordinated approaches on climate action, carbon pricing, and the cross-border effects of climate change mitigation policies with a view to achieving global climate goals." The International Chamber of Commerce (ICC) has also released a set of "global principles" to guide countries in introducing their own CBAMs and avoid disjointed mechanisms. The principles highlight that CBAMs should support Paris Agreement goals as "the primary objective," ensure WTO compliance, respect UNFCCCC and Paris Agreement Principles, and provide targeted exemptions for most vulnerable countries.

Existing and future climate finance commitments and obligations need to be met to enable developing countries to bear the costs of decarbonisation and compliance with CBA mechanisms. A key moment during COP will be discussions on the New Collective Quantified Goal on Climate Finance (NCQG), which has the potential to unlock trillions in critically-needed climate financing for developing countries.