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"The Impact of the EU Carbon Border Adjustment Mechanism on Developing Economies. A Case Study of Mozambique"

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Abstract

English

This thesis analyzes the impact of the EU's Carbon Border Adjustment Mechanism (CBAM) on developing economies, focusing specifically on Mozambique. Using tariff theory and empirical trade data, the research identifies significant protectionist elements, highlighting a 46% effective protection rate for EU aluminium sheet manufacturers and imposing substantial economic burdens on least developed countries (LDCs). Mozambique, heavily reliant on aluminium exports to the EU, faces potential GDP losses of up to 2.5% and is already redirecting exports away from the EU market. Critically, the CBAM's projected global emission reduction of just 0.28-0.38% underscores its limited environmental effectiveness while disproportionately harming developing economies. The thesis concludes that the CBAM currently acts more as trade protectionism than an effective climate measure, potentially trapping LDCs in carbon-intensive activities. The thesis recommends exempting LDCs from CBAM, reallocating revenues toward decarbonization initiatives in developing countries, and simplifying compliance frameworks.

Deutsch

Diese Arbeit untersucht die Auswirkungen des EU Carbon Border Adjustment Mechanism (CBAM) auf Entwicklungsländer, insbesondere am Fallbeispiel Mosambik. Mittels Zolltheorie und empirischer Handelsdaten zeigt die Studie signifikante protektionistische Merkmale auf, darunter eine effektiven Schutz von 46% zugunsten europäischer Aluminiumblechhersteller, und erhebliche wirtschaftliche Belastungen für am wenigsten entwickelte Länder (LDCs). Mosambik, stark abhängig von Aluminiumexporten in die EU, drohen BIP-Verluste von bis zu 2,5 % und Aluminium Exporte werden bereits in andere Märkte umgeleitet. Besonders kritisch ist die geringe globale Emissionsreduzierung durch den CBAM von lediglich 0,28-0,38 %, was seine begrenzte Umweltwirksamkeit bei gleichzeitig unverhältnismäßigen Schäden für Entwicklungsländer verdeutlicht. Die Arbeit kommt zum Schluss, dass der CBAM in seiner jetzigen Form eher als handelspolitisches Schutzinstrument denn als wirksame Klimamaßnahme fungiert und LDCs langfristig in emissionsintensiven Aktivitäten festhalten könnte. Daher empfiehlt sie, LDCs vom CBAM auszunehmen, Einnahmen gezielt für Dekarbonisierungsinitiativen in Entwicklungsländern einzusetzen und vereinfachte Compliance-Rahmenbedingungen einzuführen.

Pledge of Honesty

"On my honour as a student of the Diplomatische Akademie Wien, I submit this work in good faith and pledge that I have neither given nor received unauthorised assistance on it."

Denise Zwiauer

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1. Introduction

Climate change is arguably the most pressing challenge of our time. Scientists have long warned policymakers about its severe impacts on human life, ecosystems, and the global economy. Already, climate change is reshaping natural and socio-economic systems, with global temperatures having risen by approximately 1°C above pre-industrial levels due to human activity. The effects of this include frequent extreme weather events, rising sea levels, ecosystem disruptions, and increased food and water insecurity. These impacts are especially severe for vulnerable populations in low-lying coastal regions, small island states, and developing countries, where the capacity to adapt is limited. Without rapid and far-reaching policies, global temperatures are likely to rise by 1.5°C. A threshold experts have identified as critical, as it could trigger irreversible changes such as the collapse of polar ice sheets and the mass extinction of species (IPCC 2018, 4–5).

In response to the urgent need for climate action and to prevent crossing the 1.5°C threshold, the European Union (EU) has committed itself through the Green Deal to reduce the Greenhouse Gas Emissions by 55% until 2030 and eventually become climate neutral by 2050. To achieve this goal they launched the “Fit for 55” package, which includes several policy tools. The primary policy tool is the Emissions Trading System (ETS) which was launched in 2005 and effectively put a price on carbon emissions in the EU market. To complement the ETS and reduce carbon leakage, the EU is pioneering a Carbon Border Adjustment Mechanism (CBAM). The transitional phase of the new policy began in 2023, with full implementation scheduled for 2026, but the sale of the CBAM certificates has been postponed to 2027.

The CBAM has two main aims: (1) To equalize carbon costs for imported goods and domestic production and thereby reducing the incentive to import cheaper products that are not subject to climate policies, and (2) To incentivize other countries to adopt carbon pricing policies, as such policies would allow for deductions from the EU tariff during import.

While proponents of the CBAM emphasize its potential to drive global climate action and meet ambitious emission reduction targets, critics view it as a protectionist policy that could breach World Trade Organization (WTO) law and increase the risk of global trade wars. The policy’s environmental efficiency has also been questioned as exporting countries to the EU might simply shift to regions with weaker regulations, resulting in no significant reduction in global emissions.

Another major concern is the impact on developing and least developed countries (LDCs) as they do not have the resources available to transition to climate-friendly production. Consequently, their products may become uncompetitive under the regulation, leading to reduced export revenues to the EU and possibly deepened economic disparities. These issues are especially pressing given that many of these countries are already disproportionately affected by climate change, despite having contributed the least to historical emissions. Therefore, international climate policies must be designed with inclusivity and fairness in mind, recognizing both the limited responsibility and the heightened vulnerability of LDCs. Striking a balance between the urgency of global decarbonization and the need to avoid deepening economic disparities is essential for achieving sustainable climate outcomes.

So far the European Commission has acknowledged these concerns but did not present any solutions or potential adjustments. They have announced to publish a report on the policy's impact on developing countries, particularly LDCs, by the end of the transitional period. In this regard, the commission states: "Given the nature of the goods under the current scope of CBAM, developing countries and LDCs are not the most affected countries with the measure" (European Commission 2024, 1), referring to the World Bank's Relative CBAM Exposure Index. However, this thesis critically assesses this statement, as Mozambique – an LDC in Southern Africa – is ranked among the most strongly affected countries by the same index (World Bank 2023a).

1.1. Research Question

In light of this contradiction, this thesis investigates the following central research question: How does the EU's CBAM impact developing economies, particularly Mozambique? In doing so, it also evaluates the regulation's effectiveness in reducing global CO_2 emissions and critically examines its potential protectionist character.

To establish a foundation for the analysis, the thesis will first examine the economic theory underlying the CBAM. Given that the mechanism functions in practice as a tariff, this section will begin by exploring the general economic effects of tariffs, followed by a review of theoretical literature specifically addressing carbon tariffs. This theoretical background reflects the principles on which EU policymakers have based the CBAM framework. In addition, this chapter will introduce the method of analysing the Effective Rate of Protection (ERP) to assess the impact on downstream manufacturers facing increased input costs. Since tariffs can, in some cases, negatively affect domestic producers, the ERP analysis will help determine whether the CBAM might unintentionally harm EU manufacturers or instead provide a high level of protection, thereby raising concerns about the potentially protectionist nature of the policy.

The following chapter will offer an in-depth analysis of the EU's carbon pricing system. As the CBAM is designed to complement the EU ETS, the two mechanisms are closely interconnected. The ETS sets the EU's carbon price, which directly influences the cost of CBAM certificates that importers must purchase based on the emissions intensity of their products. This chapter will begin by providing an overview of the ETS and the carbon pricing framework and then examine how the volatility of carbon prices may pose a double burden for manufacturers, particularly in light of fluctuating raw material costs such as those for aluminium. It will also present an estimate of CBAM certificate costs for an EU-based aluminium sheet manufacturer to assess whether the policy may incentivize firms to source inputs domestically. The chapter will then apply the ERP equation developed in the theoretical framework to the aluminium sheet manufacturing sector in the EU, in order to assess whether the CBAM ultimately provides effective protection or imposes additional costs on domestic producers.

Building on this background and initial analysis of the CBAM, the thesis will then examine the potential impacts of the policy on Mozambique. Following an overview of the country's development context and an estimate of its trade portfolio, the analysis will focus on the emission intensity of Mozambique's aluminium sector, given that aluminium constitutes the majority of the country's exports to the EU. To conclude the case study, trade data will be evaluated to determine whether a shift away from the EU market is already taking place.

In the final chapter, the thesis will broaden the scope to evaluate the potential impacts of the CBAM on developing countries more generally. It will critically assess whether the expected global reduction in emissions justifies the potential increase of economic disparities. The chapter will also propose and assess possible amendments to the policy aimed at mitigating these effects, with the goal of promoting a more inclusive and fair climate policy that supports long-term sustainability.

2. Theoretical Background: Carbon Tariffs

While the CBAM is an environmental policy tool, it effectively operates as a tariff on imports based on their carbon content. To understand its effectiveness and economic impact, it is useful to look into basic economic tariff theory. Accordingly, the first part of this chapter examines the economic effects of a tariff using a simple supply and demand framework and outlines how to theoretically measure the degree of protectionism a tariff provides. This establishes a foundational understanding before discussing literature and theories of Carbon Tariffs.

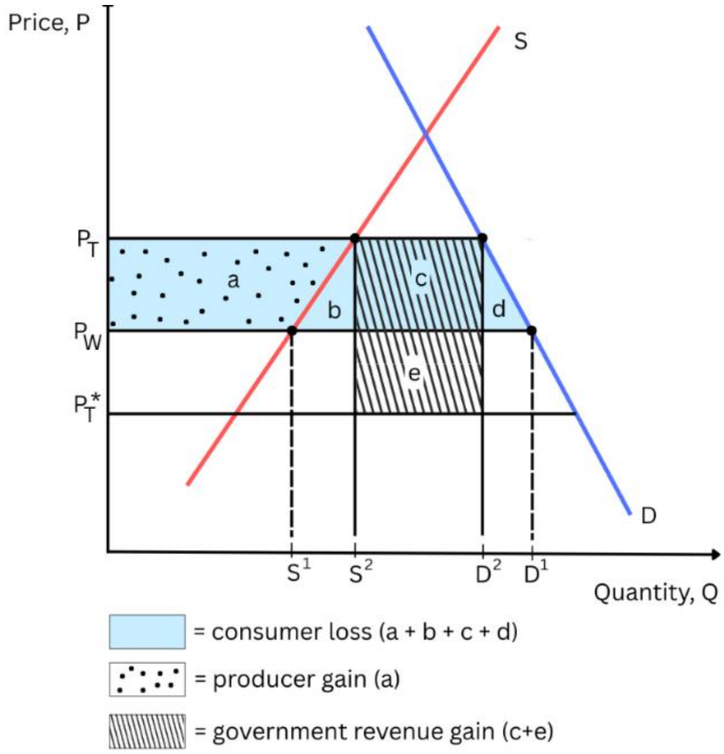
2.1. Tariffs

2.1.1. A Supply and Demand Model Analysis

Tariffs represent one of the simplest trade policies, traditionally serving two purposes: Generating government revenue and protecting domestic industries from foreign competition. Protectionist policies, particularly those aimed at shielding agriculture and manufacturing from foreign competition, peaked in the 19th century but have since steadily declined as governments increasingly favour nontariff measures such as import quotas and export restraints. Despite this shift, tariffs remain significant tools for diplomatic leverage and economic sanctions in contemporary international relations (Krugman, Obstfeld, and Melitz 2022, 242–243). This was clearly demonstrated recently, when the Trump administration imposed a series of tariffs that prompted widespread retaliation from trade partners. These actions not only triggered a global trade war but also served as a strategic tool to pressure other countries into negotiating trade agreements on terms more favourable to the United States (Swanson, Smialek, and Pager 2025).

The economic effects of tariffs can be analysed through a standard supply and demand framework. Figure 1 shows the supply and demand curves of Country A, which is imposing a tariff on Country B. When Country A implements this tariff, the price of imported goods rises above the world equilibrium price, reducing consumer demand and decreasing import volume from Country B. This decline directly impacts Country B's export sector, potentially forcing its producers to seek alternative markets, reduce production, or lower prices to maintain competitiveness. In Country A's domestic market, locally manufactured goods gain a competitive advantage as imports become more expensive and less available. This typically leads to expanded domestic production as local manufacturers respond to this market opportunity. However, despite these production benefits, consumers in Country A face higher prices for both imported and domestic goods, along with potentially reduced product variety. The magnitude of producer gains, consumer losses, and government revenue depends on the elasticity of both supply and demand curves, as well as the size of the tariff imposed (Krugman, Obstfeld, and Melitz 2022, 242-251).

Figure 1: Effects of a Tariff on Supply and Demand in Country A



Source: Made by the author, based on: Krugman, Obstfeld, and Melitz. 2022, 251.

2.1.2. Determining Protectionism

To determine the protection a tariff provides to domestic markets, the effective rate of protection (ERP) can be calculated. While the nominal rate simply states the percentage tax on imports, the effective rate captures how much the tariff actually shields domestic producers from foreign competition. This distinction becomes crucial when products involve multiple production stages with different tariff structures. For instance, a 25% tariff on imported automobiles can provide a 100% effective protection rate for domestic assemblers when considering the difference between final product value and input costs. Tariffs on inputs can have a negative effect on downstream industries. Consequently, seemingly modest tariff rates can create significantly higher actual protection levels or even harm certain domestic producers (Krugman, Obstfeld, and Melitz 2022, 246–248).

The formula for calculating the ERP, as established in "International Economics" (Krugman, Obstfeld, and Melitz 2022, 246–248), can be expressed as follows:

$$EQ1: ERP = [(VAt - VA) / VA] \times 100\%$$

VA represents the original value added under free trade conditions (calculated as the original selling price minus production costs), and VAt represents the new value added after tariff implementation (calculated as the post-tariff selling price minus production costs).

2.2. Carbon Tariffs

2.2.1. Economic and Environmental Effects

Carbon tariffs, also referred to as carbon border adjustments (CBAs), are increasingly proposed as instruments to address the challenges associated with unilateral carbon pricing, such as carbon leakage and reduced international competitiveness. However, since no country or trade union has fully implemented a CBA, its economic and environmental effects remain largely theoretical. Various economic models and approaches are strongly being debated in the literature.

While the supply and demand model introduced earlier is simple, it can help portray and understand the effects of CBAs, as demonstrated by Brunel and Levinson (2024) in their working paper "Carbon Tariffs 101". Using a simple partial equilibrium framework and assuming that the country imposing the tariff is quite small compared to the world market, Brunel and Levinson draw the following conclusions: (1) Without a domestic carbon price, a carbon tariff places equivalent costs on domestic consumers but effectively subsidizes domestic emissions. (2) When a small country introduces a carbon tariff – regardless of whether it has a domestic carbon tax – the burden primarily falls on its own consumers. (3) If a country with no regulations adopts carbon policies and subsequently increases imports, this shift reflects the end of earlier carbon leakage due to lax policies, not new leakage. (4) In the absence of strong international regulation, no small country alone can fully offset the environmental harm caused by its own economic activity, even with combined carbon pricing and tariffs (Brunel and Levinson 2024, 1-2).

For the EU these findings underscore a key limitation: even with carbon pricing and border measures, a single region, especially one that is relatively small in the global market, cannot fully mitigate the environmental damage of its economic activities. This highlights the need for broader international coordination if the EU's climate policies are to be both environmentally effective and economically sustainable. For developing countries, the conclusions are equally relevant. If the EU, as a relatively small player, struggles to achieve global impact through CBAs, developing economies, many of which lack the capacity to implement comparable regulations, may face disproportionate economic consequences without contributing meaningfully to global emissions reduction.

The fundamental problem that a CBA is aiming to solve is carbon leakage. Böhringer et al. (2022, 22) explain how carbon leakage appears through two channels: the fossil fuel market channel, and the competitiveness channel. In the first channel reduced demand for fossil fuels in environmentally regulated regions lowers global prices and thus increases demand in unregulated regions. The second channel addresses reduced domestic competitiveness of emission intense sectors of strongly regulated countries which leads to an increase in production in unregulated countries. It is through the second channel that a CBA can significantly reduce carbon leakage and contribute to achieving global climate goals. However, they emphasize that CBAs have a strong burden-shifting effect to exporting countries, exposing especially developing countries to significant economic risks (Böhringer et al. 2022, 27).

Kortum and Weisbach (2017) emphasize that the challenges posed by a CBA depend heavily on its design. Decisions about which goods to include, whether to account for direct or indirect emissions, and which countries to target each introduces distinct challenges. They argue that a CBA should only be implemented when there is a strong justification, as the administrative complexity may outweigh the benefits. As an alternative, they propose that merely threatening to impose a CBA on countries that fail to meet climate policy standards could achieve similar benefits, without the associated negative bureaucratic and economic effects (Kortum and Weisbach 2017, 440–441).

Adele Morris (2018) examines various CBA models proposed for the United States, noting that CBAs are likely to be "the most time-consuming and complicated part of implementing a GHG [greenhouse gas] tax" (19). She offers detailed design recommendations, such as limiting CBAs to a narrow range of products, clearly defining which emissions to include, and setting transparent criteria for exempting countries. Morris also stresses that decisions related to CBAs must be public, transparent, consistent, and predictable to help businesses and consumers anticipate potential impacts (Morris 2018, 19).

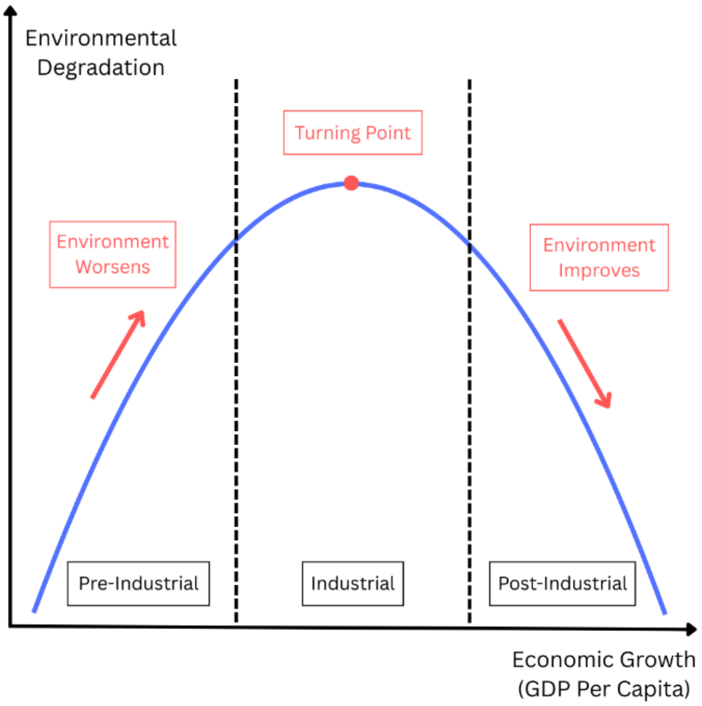
While most authors agree that a domestic carbon tax should logically be accompanied by a CBA to prevent carbon leakage, overall perspectives remain cautiously optimistic about the actual benefits of the policy when weighed against the potential drawbacks. The most significant challenges include the substantial administrative burden of collecting and analysing emissions data across complex global supply chains, and the difficult process of determining which sectors warrant coverage. These decisions must be tailored to each country's economic structure.

Implementation challenges are already apparent in the EU's CBAM. Beyond the significant bureaucratic demands, the EU's limited global economic influence makes it unlikely that major economies will adopt tariffs based on emissions intensity. Particularly in the context of the ongoing U.S. China trade war, tariff measures of the big world players purposefully target economically sensitive sectors rather than high-emission ones. Consequently, while the environmental impact of the EU CBAM will be limited, the risk of placing additional strain on developing countries and further escalating ongoing trade tensions remains significant.

2.2.2. Impact on LDCs

As mentioned by Böhringer et al. (2022), the introduction of CBAs by developed economies presents a significant challenge for LDCs striving to achieve economic growth through export-led markets. The Environmental Kuznets Curve (EKC) hypothesis offers a valuable framework for understanding the scope of this.

Figure 2: The Environmental Kuznets Curve



Source: Made by the author, based on: Economics Online. https://www.economicsonline.co.uk/definitions/the-kuznets-curve.html/

Krugman et al. (2022) explain, the EKC suggests an inverted U-shaped relationship between economic development and environmental degradation. Countries typically experience increased pollution as they industrialize, but environmental quality eventually improves once they reach higher income levels. This pattern emerges as growing wealth enables investments in cleaner technologies, stronger environmental regulations, and economic shifts toward less pollution-intensive sectors.

Most LDCs are currently positioned on the upward-sloping portion (the first third) of this curve, where carbon-intensive industrial development represents a historically proven pathway to economic transformation. The implementation of carbon tariffs on their exports risks interrupting this development trajectory before these countries have accumulated the wealth required to transition to the later stage of the curve, where environmental improvements typically begin to emerge. Consequently, such measures could not only undermine economic growth in LDCs but also fail to achieve meaningful global emission reductions in the long run.

3. The EU's Carbon Pricing System

Since its launch in 2005, the EU ETS has become the cornerstone of EU climate policy and the main instrument for achieving climate neutrality by 2050. The EU ETS operates through a cap-and-trade system that sets a limit on total GHG emissions and allows companies to trade emission allowances. To safeguard the competitiveness of energy-intensive industries and reduce the risk of carbon leakage – where firms shift production to countries with less strict climate policies – certain allowances are allocated for free. Although this approach has helped prevent the relocation of affected industries, it has weakened the EU's carbon price signal and is not fully addressing carbon leakage through embedded emissions, which occurs when emissions are effectively outsourced via complex global supply chains. To address these challenges, the CBAM was introduced, and the system of free allowances is set to be gradually phased out. The price of the CBAM certificates is going to be based on the emission intensity of the imported good and the weekly average carbon price under the EU ETS.

Given this interconnection between the ETS and the CBAM, this chapter will first examine the scope, functioning, and effectiveness of the EU ETS. It will then analyse the scope of the CBAM regulation and its implications for EU importers and third-country exporters, using the aluminium sector as a case study. This analysis will include a calculation of CBAM certificate costs and an evaluation of the effective rate of protection of the EU market.

3.1. The EU ETS

3.1.1. Scope

The EU ETS currently covers around 40% of the EU's GHG emissions, regulating approximately 10,000 sources, primarily in electricity, heat generation, manufacturing, intra-European aviation, as well as about 50% of maritime emissions from ports within the European Economic Area (EEA) (Meadows et al. 2024, 61–62). In 2023, the system was expanded with the creation of a separate but complementary scheme, the ETS2. The ETS2 will cover emissions from road transport, buildings, and smaller industrial combustion. Similar to the CBAM, it is also scheduled to begin in 2027 and it is expected to extend carbon pricing to roughly 70% of the EU's total emissions (Meadows et al. 2024, 70).

However, neither the ETS nor the upcoming ETS2 are able to address embedded emissions, which refer to emissions generated outside the EU as part of the production processes of imported goods. These emissions are effectively outsourced through complex global supply chains and may not be subject to any climate regulation in the country of origin. A relevant example is the production of raw aluminium in non-EU countries, which is imported and further processed into final products within the EU.

Under the CBAM, non-EU producers wishing to export to the EU must report both direct and indirect emissions – that is, emissions generated during the manufacturing process as well as those resulting from the electricity used. In contrast, EU-based producers are only required to report direct emissions from manufacturing, since electricity producers are as a sector covered under the ETS and must report and pay for their own emissions.

As a result of this mechanism, producers covered by the EU ETS with electricity-intensive production face a double burden, since electricity producers pass on ETS-related costs to their consumers. To mitigate the resulting increase in electricity prices and the potential loss of competitiveness for electricity-intensive industries, the EU introduced a financial compensation mechanism. Products eligible for this financial compensation under the EU ETS are exempt from accounting for indirect emissions under the CBAM (European Commission 2023, 55). These products are listed in Annex II of the CBAM regulation and include specific goods made from iron, steel, and aluminium for quick reference the list is also added her in annex 1 (European Commission 2023a, 94–95). For ease of reference, the list is also provided in Annex I of this document.

3.1.2. Functioning

The ETS system is rooted in the "polluter pays" principle, which is explicitly mentioned in the Treaty on the Functioning of the European Union, placing the burden of emission reduction on those responsible for generating them (Meadows et al. 2024, 75). Article 191(2) TFEU states: "It [The Union policy on the environment] shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay".

To uphold the polluter pays principle, the ETS sets a cap on the total GHG emissions permitted from covered sectors. This cap is divided into EU emission allowances (EUAs), each allowing the emission of one tonne of CO_2 equivalent. Allowances can be auctioned or traded on the EU-wide carbon market. Companies must surrender enough allowances to match their annual emissions or face penalties. As the cap gradually declines, the shrinking supply of allowances creates a market incentive for sectors to reduce emissions in order to remain competitive (Meadows et al. 2024, 74–75).

The EU ETS has evolved significantly since its launch. Divided into distinct phases, each phase has introduced reforms to improve the system's effectiveness. We are currently in Phase 4 of the ETS system (2021 – 2030). The latest revision in 2023 increased the linear reduction factor meaning that, without any further legislative changes, the cap will reach zero by 2045, with the issuance of allowances expected to cease by 2044 at the latest (Meadows et al. 2024, 60–67).

The price of EUAs has followed an unstable path as it is determined by supply and demand dynamics. On the supply side, the number of allowances is fixed by the declining cap. On the demand side, factors include current and expected future emissions, economic growth, energy prices, and policy expectations. Since the weekly average price of EUAs will serve as the reference price for the CBAM certificates, understanding the ETS carbon price development is essential for CBAM declarants (European Commission 2023a, 79).

Figure 3 EU Carbon Permits Price

Source: Tradingeconomics. https://tradingeconomics.com/commodity/carbon

When the ETS first started in 2005, almost all EUAs were allocated for free. However, due to the lack of a detailed emissions database, the price of EUAs sharply dropped in 2006 after the first verified emissions data was reported, revealing an excess supply of allowances and driving the price again to nearly zero in 2007. Prices were initially in the range of 20-30€ during Phase

2 but collapsed following the 2008 global financial crisis due to reduced industrial output and a surplus of allowances. Prices remained low at around €5-10 in the beginning of Phase 3 in 2013, until the Market Stability Reserve (MSR) was implemented in 2019. The MSR addresses the problem of surplus allowances by automatically adjusting auction volumes based on the number of allowances in circulation. Between 2018 and 2020, prices jumped to the range of 30€ and keep climbing since then. More recently, the announcement of the European Green Deal and enhanced climate ambition, have increased prices significantly, reaching a record high of over €100 per tonne in February 2023. As of late 2023, prices have stabilized in the €70-80 range (Meadows et al. 2024, 61–62).

Figure 4 Aluminium Prices

Source: Tradingeconomics. https://tradingeconomics.com/commodity/aluminum

Aluminium prices have shown strong fluctuations over the past decade, with a sharp increase visible during the COVID-19 pandemic period. For EU aluminium manufacturers, this spike in market prices coincided with rising costs under the ETS, placing a potential double burden on them. With the upcoming implementation of the CBAM, similar cost exposure could extend to aluminium producers outside the EU in the future, especially if aluminium prices rise again due to unforeseen global events.

The EUAs can not only be acquired through trade, but also through auctions. These auctioning processes are overseen by the European Securities and Markets Authority and conducted through the EU-wide common auction platform, the European Energy Exchange. More than half of EUAs are sold through auctions, providing substantial revenue for Member States. In 2022 alone, auctioning generated €39 billion, with €30 billion being transferred directly to Member States. Member States are legally required to allocate these revenues to climate-related purposes. The funds support various climate initiatives, including renewable energy development, energy efficiency improvements, public transport expansion, research and innovation for low-carbon technologies, and just transition support for affected regions and workers within the EU. The EU has also established dedicated funds to channel ETS revenues: the Innovation Fund and the Modernisation Fund are both substantially financed, and a new Social Climate Fund will be introduced in 2026. These funds show the twofold benefit of carbon pricing: it not only helps reduce emissions by making pollution more expensive, but also generates revenue that can be used to support climate action and ease social impacts (Meadows et. al. 2024, 74–77). Notably, however, Member States are not yet legally required to allocate revenues generated through the CBAM to climate-related initiatives, highlighting an inconsistency in the EU's climate financing framework and raising questions about the use of these new funds.

3.1.3. Effectiveness

The EU ETS has proven effective in reducing greenhouse gas emissions. Within the scope of the ETS they have fallen from 2 billion tonnes in 2008 to 1.4 billion tonnes in 2022 (Meadows et al. 2024, 63–64). Meadows et al. (2024): argue that this drop in emissions happened without significant negative impacts on profits, employment, or competitiveness of EU firms and that regulated firms have even seen increases in revenues, suggesting that the system has sparked low-carbon investment rather than industrial decline (64).

While the EU ETS has played a key role in reducing emissions within the EU and maintaining the competitiveness of regulated firms, the challenge of effectively addressing carbon leakage remains. Until now the system allocated free allowances to sectors considered vulnerable to relocation due to international competitiveness pressures. In the current phase, approximately 5.3 billion allowances, representing 43% of the total emissions cap, are allocated for free to industry. While the free allocation system has been effective in maintaining the competitiveness of EU firms, it reduces the incentive for deep emission reductions both within the EU and globally (Meadows et al. 2024, 84). For this reason, the free allocation system will gradually be phased out and replaced by the CBAM.

The phasing out of free allowances is expected to strengthen the carbon price signal within the EU and could potentially incentivize firms beyond the EU to decarbonize their production processes. In comparison to the free allocation system, the CBAM increases alignment with the EU's polluter-pays principle. However, there are concerns that certain Eastern EU countries may face significant losses due to the replacement of free allowances by the CBAM (Amendola 2025, 1–3).

3.2. The CBAM

3.2.1. Purpose and Scope

Through the CBAM, the ETS carbon price will be extended to EU importers, aiming to create a level playing field on the market. In its initial phase, which has started on October 1, 2023, the CBAM covers a selected group of carbon-intensive sectors where the commission identified a high risk of carbon leakage. These sectors are: iron and steel, cement, fertilizers, aluminium, hydrogen, and electricity (European Commission 2023a, 90). The selection focuses on basic materials rather than complex manufactured products to balance effectiveness with implementation practicality and addressing carbon leakage through embedded emissions. Notably, manufactured components such as car parts are currently excluded from CBAM, as are products that fall under different customs codes – for example, aluminium components used in furniture, which are classified under furniture rather than aluminium.

In general, the CBAM covers direct and indirect emissions. However, and as mentioned earlier, products that are eligible within the EU ETS system for compensation due to high electricity prices are exempt from accounting for indirect emissions under the CBAM. These products are listed in Annex II of the CBAM regulation and include specific items made from iron, steel, and aluminium. Nevertheless, during the transitional period, CBAM declarants for all covered goods are required to report both direct and indirect emissions (European Commission 2023a, 94–95).

3.2.2. Functioning

Unlike the EU ETS, the CBAM does not impose a cap on the total number of certificates and the certificates will not be tradeable (Meadows et al. 2024, 94). The administration of the CBAM follows a process similar to other EU customs procedures. Importers must become authorized CBAM declarants and register in the CBAM registry. They are also responsible for collecting the necessary data from their supply chain to fulfil reporting obligations and for purchasing the required certificates. This may pose challenges, particularly for complex supply chains and for importers working with suppliers in countries that have limited emissions monitoring capabilities (European Commission 2023a, 72–76).

During the transitional period, importers must submit quarterly reports containing information on the quantity of imported goods, their country of origin, and the embedded emissions. Once the financial phase begins in 2026, annual declarations will be required, with CBAM certificates being surrendered by August 31 of the following year (following the 2025 amendment). The European Commission will establish a CBAM registry to track certificates and a common central platform for their sale starting from February 2027 (rather than January 2026 as originally planned). The price of CBAM certificates will be calculated weekly, based on the average price of EUAs. With this system, the EU is hoping to also create incentives for third countries to implement their own carbon pricing mechanisms, as carbon prices paid in the country of origin can be deducted from the CBAM certificate price (European Commission, 2023a, 58–59; European Commission 2023a, 78–79; European Commission 2025, 6–8).

The administrative burden of the CBAM is high, particularly for small and medium-sized enterprises on both the importing and exporting sides. This concern was acknowledged in the recent 2025 amendment, which replaced the initial value-based threshold of €150 with a mass-based exemption set at 50 tonnes of imports per calendar year. The new threshold is expected to exempt around 90% of importers while still covering over 99% of embedded emissions (European Commission 2025, 3).

Compared to the EU ETS system, complying with the CBAM regulation involves a greater bureaucratic effort. Importers are required to report not only direct but also indirect emissions, which they must obtain from their suppliers without reliable means of verifying the reported data. Manufacturers outside the EU who wish to export their products to the EU market must monitor their emissions according to rules set by the European Commission. These monitoring requirements are detailed and often complex. For example, reporting indirect emissions alone can be challenging. To calculate these emissions, manufacturers must apply the following formula: electricity consumption (kWh) × emission factor (or electricity factor) × imported tonnes (European Commission 2023b, 11).

At first glance, the formula seems straightforward, but on closer inspection, obtaining the correct emission factor can be quite challenging, particularly for factories located in countries without a standardized national electricity grid. The emission factor for electricity depends on the source of the electricity used in production. If the electricity comes from the national grid, reporting is relatively straightforward. Factories can either use the default emission factor provided by the European Commission, based on IEA data, or rely on publicly available data from the country's government.

If the manufacturer operates its own power plant or receives electricity through a power purchase agreement, determining the electricity emission factor becomes more complex. The operator must monitor the unit and calculate the emission factor in accordance with specific rules set by the European Commission, taking into account the type of fuel used and, where applicable, any heat production. The emission factor from a supplying power plant may only be used if the plant is monitored according to the same standards. However, at this stage, the Commission has not provided guidance on how to proceed when emission factors are unavailable or do not meet EU requirements, nor has it clearly assigned responsibility for monitoring and enforcement of these obligations (European Commission 2023b, 11).

In addition to the challenges of determining the electricity factor, further monitoring obligations may apply depending on the type of good. For example, in the case of aluminium, manufacturers outside the EU are required to identify and report perfluorocarbon emissions (PFC) from primary aluminium production. The EU provides two complex calculation methods for this purpose in its guidance materials. Manufacturers may also need to report additional data, such as the amount of scrap used to produce one tonne of unwrought aluminium, or the percentage of alloying elements, since if the product contains more than 5% alloying elements, the embedded emissions must be calculated differently (European Commission 2023c, 208–210). While this thesis does not further examine the monitoring and reporting regulations in detail, the example highlights the significant increase in complexity and reporting efforts required from manufacturers outside the EU.

3.2.3. Trade Implications and Protectionism

The complex monitoring obligations and increased administrative workload will likely require workforce upskilling and the hiring of additional staff, creating challenges for both manufacturers outside the EU and EU-based importers of these products. While this could encourage investment in skills development and generate new job opportunities, the effects could also be different: Non-EU producers lacking the necessary resources may choose to withdraw from the EU market and redirect their focus to regions with less demanding reporting requirements while EU-based importers of CBAM-covered goods may turn to domestic producers to simplify compliance. These dynamics suggest that the CBAM regulation could have a protectionist effect on the EU market by introducing a significant bureaucratic burden.

In addition to the bureaucratic burden, the CBAM will impose new cost pressures on EU-based importers through the required purchase of CBAM certificates for direct and indirect emissions. The following example illustrates how high this burden could be on an aluminium sheet factory importing a shipment of 50 tonnes of raw aluminium imported from a non-EU country which doesn’t have its own carbon pricing mechanism.

The following formula can be used to calculate the emissions subject to CBAM obligations. The grey emissions refer to the sum of direct and indirect emissions (Bundesministerium für Finanzen 2025):

$$\text{EQ2: CBAM Emission} = \text{Grey Emission} - \text{CBAM-Benchmark} \times \text{CBAM Factor}$$

To determine the total grey emissions, direct and indirect emissions must be added. In this example we are looking at unwrought or raw aluminium, which is exempted from taking indirect emissions into account. Therefore, only direct emissions will be included. In general, the data on direct and indirect emissions must be provided by the supplier to the importer. For simplicity, this example uses the Commission’s default values for unwrought aluminium, which also have to be used if a company fails to get data from their supplier. The default value is 2.36 tCO_2e/ton direct emissions for raw aluminium. For a shipment of 50 tonnes raw aluminium, this amounts to total emissions of 118 tCO_2e (European Commission 2023d, 19). The default values as defined by the European Commission for aluminium can be found in Annex 2 of this document.

Next, we determine the benchmark factor. The system of free allocation in the EU ETS system is based on these benchmark values. They reflect the efficiency of top-performing industrial installations within each sector. The benchmark value for primary aluminium is set at 1.464 tCO_2e per tonne (European Commission 2021, 16). The benchmark is then multiplied by the quantity of imported goods and the CBAM factor. The CBAM factor reflects the gradual phase-in of the mechanism and corresponds to the reduction of free allowances over time. It will gradually decrease and thus increase the price of CBAM certificates. By 2027, when importers will be required to purchase certificates, the CBAM factor will be set at 95% (Bundesministerium für Finanzen, 2025).

The relevant values outlined above are now summarised and applied to EQ2 to calculate the resulting CBAM emissions:

Direct Emissions (grey emissions):

$$2.36\ tCO_2e/tonne \times 50\ tonnes = 118\ tCO_2e$$

CBAM Benchmark:

$$1.464tCO_2e/tonne \times 50tonnes = 73.2tCO_2e$$

CBAM Factor:

$$95\% = 0.95$$

Applying EQ2:

$$\text{CBAM Emissions} = \text{Grey Emissions} - (\text{CBAM Benchmark} \times \text{CBAM Factor})$$

$$\text{CBAM Emissions} = 118 - (73.2 \times 0.95) = 48.46\ tCO_2e$$

Assuming a carbon price of 80€ per tonne of CO_2e, based on the average ETS price in 2025, the importer would be required to surrender CBAM certificates with a total value of €3,876.80 for this shipment of 50 tonnes of raw aluminium. This corresponds to an additional €77.54 per tonne, which represents approximately 3.6% of the material cost, based on the current aluminium price of €2,165 per tonne (Trading Economics 2025). This increase constitutes a significant cost burden, this added cost is likely to be passed on to consumers.

Beyond the nominal tariff, it is important to assess the extent to which this carbon-based tariff provides effective protection for downstream EU manufacturers – those that use raw materials or intermediate goods to produce products – as tariffs can sometimes have negative effects on domestic producers. This assessment can be made by calculating the Effective Rate of Protection (ERP) using EQ1 introduced in the previous chapter. The following example calculates the ERP for EU-based aluminium sheet manufacturers who import 50 tonnes of raw aluminium from outside the EU.

To calculate the ERP, the following values must be determined: world market prices for aluminium sheets and raw aluminium, as well as the value of CBAM certificates applied to both the final product, aluminium sheets and the input, raw aluminium.

World prices for aluminium sheets vary by region and are influenced by factors such as alloy type, thickness, regional market conditions, and trade agreements. The average price would be around $7,244 per ton, equivalent to approximately €6,480.[1] In contrast, the world price for raw aluminium is more standardized and closely monitored. As of 9 May 2025, it stands at $2,421.10 per tonne, equivalent to approximately €2,165 (Trading Economics 2025).

As previously calculated, the CBAM certificates for 50 tonnes of raw aluminium amount to €3,876.80. To determine the equivalent CBAM certificate cost for aluminium sheets, the default emission value of 2.86 tCO_2e per tonne for aluminium sheets is applied while CBAM Benchmark and CBAM Factor remain the same as before (European Commission 2023d, 19). For a shipment of 50 tonnes, the CBAM emissions can be calculated as:

Direct Emissions (grey emissions):

$$2.86\ tCO_2e/\text{tonne} \times 50\ \text{tonnes} = 143\ tCO_2e$$

CBAM Benchmark:

$$1.464 tCO_2e/\text{tonne} \times 50 \text{tonnes} = 73.2 tCO_2e$$

CBAM Factor:

$$95\% = 0.95$$

$$\text{CBAM Emissions} = 143 – (73.2 \times 0.95)$$

$$\text{CBAM Emission} = 73{,}46$$

At a carbon price of €80 per tonne of CO_2e, this results in a total cost of €5,876.80 in CBAM certificates for the final product. With this data, we can now compute the ERP:

Average World Price Raw Aluminium: €2,165

Average World Price Aluminium Sheets: €6,480

Cost of CBAM certificates for 50 tonnes Raw Aluminium: €3,876.80

Cost of CBAM certificates for 50 tonnes Aluminium Sheets: €5,876.80

Value Added at World Prices (VA) = 6,480 - 2,165 = €4,315

[1] As no global market price for aluminium sheets could be found, an average was calculated based on available regional data from Q1 2025: approximately $5,400 per metric ton in North America, $12,777 in Europe, and $3,556 in Asia. This results in an estimated average of $7,244 per metric ton, or roughly €6,480 (Aluminium Sheet Prices, News, Monitor, Analysis & Demand)

$$\text{Value Added at Tariff-inclusive Prices (VAt)} = (6{,}480+5{,}876.80) - (2{,}165+3{,}876.80)$$

$$= 12{,}356.80 - 6{,}041.80 = €6{,}315$$

$$\text{EQ1: ERP} = [(\text{VAt} - \text{VA}) / \text{VA}] \times 100$$

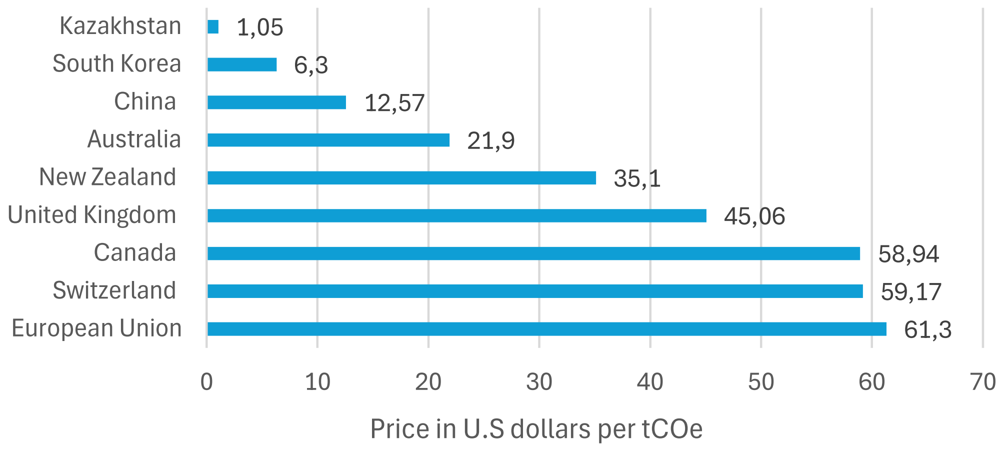
$$\text{EQ1: ERP} = [(6{,}315 - 4{,}315) / 4{,}315] \times 100$$

$$\text{ERP} = 46\%$$

A positive ERP of 46.4% indicates that the CBAM policy provides a medium-high effective protection to EU aluminium sheet manufacturers. This protection arises because the tariff raises the cost of importing finished aluminium sheets more than it raises the cost of importing raw aluminium. This could have significant implications for countries aiming to increase local value addition, as demand within the EU for imported manufactured goods may decline, with a greater focus shifting towards importing raw materials that are then further processed within the EU.

This analysis assumes that the exporting country does not operate an equivalent carbon pricing mechanism that would reduce or eliminate the CBAM adjustment. If such a system exists, the effective tariff – and therefore the ERP – would be significantly lower. While an increasing number of countries, such as Canada, the United Kingdom, and China, are implementing similar carbon pricing schemes, the European Union still has the highest carbon price globally. Consequently, even if importers are eligible for a deduction based on their domestic carbon pricing, they would still be required to pay the difference to match the EU carbon price. As illustrated below, no developing country has introduced a comparable carbon pricing system to date. Therefore, in the case study on Mozambique, the calculations presented above can be considered a reliable approximation.

Figure 5 Carbon trading prices covered by Emission Trading Systems in selected countries as of April 2024



Source: Made by the author, based on: https://www.statista.com/statistics/1241719/carbon-trading-prices-worldwide-by-select-country/

4. Mozambique

To assess a country's exposure to the EU CBAM, two key factors must be considered: the share of exports to the EU that fall under CBAM coverage, and the emission intensity of these products. Mozambique presents a compelling case study for examining the potential impacts of the CBAM on developing countries, as it is highly dependent on revenues from aluminium exports to the EU market. This chapter examines Mozambique's trade profile and the emission intensity of its aluminium sector, followed by an analysis of the possible economic effects of the CBAM and potential changes in market dynamics.

4.1. Development Context and Trade Portfolio

Mozambique is located in southeastern Africa and is classified by the United Nations as one of the world's Least Developed Countries (UN DESA 2024). With a Human Development Index (HDI) of 0.446, it ranks among the ten poorest countries globally. Although the country experienced robust economic growth averaging around 8% following the end of its civil war in 1992, this growth was disrupted in 2016 by a major "hidden debt" crisis. The economic situation further worsened by natural disasters in 2019 and the COVID-19 pandemic in 2020. As a result, GDP growth slowed to approximately 3% between 2016 and 2019 and fell by an additional 1.2% in 2020. According to the World Bank's "Mozambique Country Climate and Development Report" (2023b), the economy is projected to recover, with growth rates expected to accelerate to approximately 8% between 2023 and 2027 (World Bank, 2023b, 21-22).

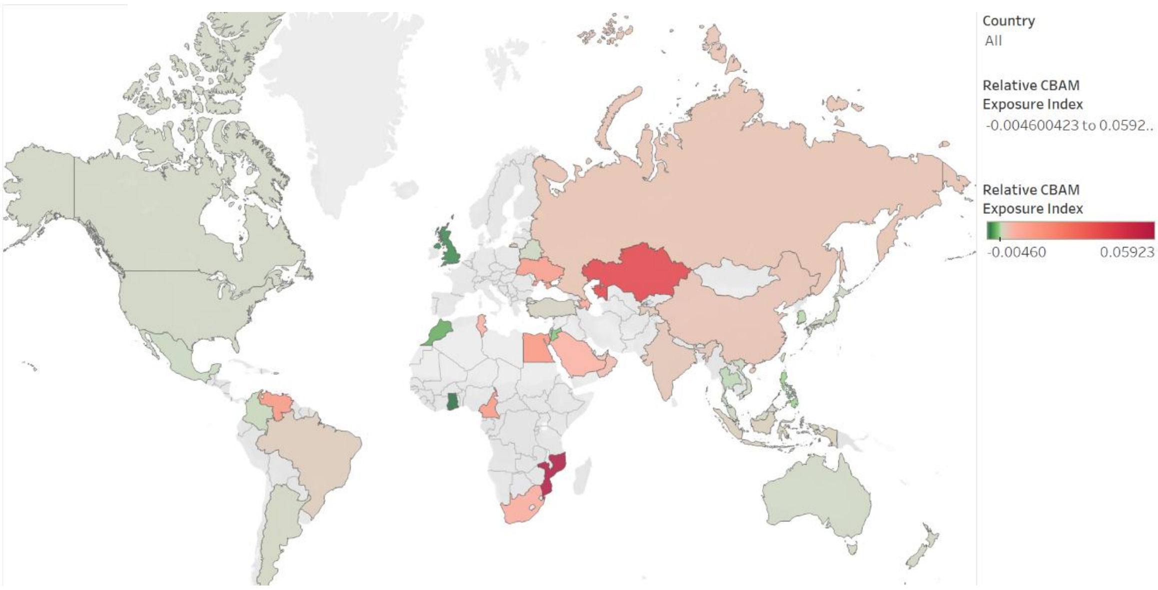
Mozambique faces several ongoing development challenges. Poor infrastructure and limited access to electricity continue to hold back economic progress. The country's low level of urbanization also means it is missing out on opportunities for broader structural change and poverty reduction. In addition, weak institutional capacity remains a key barrier to effective governance and policy implementation. Mozambique is also highly vulnerable to extreme weather events, and climate change is expected to increase these risks in the coming decades (World Bank, 2023b, 22-26).

Within this challenging context, Mozambique's export profile reveals heavy dependence on natural resource extraction, particularly minerals and energy products like coal, petroleum gas and titanium Ore. In 2023, exports accounted for approximately 50% of the country's GDP, underscoring the economy's vulnerability to fluctuations in global prices. Since 2018, the coal sector has been the largest contributor to export earnings, making Mozambique the tenth largest coal exporter globally (World Bank, 2023b; 32).

Aluminium exports constitute another critical component of Mozambique's trade portfolio, representing approximately 17% of total exports in 2023 with a value of $1.99 billion (Observatory of Economic Complexity 2025). The EU is the largest market for this aluminium, importing approximately 84% t of Mozambique's total aluminium exports. Italy emerges as the largest single market ($554 million), followed by Spain ($247 million) and the Netherlands ($219 million), while the United Kingdom ($214 million) and Singapore ($316 million) represent other significant destinations (Observatory of Economic Complexity 2025).

This export concentration exposes Mozambique significantly to the effects of the EU CBAM policy. The World Bank's Relative CBAM Exposure Index confirms this vulnerability, identifying Mozambique as the most affected country globally in the aluminium sector, followed by Kazakhstan, Egypt, and Ukraine (World Bank, 2023a). The index is calculated by multiplying a country's export share by the difference between its emissions intensity and EU averages for CBAM-covered products at an assumed carbon price of $100 per ton, which provides a quantitative measure of potential economic exposure (World Bank 2023c).

Figure 6 Relative CBAM Exposure Index, by Product (Aluminium)



Source: World Bank 2023 https://www.worldbank.org/en/data/interactive/2023/06/15/relative-cbam-exposure-index#3

4.2. Aluminium Sector Emission Intensity and Economic Implications of CBAM

The emission intensity of Mozambique's aluminium sector presents a complex picture with potentially contradictory implications for CBAM exposure. According to the World Bank's "Mozambique Country Climate and Development Report" (2023b), the country's aluminium production is comparatively emission-low when contrasted with major competitors like China, India, or Kazakhstan. This assessment can be attributed to Mozambique's electricity generation mix, which is dominated by hydropower, accounting for 76% of the country's installed capacity, alongside gas (17%), fuel (%), and minimal solar contribution (1%) (World Bank 2023b, 75).

These characteristics have prompted Mozambique's aluminium industry to promote "green aluminium" claims in light of the CBAM. Especially the Mozal aluminium smelter, which represents a significant portion of the country's aluminium production capacity and is owned by the Australian South 32 Cooperation, has positioned itself as producing environmentally friendly aluminium due to the hydropower-dominated energy mix (Machado 2023; South32 2024). Some, critical analysis suggests that Mozambique may be more carbon-intensive than it appears due to its indirect dependence on South Africa's coal-based energy infrastructure, particularly in manufacturing processes. Such dependencies, if substantial, could expose Mozambique to higher CBAM costs than anticipated, with some estimates suggesting potential GDP losses of up to 2.5% (Machado 2023; FurtherAfrica 2022).

However, it is important to note that this scenario assumes the inclusion of indirect emissions from the electricity used in production within the CBAM. In reality, under the current regulation, importers of aluminium into the EU are exempt from reporting and purchasing certificates for these indirect emissions. Since Mozambique's exports to the EU mainly consist of raw aluminium, the electricity mix used in production has little impact on the number of certificates required for these imports.

Consequently, as correctly highlighted and applied by the World Bank in their Technical Note for the CBAM Exposure Index (World Bank 2023c), only direct emissions, often referred to as scope 1 emissions, should be considered when assessing Mozambique's exposure. That said, evaluating the actual direct emission intensity of aluminium smelters in Mozambique is challenging due to limited publicly available data.

The Mozal Aluminium Smelter, Mozambique's main aluminium producer, has published a sustainability report addressing the smelter's emission intensity and its implications for the

CBAM. They report a total emission intensity of 11.4 tonnes CO_2e per tonne of product, but this figure includes both direct and indirect emissions. The company's sustainability report (South32, 2024) does not provide a detailed breakdown between these components. By comparison, the EU's default values for raw aluminium emissions are 2.36 tonnes CO_2e per tonne for direct emissions and 8.14 tonnes CO_2e per tonne for indirect emissions, totaling 10.49 tonnes CO_2e per tonne. Assuming Mozal's emissions follow a similar distribution between direct and indirect emissions, the EU default values offer a reasonable proxy. Therefore, the calculations presented in the preceding chapter remain highly relevant for evaluating Mozambique's exposure under CBAM.

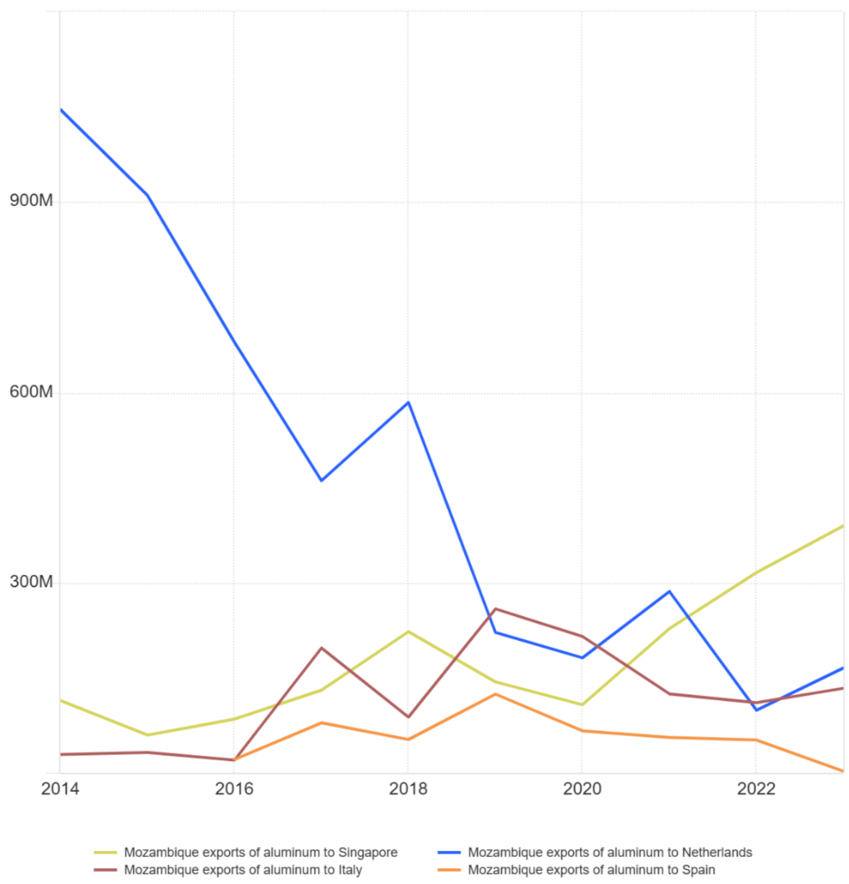
Regarding the CBAM, Mozal states that the EU CBAM currently has no material financial impact on its operations. However, the company acknowledges that the policy could have significant negative implications in the future if indirect emissions become subject to CBAM charges. Under the current framework, it criticizes the EU's unique emission reporting requirements, which differ from global standard methods. The company highlights that, according to the EU's emission calculation guidelines, the reported emission intensity may be significantly higher than under its previous framework based on global standards. Mozal plays a significant role in Mozambique's economy, contributing approximately 4% to national GDP, employing over 2,500 people directly, and supporting an additional 21,000 indirect jobs through its economic activity, providing some of the better-paying jobs in the country (South32 2024, 67). Given these figures, any negative effects of CBAM on Mozal could disproportionately affect well-paid employment in Mozambique.

Considering other aluminium smelters, a study by the African Climate Foundation and the London School of Economics estimates a general wage decline of 0.12% in Mozambique under the CBAM. Although this reduction appears small, it could be significant in a country marked by high poverty levels and limited economic resilience (Machado 2023; AFC-LSE 2023, 30). To mitigate these impacts aluminium producers in Mozambique may consider shifting their markets to other regions.

4.3. Possibility of Export Market Shifts

An analysis of recent trade statistics reveals a decline in Mozambique's aluminium exports to EU countries. As illustrated in Figure 6, exports to the Netherlands have decreased significantly in recent years, and a slight decline in exports to Italy and Spain can be observed. In contrast, exports to Singapore have shown a marked upward trend. These dynamics may suggest a strategic reorientation of trade, potentially aimed at circumventing the EU's increasing reporting requirements and mitigating the anticipated economic impact of the CBAM. However, the shift away from EU markets began well before the CBAM was announced in 2021, making a direct causal relationship unlikely. Nevertheless, the observed redirection of aluminium exports underscores a key limitation of the CBAM: its environmental effectiveness is undermined when trade flows are shifted to countries lacking carbon pricing mechanisms. In such cases, emissions are not reduced but rather relocated, diminishing the CBAM's contribution to global emission reduction efforts.

Figure 7 Mozambique Exports of Aluminium



Source: Tradingecnomics https://tradingeconomics.com/mozambique/exports-by-country

5. The EU CBAM and Developing Countries: Current Stance and Potential Solutions

As shown through the analysis of Mozambique, developing countries, especially those highly dependent on carbon-intensive exports to the EU, face significant challenges under the CBAM. Building on insights from the case study, this chapter now broadens its scope to examine the effects the CBAM may have on other developing economies. It also proposes potential solutions and amendments that the European Commission could adopt to mitigate negative economic consequences on LDCs while taking actions to realize global climate goals.

5.1. Economic and Environmental Impacts

As discussed in the previous chapter, Mozambique may experience GDP losses of up to 2.5% and a general wage decline of 0.12%. The broader economic impacts on developing countries are further examined in the report: "Carbon Border Adjustment Mechanisms and Developing Countries" by the United Nations Conference on Trade and Development UNCTAD (2021). The researchers analysed three different Carbon Border Adjustment Scenarios and highlighted their impacts on trade, employment, and emission reduction.

Scenario 1 serves as the baseline, reflecting the current situation but with a lower domestic carbon price in the EU. It assumes that the EU applies a carbon price of $44 per tonne only to domestic production, without any border adjustment on imports. In this scenario, UNCTAD finds that while emissions within the EU decrease by approximately 13%, carbon leakage rises by 13.3%. A significant share of emissions is effectively shifted to other countries through increased imports of carbon-intensive goods. Developing countries benefit slightly in this scenario, as their exports become more competitive compared to the EU and countries like Brazil, for instance, experience slight GDP gains under this model (UNCTAD 2021, 16–23).

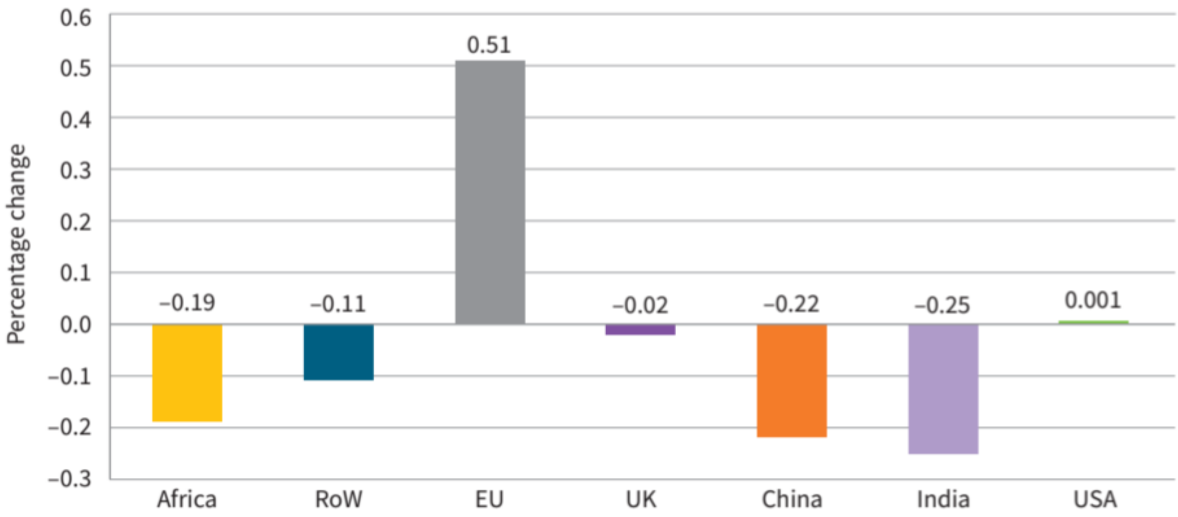
Scenario 2 assumes that in addition to the domestic carbon pricing of the EU a CBAM of $44 per tonne is introduced, covering the key sectors of steel, aluminium, cement and fertilizers but LDCs and Small Island Developing States (SIDS) are exempt. This Scenario would result in an overall 0.1% drop in global emissions and reduction of EU carbon leakage from 13.3% to 5.2%. Notably, while emissions outside the EU decrease significantly, a partial return of production to the EU leads to a small increase in EU emissions (UNCTAD 2021, 17).

Scenario 3 most closely reflects the current design of the CBAM framework, assuming a carbon price of $88 within the EU and an equivalent CBA applied without LDC exemptions. Initially, the higher carbon price results in a carbon leakage rate of 15.1%. However, the strong CBAM lowers the emissions abroad by 55%. Developing countries would experience export declines in the CBAM-affected sectors, averaging 2.4% at a carbon price of $88 while developed countries outside the EU would not suffer from any export declines but benefit from market shifts since their production is less carbon-intensive. As a result, carbon-intensive industries in developing countries are likely to experience increased unemployment and a slight decline in GDP (UNCTAD 2021, 17–24).

A study conducted by the African Climate Foundation and the London School of Economics and Political Studies, focused specifically on the impact of the CBAM on African countries (AFC-LSE 2023). The report highlights that Africa, which hosts 33 of the world's 46 LDCs, is particularly vulnerable because of Africa's reliance on the EU as a primary export market, particularly for products like aluminium, iron and steel, cement, and fertilizers (AFC-LSE 2023, 9–10). Similar to UNCTAD, they analyse different CBAM scenarios with different coverage levels and carbon prices and come to the same conclusion: LDCs will likely suffer under GDP and export losses due to default emission values and lack of decarbonisation capacity while the global emission reduction remains comparatively small (AFC-LSE 2023, 16–18).

In the scenario most closely aligned with the current scope of the CBAM, assuming a carbon price of €87 and a limited list of covered products, Africa's GDP is projected to decline by 0.91%. While emissions would decrease significantly outside the EU, the resulting decline in exports to the EU could lead to increased production within the EU, causing emissions within the EU to rise by 0.51%. As a result, much of the emission reductions achieved abroad would be offset, and the overall global reduction would amount to just 0.28% – down from an initial estimate of 0.79% (AFC-LSE 2023, 18). Similar conclusions are drawn by Kenneth Bicol Dy and Han Yang, whose simulation shows that while the CBAM reduces production and emissions in non-EU countries, it simultaneously boosts EU production which would lead to a 0.38% reduction in global emissions (Kenneth Bicol Dy and Han Yang 2025, 1). These findings underscore the limited global environmental impact of the CBAM in its current form and also indicate potential protectionist interests.

Figure 8 Impact of the CBAM on CO 2 emissions, by economy (% change)



Source: AFC-LSE 2023 https://www.lse.ac.uk/africa/assets/Documents/AFC-and-LSEReport-Implications-for-Africa-of-a-CBAM-in-the-EU.pdf

To meaningfully reduce global emissions, the CBAM would need to either cover a wider range of products or apply a higher carbon price. Since the mechanism's core objective is to drive down global emissions and the European Commission has the authority to broaden the scope of the policy, it is likely that the CBAM will be expanded after its initial implementation phase. While the AFC-LSE report assesses the impact of the CBAM on the African economy under its current scope as relatively moderate, it cautions that an expansion of the mechanism to additional products or an increase in carbon prices could lead to significantly greater negative effects, with Africa's GDP potentially declining by up to 1.12% (AFC-LSE 2023, 35).

However, even within its current scope, the policy may act as a de facto trade barrier for developing countries due to their limited institutional and infrastructural capacity to comply with CBAM requirements. As the AFC-LSE report highlights, most African countries lack carbon pricing systems and the technical means to monitor and report embedded emissions accurately. As a result, default carbon intensity values are likely to be applied to their exports, artificially inflating their actual emissions profiles and increasing their CBAM liabilities (African Climate Foundation and LSE 2023, 40).

After analysing the results of both the UNCTAD and the AFC-LSE report it shows that at a carbon price of €80 to €90, developing countries are likely to face economic setbacks, with limited capacity to adapt to the demands of the EU's CBAM and a high possibility of reduced exports to the EU. This raises significant concerns about the policy's impact, suggesting that without exemptions or compensatory measures, the CBAM could deepen existing economic inequalities and hinder development prospects – especially once the mechanism expands.

If development prospects are undermined, the EU risks unintentionally contributing to a long-term increase in global emissions by keeping developing countries on the left side of the EKC, where economic growth correlates with environmental degradation. By reducing export revenues and constraining GDP growth, the CBAM may limit the capacity of these countries to invest in clean technologies. This outcome would contradict the EU's broader objective of promoting global emissions reduction in the long run.

A potential positive impact of the CBAM for developing countries is a shift toward greater local value addition to mitigate the negative economic impacts. Since fully assembled products, such as car doors or furniture, fall under different customs codes and are currently not covered by the CBAM, this may incentivize domestic production of higher-value goods. Such a shift could contribute to job creation, increased GDP, and enhanced industrial development. Moreover, the possibilities of cost-competitive production, driven by lower labour, manufacturing, and land costs, may attract foreign direct investment, further supporting economic growth.

A possible shift toward local value addition and industrial development could offer some long-term opportunities, particularly if supported by investment and capacity-building measures. However, scenario analyses by UNCTAD and the African Climate Foundation in collaboration with the LSE show that, under the current scope – and especially if the CBAM is expanded – least developed countries are likely to face GDP and export losses, particularly in carbon-intensive sectors like aluminium, steel, and cement. These effects are mainly due to limited institutional capacity, which leads to the use of default emission values, and the lack of exemptions for vulnerable economies. While global emissions may decline modestly, the policy risks undermining development prospects and reinforcing global inequalities. Moreover, by constraining economic growth, the CBAM may hinder environmental progress in the Global South by keeping countries on the emissions-intensive side of the Environmental Kuznets Curve.

5.2. Policy Shortcomings and Potential Solutions

During the CBAM's negotiation phase, calls for direct support to developing countries were largely dismissed. Notably, multiple NGOs signed an open letter urging the EU to consider mechanisms for compensation, exemption or support for affected countries (VIDC 2024).

While the European Commission has pledged to assess CBAM impacts on LDCs after the transitional phase and allowed for a 50-tonne annual threshold in the latest revision, substantive support mechanisms remain absent. Several policy adjustments could help mitigate the negative effects of the CBAM on developing countries, while also aligning with the EU's broader objectives of global emissions reduction supporting the movement along the Environmental Kuznets Curve.

A key recommendation mentioned in the AFC-LSE report is the exemption of LDCs from CBAM obligations. The rationale for this approach lies in the principle of "common but differentiated responsibilities," which recognises the minimal historical contribution of LDCs to global emissions and their heightened vulnerability to climate change. Although the EU initially considered such exemptions, it ultimately decided against them. Instead, it proposed financial and technical assistance to support decarbonisation in LDCs (AFC-LSE 2023, 48).

Redirecting CBAM revenues toward supporting developing countries offers a promising pathway. However, to date, the EU has made no concrete financial commitments to support developing countries under the CBAM framework. Instead, revenues generated from the mechanism have been allocated to the EU Innovation Fund, which focuses on supporting climate innovation within the Union, rather than contributing to international climate investments (AFC-LSE 2023, 48). Several studies argue that using CBAM revenues to promote clean technology adoption and capacity-building in LDCs could enhance both the effectiveness and fairness of the mechanism (Perdana and Vielle 2022, 3). By improving access to environmentally sound technologies and enabling participation in global low-carbon value chains, such measures could reduce the carbon intensity of exports and support long-term climate transitions. In practice, this would require not only financial funding, but also enhanced technology transfer under international frameworks such as the agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement (AFC-LSE 2023, 45).

The TRIPS Agreement is a key international legal instrument administered by the World Trade Organization (WTO) that establishes minimum standards for the protection and enforcement of intellectual property rights. In the context of climate-related technologies, TRIPS has faced criticism for creating barriers to the access of green technologies in developing countries. However, it also contains a range of flexibilities for LDCs, which the AFC-LSE report encourages these countries to actively utilize. African nations should make strategic use of TRIPS provisions on compulsory licensing and technology transfer to access environmentally sound technologies. Doing so will require coordinated efforts among LDCs to clarify the applicability of these provisions to climate technologies and to advocate for necessary reforms. In parallel, African LDCs must proactively identify priority technologies for decarbonisation and work to strengthen implementation and monitoring mechanisms to fully benefit from the available TRIPS flexibilities (AFC-LSE 2023, 46).

Complementary adjustments to administration of the CBAM could also ease the compliance burden on developing countries. For instance, current rules impose high default carbon intensity values on exporters without verifiable emissions data. This disproportionately affects countries lacking efficient monitoring systems and may result in inflated CBAM costs for goods that are not necessarily high-emitting. Supporting the development of national and regional carbon accounting systems, including the establishment of carbon registries and monitoring, reporting and verification frameworks, would enable fairer emissions assessments and facilitate compliance (AFC-LSE 2023, 17).

Furthermore, institutional reforms are essential to ensure that the CBAM fosters inclusive and cooperative approaches to global climate governance. In light of potential legal challenges under WTO rules and widespread concerns about the CBAM's unilateral nature, greater transparency and multilateral engagement are crucial. This includes involving affected countries in the design and implementation of the CBAM, establishing a formal grievance mechanism, and coordination with the United Nations Framework Convention on Climate Change (UNFCCC) process. The UNFCCC provides the primary international forum for negotiating global climate commitments, particularly through mechanisms that emphasize common but differentiated responsibilities and support for developing countries. Aligning the CBAM with the principles and procedures of the UNFCCC would enhance the policy's legitimacy and political acceptability among LDCs (Magacho, Espagne, and Godin 2024, 254).

To better align the CBAM with the principles of the UNFCCC, the adoption of a Low-Information CBAM (LBAM) could serve as a pragmatic compromise between fully including LDCs and exempting them entirely. The LBAM model proposed by Campolmi et al. (2024) reduces data requirements and administrative complexity, offering a more accessible and inclusive framework for countries with limited institutional capacity. While the simplified nature of the LBAM may increase the risk of misuse by large corporations, such as Mozal in Mozambique, appropriate safeguards and monitoring could be introduced to ensure fair and effective implementation. The LBAM could also serve as a transitional phase, giving LDCs more time to adapt their emission monitoring frameworks, and would ideally be accompanied by EU support to help upgrade their systems in line with EU standards. This would enable them to become CBAM-compliant without suffering major economic losses or facing the risk of market shifts.

6. Conclusion

This thesis set out to investigate the central research question: How does the EU's CBAM impact developing economies, particularly Mozambique? In doing so, it further aimed to evaluate the regulation's effectiveness in reducing global CO_2 emissions and to critically examine its potential protectionist character. Through a theoretical analysis, an empirical case study, and a critical policy evaluation, the thesis has demonstrated the potential impacts of the CBAM. The key findings can be summarized as follows.

6.1. Main Findings

The current scope of the CBAM reveals underlying protectionist features, both in principle and in practice. From a theoretical perspective, the CBAM functions as a carbon-based tariff officially designed to prevent carbon leakage and ensure a level playing field for EU industries. Drawing on traditional tariff theory, it is understood that tariffs raise the prices of imported goods, with the additional costs often passed on to domestic consumers. While such measures tend to benefit domestic producers by shielding them from foreign competition, tariffs imposed on input materials can have negative effects by increasing production costs. This possibility was tested through the ERP analysis, which indicated that the CBAM provides moderate to high levels of protection for EU-based aluminium sheet manufacturers. The potential protectionist character of the CBAM was further illustrated through the estimation of CBAM certificate costs, which revealed a possible 3,6% increase in material costs at a carbon price of €80 per tonne of CO_2e.

Effectivity in emission reduction will be limited under the current scope. While the CBAM may encourage some countries to adopt carbon pricing mechanisms, the thesis evaluated its effectiveness in delivering meaningfully to global emission reductions is limited. According to simulations the mechanism's current scope would have only a low emission reduction effect globally between 0,28% and 0,38%. In light of this limited environmental impact, a protectionist climate policy like the CBAM cannot be justified, as it fails to serve a greater objective such as advancing urgent climate goals.

The exemption of indirect emissions in the aluminium sector limits the policy's overall impact on Mozambique and other LDCs. Incorporating indirect emissions in the aluminium sector under the CBAM would disproportionately affect producers and intensify the economic impact on export-dependent developing economies, given the sector's high energy intensity. In this light, the decision to exempt indirect emissions in the initial phase appears to be a pragmatic policy choice, as their inclusion would have made compliance unfeasible for many exporters. The empirical case study of Mozambique supports this conclusion. While the country's largest aluminium producer has not yet expressed significant concern about the immediate impact of the CBAM, it has highlighted the potentially severe burden that would arise if indirect emissions were to be included in the calculation. Furthermore, analyses by UNCTAD and the African Climate Foundation, have highlighted growing concerns that indirect emissions may eventually be included in the CBAM, highlighting uncertainty and worry among developing country exporters.

The absence of EU-compliant emission monitoring frameworks forces exporters to rely on default EU values, which likely overstate actual emissions and inflate CBAM-related costs. This issue was particularly emphasized in the ACF report, which focused on the challenges faced by African countries. Assessing the emission intensity of aluminium production in Mozambique was also difficult due to limited publicly available data. However, based on available information from Mozal, emission levels appear to be close to the default values set by the European Commission. Despite this, the company noted that the EU's expected monitoring system differs from their current practices and would likely result in higher reported emissions under the CBAM framework.

Developing countries will experience export declines in the CBAM-affected sectors, and might shift their markets elsewhere. On average, developing countries are projected to experience a 2.4% decline in exports as a result of the CBAM. Trade data suggests that Mozambique may have already adjusted its export strategy: a notable increase in aluminium exports to Singapore following the significant decrease of aluminium exports to the Netherlands. This trend reinforces the hypothesis that exporters may seek to avoid the economic and administrative burden of EU environmental policies.

The CBAM thus presents significant challenges for developing economies, particularly Mozambique, by introducing new cost and compliance burdens for export-oriented industries. The CBAM essentially creates a double burden for LDCs: on the one hand, they must adapt to new administrative and financial requirements with limited capacity, and on the other, they face the possibility of losing critical export revenues. Mozambique's vulnerability is especially pronounced due to its strong reliance on aluminium, which makes up nearly 20% of its total exports, with the EU as the primary market. Without substantial investments in emissions monitoring systems and clean technologies, countries like Mozambique risk being excluded from EU markets altogether and shifting their exports towards countries with less stringent climate policies.

With the potential for GDP decline and limited resources to invest in clean technologies, the CBAM risks locking LDCs into the early, pollution-intensive stage of the EKC. In Africa, where GDP losses are estimated to reach up to 1.1% , the policy threatens to reinforce existing global inequalities and delay development in regions that historically contributed the least to global emissions yet are most vulnerable to climate change. If countries fail to reach the turning point of the EKC and remain on its left side, economic growth will continue to be associated with high emission intensity. Such an outcome would ultimately contradict the EU's broader objective of promoting long-term global emissions reduction.

The most striking finding of this thesis is the disproportion between the very limited projected environmental benefits and the economic harm imposed on LDCs. Under the current CBAM framework, global emissions are expected to fall by only 0.28% to 0.38%, while some developing countries could see major economic losses. Overall in Africa, GDP is projected to decline by up to 1.12%, and Mozambique could lose as much as 2.5% of its GDP. The CBAM therefore functions more as a tool of trade protectionism than as an effective climate policy, offering limited environmental benefits while imposing negative consequences on the world's most vulnerable economies and effectively shielding the EU's own market.

Moreover, the CBAM lacks transparency and has not meaningfully involved the countries most affected by it. This weakens its credibility as a fair and inclusive tool for global climate action. By ignoring the principle of different responsibilities and capabilities – set out in the UNFCCC – the policy's fairness is called into question. A climate policy that is truly fair and effective should not only impose costs and reporting requirements but also help countries make the transition to cleaner production.

To address these concerns, the thesis suggested several policy changes. First, the EU should consider exempting LDCs from CBAM requirements. Second, the money raised from CBAM certificates should be used in a transparent way to support climate projects in affected countries, helping them reduce emissions and build greener industries. Redirecting a portion of CBAM revenues to support the development of national monitoring, reporting, and verification systems, technology transfer, and green infrastructure in LDCs would represent a more balanced and equitable approach. Such measures would also help prevent the artificial inflation of costs that occurs when exporters are forced to rely on default emission values due to insufficient monitoring capacity. Third, the EU should work more closely with international frameworks like the UNFCCC to make the CBAM part of a fairer global climate strategy. Finally, simpler models such as the LBAM could be tested to reduce the administrative workload while still contributing to emission reduction.

In conclusion, the success of the CBAM depends not only on its ability to reduce emissions but also on its political and ethical legitimacy in the eyes of the international community. While it represents progress in climate policy, its current design raises concerns about fairness and coherence with development goals. Without meaningful adjustments, the policy risks being seen more as a form of green protectionism than as a tool for fostering global cooperation to combat climate change.

6.2. Further Research

Further empirical research is needed to monitor actual changes in trade flows, emissions, and investment patterns resulting from the CBAM. Country-specific studies focusing on emissions monitoring capacity, sectoral vulnerabilities, and trade diversification strategies would enrich the debate on the CBAM policy design.

Interdisciplinary research linking climate science, international trade law, and development economics will be critical to designing equitable and effective global carbon pricing instruments. Moreover, further studies should explore how mechanisms like the LBAM could be scaled and institutionalized, and how capacity-building measures can be effectively financed. The intersection of climate policy and trade regulation will continue to evolve, and robust research will be essential to ensure that instruments like the CBAM achieve their stated goals without sacrificing equity or inclusiveness.

7. Literature

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8. Tables and Figures:

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Figure 4. Aluminium Prices. *Source*: Trading Economics, "Aluminum," accessed 6 June, https://tradingeconomics.com/commodity/aluminum

Figure 5. Carbon Trading Prices Covered by Emissions Trading Systems in Selected Countries as of April 2024. *Created by the author based on*: Statista https://www.statista.com/statistics/1241719/carbon-trading-prices-worldwide-by-select-country/

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ANNEX 1: List of goods for which only direct emissions are to be taken into account

Iron and steel

CN code	Greenhouse gas
72 – Iron and steel Except: 7202 2 – Ferro-silicon 7202 30 00 – Ferro-silico-manganese 7202 50 00 – Ferro-silico-chromium 7202 70 00 – Ferro-molybdenum 7202 80 00 – Ferro-tungsten and ferro-silico-tungsten 7202 91 00 – Ferro-titanium and ferro-silico-titanium 7202 92 00 – Ferro-vanadium 7202 93 00 – Ferro-niobium 7202 99 – Other: 7202 99 10 – Ferro-phosphorus 7202 99 30 – Ferro-silico-magnesium 7202 99 80 – Other 7204 – Ferrous waste and scrap; remelting scrap ingots and steel	Carbon dioxide
7301 – Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; welded angles, shapes and sections, of iron or steel	Carbon dioxide
7302 – Railway or tramway track construction material of iron or steel, the following: rails, check-rails and rack rails, switch blades, crossing frogs, point rods and other crossing pieces, sleepers (cross-ties), fish- plates, chairs, chair wedges, sole plates (base plates), rail clips, bedplates, ties and other material specialised for jointing or fixing rails	Carbon dioxide
7303 00 – Tubes, pipes and hollow profiles, of cast iron	Carbon dioxide
7304 – Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	Carbon dioxide
7305 – Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406,4 mm, of iron or steel	Carbon dioxide
7306 – Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	Carbon dioxide
7307 – Tube or pipe fittings (for example, couplings, elbows, sleeves), of iron or steel	Carbon dioxide
7308 – Structures (excluding prefabricated buildings of heading 9406) and parts of structures (for example, bridges and bridge-sections, lock- gates, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, shutters, balustrades, pillars and columns), of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel	Carbon dioxide

7309 00 – Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	Carbon dioxide
7310 – Tanks, casks, drums, cans, boxes and similar containers, for any material (other than compressed or liquefied gas), of iron or steel, of a capacity not exceeding 300 l, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	Carbon dioxide
7311 00 – Containers for compressed or liquefied gas, of iron or steel	Carbon dioxide
7318 – Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter pins, washers (including spring washers) and similar articles, of iron or steel	Carbon dioxide
7326 – Other articles of iron or steel	Carbon dioxide

Aluminium

CN code	Greenhouse gas
7601 – Unwrought aluminium	Carbon dioxide and perfluorocarbons
7603 – Aluminium powders and flakes	Carbon dioxide and perfluorocarbons
7604 – Aluminium bars, rods and profiles	Carbon dioxide and perfluorocarbons
7605 – Aluminium wire	Carbon dioxide and perfluorocarbons
7606 – Aluminium plates, sheets and strip, of a thickness exceeding 0,2 mm	Carbon dioxide and perfluorocarbons
7607 – Aluminium foil (whether or not printed or backed with paper, paper-board, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0,2 mm	Carbon dioxide and perfluorocarbons
7608 – Aluminium tubes and pipes	Carbon dioxide and perfluorocarbons
7609 00 00 – Aluminium tube or pipe fittings (for example, couplings, elbows, sleeves)	Carbon dioxide and perfluorocarbons
7610 – Aluminium structures (excluding prefabricated buildings of heading 9406) and parts of structures (for example, bridges and bridge-sections, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, balustrades, pillars and columns); aluminium plates, rods, profiles, tubes and the like, prepared for use in structures	Carbon dioxide and perfluorocarbons

7611 00 00 – Aluminium reservoirs, tanks, vats and similar containers, for any material (other than compressed or liquefied gas), of a capacity exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	Carbon dioxide and perfluorocarbons

7612 – Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas), of a capacity not exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	Carbon dioxide and perfluorocarbons
7613 00 00 – Aluminium containers for compressed or liquefied gas	Carbon dioxide and perfluorocarbons
7614 – Stranded wire, cables, plaited bands and the like, of aluminium, not electrically insulated	Carbon dioxide and perfluorocarbons
7616 – Other articles of aluminium	Carbon dioxide and perfluorocarbons

Chemicals

CN code	Greenhouse gas
2804 10 00 – Hydrogen	Carbon dioxide

ANNEX 2: Default values for the transitional period for aluminium

Aggregated goods category	CN code	Description	Default values (tonne CO_2e/tonne goods)		
			Direct emissions	Indirect emissions	Total emissions
Unwrought aluminium	7601	Unwrought aluminium	2,36	8,14	10,49
Aluminium products	7603	Aluminium powders and flakes	2,48	8,4	10,88
	7604 10 10	Bars and rods of aluminium, not alloyed	2,31	7,49	9,80
	7604 10 90	Profiles of aluminium, not alloyed	2,73	9,30	12,04
	7604 21 00	Hollow profiles of aluminium alloys	2,73	9,30	12,04
	7604 29 10	Bars and rods of aluminium alloys	2,31	7,49	9,80
	7604 29 90	Profiles of aluminium alloys	2,73	9,30	12,04
	7605	Aluminium wire	2,31	7,49	9,80
	7606	Aluminium plates, sheets and strip, of a thickness exceeding 0,2 mm	2,86	9,25	12,11
	7607	Aluminium foil (whether or not printed or backed with paper, paperboard, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0,2 mm	2,86	9,25	12,11
	7608	Aluminium tubes and pipes	2,73	9,30	12,04
	7609 00 00	Aluminium tube or pipe fittings (for example, couplings, elbows, sleeves)	2,73	9,30	12,04
	7610	Aluminium structures (excluding prefabricated buildings of heading 9406) and parts of structures (for example, bridges and bridge-sections, towers, lattice masts, roofs, roofing frameworks, doors and windows and their frames and thresholds for doors, balustrades, pillars and columns); aluminium plates, rods, profiles, tubes and the like, prepared for use in structures	2,73	9,30	12,04

7611 00 00	Aluminium reservoirs, tanks, vats and similar containers, for any material (other than compressed or liquefied gas), of a capacity exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	2,86	9,25	12,11
7612	Aluminium casks, drums, cans, boxes and similar containers (including rigid or collapsible tubular containers), for any material (other than compressed or liquefied gas), of a capacity not exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	2,86	9,25	12,11
7613 00 00	Aluminium containers for compressed or liquefied gas	2,86	9,25	12,11
7614	Stranded wire, cables, plaited bands and the like, of aluminium, not electrically insulated	2,31	7,49	9,80
7616	Other articles of aluminium		See below	
7616 10 00	Nails, tacks, staples (other than those of heading 8305), screws, bolts, nuts, screw hooks, rivets, cotters, cotter pins, washers and similar articles	2,86	9,25	12,11
7616 91 00	Cloth, grill, netting and fencing, of aluminium wire	2,86	9,25	12,11
7616 99 10	Other - Cast	2,48	8,40	10,88
7616 99 90	Other - Other	2,86	9,25	12,11