

Climate Policy as a Geopolitical Tool: How the European Union's Carbon Border Adjustment Mechanism Affects its Relationships with Africa and China

Katharina Koch
University of Calgary

Alaz Munzur
University of Saskatchewan

Jennifer Winter[†]
University of Calgary

June 2023

Abstract

The European Union's carbon border adjustment mechanism (CBAM) — proposed in 2021 and ratified by the European Council and Parliament to come into effect in October 2023 — will set a border carbon price on imports in six sectors: aluminium, cement, electricity, fertilizer, hydrogen, and iron and steel. The EU has two goals in implementing the CBAM: (1) to encourage its trading partners to increase their climate ambitions, and (2) to reduce competitiveness pressures on domestic industries, preventing carbon leakage to non-EU countries. The CBAM has the potential to affect the EU's trade and geopolitical relationships, particularly through the process of determining equivalency of non-EU emissions pricing regimes. Moreover, experts criticize the CBAM regulation as placing developing and least-developed countries at a disadvantage as they struggle to keep pace with the energy transition in industrialized countries.

This chapter investigates how the CBAM will affect the EU's trilateral and bilateral geopolitical relationships with Africa and China. We use trade data to identify the exposure of China and a subset of African countries (Algeria, Egypt, Morocco, Mozambique, South Africa and Tunisia) to the CBAM, using CBAM industries' share of exports and the importance of the EU market. We explore the effect of the CBAM on bilateral and trilateral trade relations, and how differences in emissions pricing will affect the treatment of CBAM sector exports from African countries and China. We also present a qualitative analysis of responses from developing countries following the European Commission's 2021 CBAM announcement. We find the CBAM will only have a limited effect on the trilateral relationship between Africa, China and the EU. Each African country has a unique trade relationship with the EU as well as individual emissions-reduction approaches. However, Mozambique is a least developed country particularly exposed to the CBAM, placing the debate of exemptions based on developing status at the forefront of its bilateral relationship. Moreover, South Africa is prepared to challenge the EU's CBAM, in concerted action with China, through the BASIC country bloc. Therefore, the CBAM may significantly affect the trilateral relationship between the EU, China and South Africa.

Keywords: CBAM, European Union, Climate Policy, Carbon Leakage, Geopolitical Relations, Developing Countries.

[†] Corresponding author: jwinter@ucalgary.ca.

Introduction

Following adoption of the Paris Agreement in 2015, many countries have implemented policy mixes to mitigate emissions and adapt to climate change, strengthening their climate commitments. These policies include emissions pricing mechanisms, in the form of performance standards, direct taxes, and emissions trading systems (The World Bank, 2022a). The European Union (EU) is in the process of reforming its emissions trading system (ETS) and introducing a carbon border adjustment mechanism (CBAM) to tax imports of a select set of emissions-intensive industries — aluminum, cement, electricity, fertilizer, and iron and steel — from third countries. The EU pursues two goals with this new policy. First, to encourage its trading partners to increase their climate ambitions, and second, to reduce competitiveness pressures on domestic industries and prevent carbon leakage¹ to non-EU countries. The European Commission (EC) released the proposed CBAM regulation in July 2021 (European Commission, 2021c), followed by a revised version in December 2022 (Council of the European Union, 2022). The European Parliament and European Council voted in favour of adopting it in April 2023 (European Council, 2023; European Parliament, 2023b). The CBAM will come into force in October 2023² (Council of the European Union, 2022).

Opposition to the CBAM immediately emerged within the EU and from some of its main trading partners, including China (Overland & Sabyrbekov, 2022). The CBAM will be particularly challenging for developing countries due to the emissions intensity of their exports and domestic electricity production (Böhringer et al., 2022). More broadly, the CBAM might result in World Trade Organization (WTO) litigation and retaliatory trade measures, should third countries perceive it as a discriminatory trade measure in breach of international trade law. Both place strain on geopolitical relations between the EU and third countries. Given these factors, our guiding research question is *how will the CBAM affect the EU's trilateral and bilateral geopolitical relationships with African countries and China?* We use trade data and differences in emissions

¹ Leakage occurs when industries transfer their production to economies with less-stringent emission reduction policies. The EU's current approach to preventing leakage is providing free allocations of emissions permits to facilities subject to the ETS; this lowers the average cost of emissions at these facilities and protects both domestic and international competitiveness (Winter, 2022). The ETS transition will phase out these free allocations and phase in the CBAM (European Commission, 2023).

² On October 1, 2023, the CBAM will enter into force in its transitional phase, equiring importers to report on direct and indirect greenhouse gas emissions. The permanent system enters into force on 1 January 2026 (European Commission, 2023).

pricing to examine the exposure of six African countries (Algeria, Egypt, Morocco, Mozambique, South Africa and Tunisia) and China to the effects of the CBAM, and a qualitative analysis of China and the six African countries' responses to the CBAM regulation to examine the effect on the trilateral relationship between Africa, China and the EU.

Carbon border adjustments (CBAs) such as the CBAM are trade measures complimenting other types of climate-protection policies and environmental regulations (Böhringer et al., 2010). The effect of CBAs on global trade flows, strategic interactions across countries, and carbon leakage is an evolving area of research (Böhringer et al., 2010; Cosbey et al., 2019; Böhringer et al., 2022). Several scholars argue the CBAM is an in-disguise trade restriction to protect domestic industries, potentially burdening developing countries through additional reporting and exporting requirements, and increased EU-export costs (Balistreri et al., 2019; Erixon, 2021; Marín Durán, 2023). A mitigating factor is that if countries adopt emissions pricing with a price equivalent to the EU ETS, they would be exempt from the CBAM (European Parliament, 2023a).

Nevertheless, developing and least developed countries (LDCs) may not have the capacity to adopt equally stringent policy. Moreover, the CBAM potentially undermines the Paris Agreement principle of “common but differentiated responsibilities and respective capabilities” (African Climate Foundation & London School of Economics, 2023). Consequently, some of the EU's trading partners may perceive the CBAM as a coercive or punitive measure that may violate WTO principles of non-discrimination³ between trading partners (Eicke et al., 2021; Galiffa & Bercero, 2022; Holmes et al., 2011; Monjon & Quirion, 2011; Overland & Sabyrbekov, 2022). Although developing countries and LDCs “account for a minimal share of EU-external trade in the CBAM commodities”, the vulnerability stems from their export exposure to the EU (Perdana & Vielle, 2022).

The trade implications of the CBAM may be significant as the EU is a key market for emission-intensive goods from Africa and China (Munzur et al., 2023). African countries most likely to be affected are Algeria, Egypt, Mozambique, Morocco, South Africa, and Tunisia, though levels of exposure differ significantly. For example, in 2019, 22% of Mozambique's exports were aluminum, with 83% going to the EU; this is 8% of the EU's aluminum imports and 60% of Mozambique's total exports to the EU. In contrast, the EU share of South Africa's aluminum

³ This principle is known as “most-favoured-nation treatment”; under WTO agreements, countries cannot normally discriminate between their trading partners (World Trade Organization, 2023).

exports is 32%, which only accounts for 2.5% of its total exports to the EU (United Nations Commodity Trade Statistics Database, 2023). Trade between the six African countries and China in the CBAM sectors is lower in value and share of total exports. In 2019, Mozambique exported 4.5% of its iron and steel to China, just 0.04% of Mozambique's total exports to China. In contrast, South Africa exported roughly the same share of iron and steel to the EU and China (United Nations Commodity Trade Statistics Database, 2023). While the trade relationship between the African countries and China in the CBAM sectors is generally minor in comparison to the EU, we use the trade implications of the CBAM to identify the potential effect on the trilateral relationship. We find the CBAM will only have a limited effect on the trilateral relationship between Africa, China and the EU as the trade exposure levels differ significantly across African countries. However, South Africa, in concert with China, is prepared to challenge the EU's CBAM, and so this is an evolving geopolitical space.

The trilateral relationship took form in the early 2000s, when China "committed to trade and investment in foreign countries, especially within the African continent" to consolidate its global economic power (Tawiah et al., 2021, p. 2). The launch of the Forum on China-Africa Cooperation "marked China's rise in Africa and has since then become the main institutional framework that governs China-Africa relations" (Hooijmaaijers, 2018, p. 443). The EC (2008) responded with a formal proposal of "Trilateral Dialogue and Cooperation," but did not result in any concrete projects due to its failure to engage African representatives and perceptions that it was tailored to Chinese interests (Bertucci & Locatelli, 2020). The EU underestimated China's desire for African resources (coal, steel and fossil fuels), which resulted in competition between China and the EU *over* Africa (Berger, 2006).

The emerging South-South relations between Africa and China, and resulting competition of major economic powers with China, is an ongoing structural change in global trade flows and international diplomacy (Che & Bodomo, 2023; Melber, 2013). China's economic rise also contributed to the emergence of the BRICS⁴ as a bloc, reshaping global governance and geopolitics (Gray & Gills, 2016). The economic achievements of emerging economies in the Global South, such as China and South Africa, initiated a scholarly debate on a "new phase of challenge or construction of alternatives to the hegemonic and neo-colonial politics from the Global North" (Gray & Gills, 2016, p. 558). This includes increasing scholarly attention to the role of emerging

⁴ BRICS is the acronym for the bloc of Brazil, Russia, India, China and South Africa.

economies during international climate change negotiations (Hurrell & Sengupta, 2012). The 2009 Conference of the Parties in Copenhagen (COP 15) saw a power shift in global environmental governance as the BASIC (Brazil, South Africa, India and China) group brokered the final Copenhagen Accord with the United States (Hurrell & Sengupta, 2012; Qi, 2011). The CBAM will affect the EU's trading partners and is likely another impetus for changing the trade and geopolitical trilateral relationship between Africa, the EU and China.

We next introduce the details and purpose of the EU's CBAM regulation, including a general discussion of WTO rules and the potential effect on developing countries. We then present the existing emission-reduction policies in China, the EU and the six African countries, followed by a discussion of the trade relationships, and the joint and national responses to the CBAM. We conclude by identifying key next steps for research on these relationships.

The EU Carbon Border Adjustment Mechanism and the Current Policy Environment

While 73 jurisdictions in 48 countries have implemented emissions pricing as of 2023, there is stark variation in pricing levels (The World Bank, 2022b). Such disproportionate emissions-reduction efforts may lead to the relocation of economic activity to countries with less-stringent climate policies, with limited reductions in global emissions. To prevent this leakage and encourage decarbonization outside of its borders, on July 14, 2021, the EC released a regulatory proposal for a CBAM (European Commission, 2021c). The CBAM aims to “ensure the price of imports reflects more accurately their carbon content” while minimizing the risk of carbon leakage and equalizing the cost of carbon between imported and domestically-produced goods (European Commission, 2021b, p. 2). The CBAM will apply to imports the European Economic Area (EEA), and Switzerland (European Commission, 2021c).⁵

CBAs are a policy option for preserving domestic competitiveness in the presence of unequal emission-reduction policy. By pricing emissions embodied in imports, domestic pricing also applies to importers. In the absence of a CBA, domestic producers face competition from lower-cost foreign products subject to laxer emissions regulations. Although complex and costly

⁵ The members of the European Economic Area are the EU27 plus Iceland, Norway and Liechtenstein. The EU27 consists of Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

to implement, a CBA has the potential to limit carbon leakage by shifting the economic burden to countries with less-stringent emissions regulations⁶. The original CBAM regulation proposed an emissions tax payable on imports of aluminum, cement, electricity, fertilizer, iron and steel.⁷ In December 2022, the European Parliament negotiated the inclusion of hydrogen, “as well as some precursors and a limited number of downstream products” and indirect emissions “in a well-circumscribed manner” (Council of the European Union, 2022). The updated proposal for the CBAM regulation, published by the European Parliament in April 2023, defines indirect emissions as those those from electricity used to produce a listed good, and presents equations used to calculate direct and indirect emissions. The default values for embodied emissions rely on EU emissions intensities (European Parliament, 2023a). The CBAM transitional phase only requires importers to report on direct and indirect emissions. The permanent system with payment enters into force on 1 January 2026 (European Commission, 2023).

As an “external projection of a country or region's climate policies” (Perdana & Vielle, 2022), the CBAM could be viewed as a discriminatory trade measure, infringing on the principles of non-discrimination in WTO law. The CBAM could “perpetuate existing power imbalances in global trade” and give the EU greater control over global trade, placing developing economies and LDCs at a disadvantage (African Climate Foundation & London School of Economics, 2023). Moreover, the United Nations Framework Convention on Climate Change (1992) established that parties should protect the climate system based on equity by recognizing their differentiated responsibilities. Similarly, the Kyoto Protocol set binding emission reduction targets for 37 industrialized countries and the EU, with voluntary targets for developing nations. Article 2 of the Paris Agreement declares that the agreement “will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC), in the light of different national circumstances” (United Nations, 2015). A blanket application of the CBAM without distinguishing between national socio-economic conditions risks “shifting the

⁶ Leakage-prevention is only partial, as a BCA protects domestic production’s internal market share from lower-cost imports (where the cost difference is from less stringent environmental policy elsewhere). Preserving international competitiveness requires export rebates. An alternative tool that protects domestic firms’ international and domestic competitiveness is an output-based pricing system, which provides an output subsidy to emissions-intensive and trade-exposed production, mitigating the costs of environmental policy (Droege & Fischer, 2020).

⁷ A full list of emissions covered by the draft regulation for each individual industry is published by the EC (European Commission, 2021a). For all five industries, the focus is on carbon dioxide (CO₂), but fertilizers also include nitrous oxide (N₂O) and aluminum includes perfluorocarbon (PFC) emissions.

burden of emissions reductions to developing countries” (Winter, 2022, p. 34), inconsistent with the principles of equity and CBDR-RC. Furthermore, industry in developing countries is often more emissions-intensive and subject to fewer emissions-reduction policies (Böhringer et al., 2022; Winter, 2023).

As an environmental trade measure, the CBAM may be contested as incompatible with the General Agreement on Tariffs and Trade (Balistreri et al., 2019; Erixon, 2021; Marín Durán, 2023). Specifically, article III “requires WTO members to treat foreign goods no less favorably than comparable domestic goods” (Monjon & Quirion, 2011, p. 1214). The CBAM regulation will thus need to “be drafted and applied in a way that does not unjustifiably or arbitrarily discriminate between domestic and foreign products and among foreign products from different origins” (Tamiotti, 2011, p. 1203). For example, exemptions based on the country of origins could allow for differential treatment of developing countries and LDCs. Table 1 summarises relevant WTO rules that could be invoked against CBAs on both imports and exports from research by the EU Policy Department for External Relations.

Table 1. Relevant WTO rules for the CBAM.	
WTO Rule Potentially Invoked	Effect on EU
Tariff Bindings (import rule)	A carbon adjustment, for example on steel, if construed as an import tariff, could be found to exceed the EU’s tariff binding on steel.
National Treatment (import rule)	The EU promised not to discriminate (either de jure or de facto) imported products as compared to like EU products. The EU must ensure a ‘level playing field’.
Prohibition on quantitative import restrictions	If the EU carbon adjustment were not seen as an import tariff or duty, but rather as a border restriction limiting imports, GATT Article XI could be violated (General Elimination of Quantitative Restrictions)
Most-favored-nation treatment	Whatever the classification of the carbon adjustment, it cannot discriminate between like products imported from different countries.
Export subsidy	If an EU adjustment mechanism were to include an exemption or rebate for exports, other WTO members could challenge this as an export subsidy, as such exemption or rebates could be seen as a ‘financial contribution’ by the EU in the form of ‘government revenue that is otherwise due’ which is ‘foregone or not collected’ contingent on exporting the product. Export subsidies are prohibited under WTO agreements.
Source: Pauwelyn (2020).	

In the proposed regulation, the European Parliament (2023b, p. 8) addresses the issue of WTO compatibility and equivalent policies for exempting third countries from the CBAM:

“As an instrument to prevent carbon leakage and reduce GHG emissions the CBAM should ensure that imported products are subject to a regulatory system that applies carbon costs equivalent to the ones that otherwise would have been borne under the EU ETS, resulting in an equivalent carbon pricing for imports and domestic products and a level playing field. The CBAM is a climate measure which should support the reduction of emissions in the Union in line with the European Green Deal and Regulation (EU) 2021/1119 and prevent the risk of carbon leakage, while ensuring compatibility with WTO rules.”

The CBAM regulation includes three types of exemptions:

- 1) The regulation should apply to goods imported into the customs territory of the Union from third countries, except where their production has already been subject to the EU ETS, whereby it is applied to third countries or territories, or to a carbon pricing system fully linked with the EU ETS (European Commission, 2021b, Recital 14).
- 2) An authorized declarant should be allowed to claim a reduction in the number of CBAM certificates to be surrendered corresponding to the carbon price already paid for those emissions in other jurisdictions (European Commission, 2021b, Recital 38).
- 3) If technical solutions cannot be found, third countries that are market-coupled should benefit from a time-limited exemption from the CBAM until at the latest 2030 with regard solely to the export of electricity, provided that certain conditions are satisfied (such as an equivalent price as the EU ETS) (European Commission, 2021b, Recital 49).

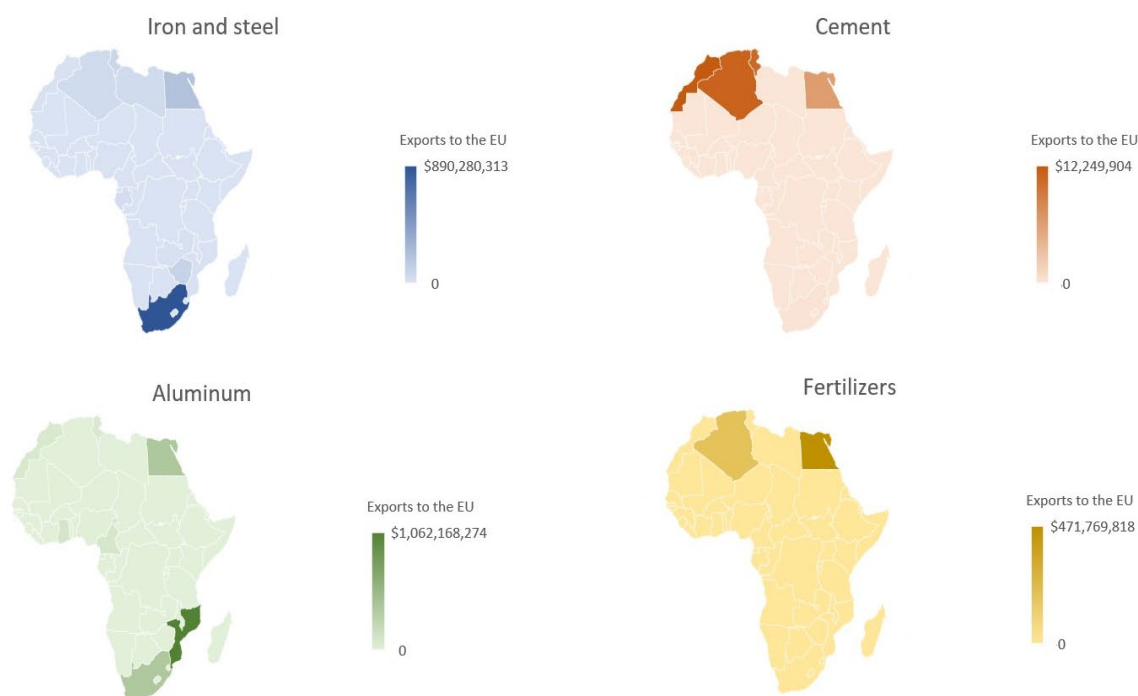
Developing countries and LDCs may be particularly interested in legally challenging the CBAM at the WTO if they perceive it will create unfavorable outcomes. With this in mind, we now turn to discussing the effects of the CBAM on the trilateral relationship between Africa, China, and the EU.

Effect of the CBAM on Trilateral Relationships

Potentially coercive and unilateral environmental and trade policies, including the CBAM, could shift trade dynamics between Africa, the EU and China. The effect of the CBAM on bilateral and trilateral relationships will depend on two main factors: countries' domestic emissions policy which determines treatment under the CBAM, and the strength of existing trade relationships in

the CBAM sectors, which determines exposure to the CBAM. In 2019, the EU’s main trading partners from Africa in the six CBAM sectors were Algeria, Egypt, Morocco, Mozambique, South Africa and Tunisia (Figure 1). In this section, we explore exposure to the CBAM for these six African countries and China using the lenses of climate and trade, and then discuss political responses.

Figure 1. 2019 African Exports of Aluminum, Cement, Fertilizers and Iron and Steel to the EU (USD).



Source: United Nations Commodity Trade Statistics Database (2023).

Note: There are no exports of hydrogen from African countries to the EU. Morocco is the only country in Africa that exports electricity to the EU; in 2019 it’s electricity exports to the EU was approximately \$61 million US.

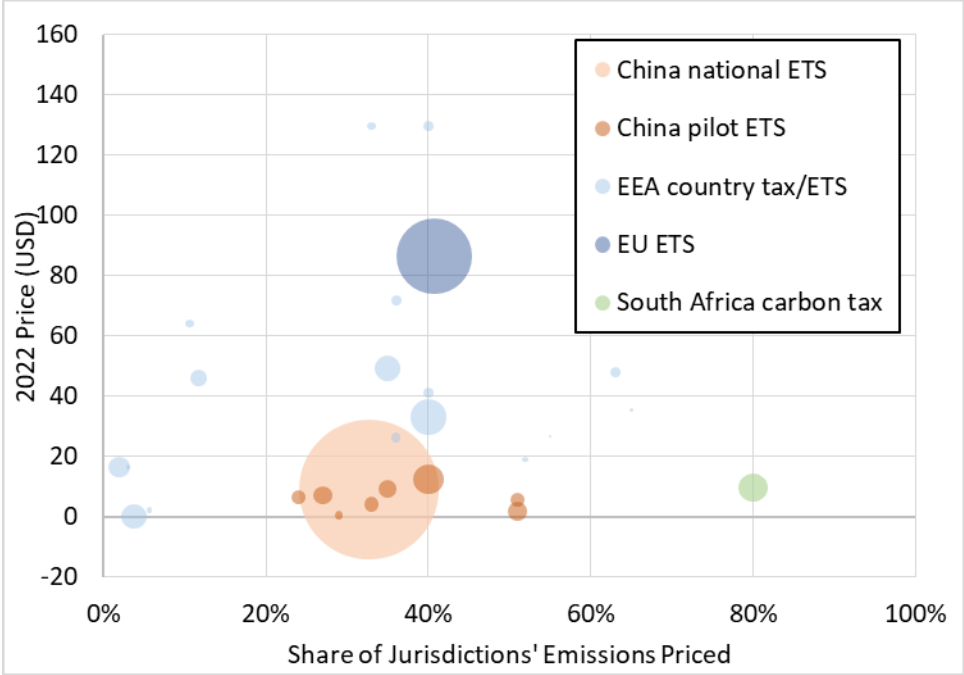
Emission-Reduction Policies in the EU, Africa and China

The emissions pricing policies in the EU, China and Africa differ in scope, coverage, design and price level (Figure 2, Table 2).⁸ In 2005, the EU ETS came into force, capping industrial emissions

⁸ Carbon taxes and ETSs are two different approaches to pricing emissions, with distinct implementation mechanisms. Carbon taxes are a direct tax on emissions, applying a fixed rate per tonne of CO₂-equivalent. In contrast, an ETS operates by requiring firms to remit emission permits equivalent to their emissions to government. These allowances are distributed by a regulatory body; emitters may be required to purchase these allowances through auctions or direct purchase, or may receive free allocations from government. Emitters can also trade allowances, establishing a market

(Table 2); the ETS applies in all EU countries and Iceland, Norway, and Switzerland. Most European Economic Area countries also have carbon taxes or domestic ETSs that expand pricing beyond the coverage of the ETS (Parry et al., 2022). Currently, the only African country with emissions pricing is South Africa, which implemented its carbon tax in 2019. South Africa’s tax covers all six CBAM sectors. Morocco is analysing the feasibility of national carbon pricing (The World Bank, 2022a). Several Chinese regions have cap and trade programs covering industrial and non-industrial activities, and China’s national ETS covering electricity generation⁹ came into force in mid-2021; the national ETS is expected to expand to cover other industrial sectors in the future. Importantly, China’s national system is a tradeable performance standard, where firms are required to have an emissions intensity below a specific benchmark and tradeable emissions permits are allocated based on facility output (Goulder et al., 2022).

Figure 2: Emissions prices and share of emissions priced



Source: Authors’ calculations from The World Bank (2022a).

Note: Circle size is jurisdictions’ total 2018 emissions.

price for emissions (for further information see Parry et al., 2022; Winter, 2022). An ETS can take the form of a cap and trade system or an emissions performance standard.

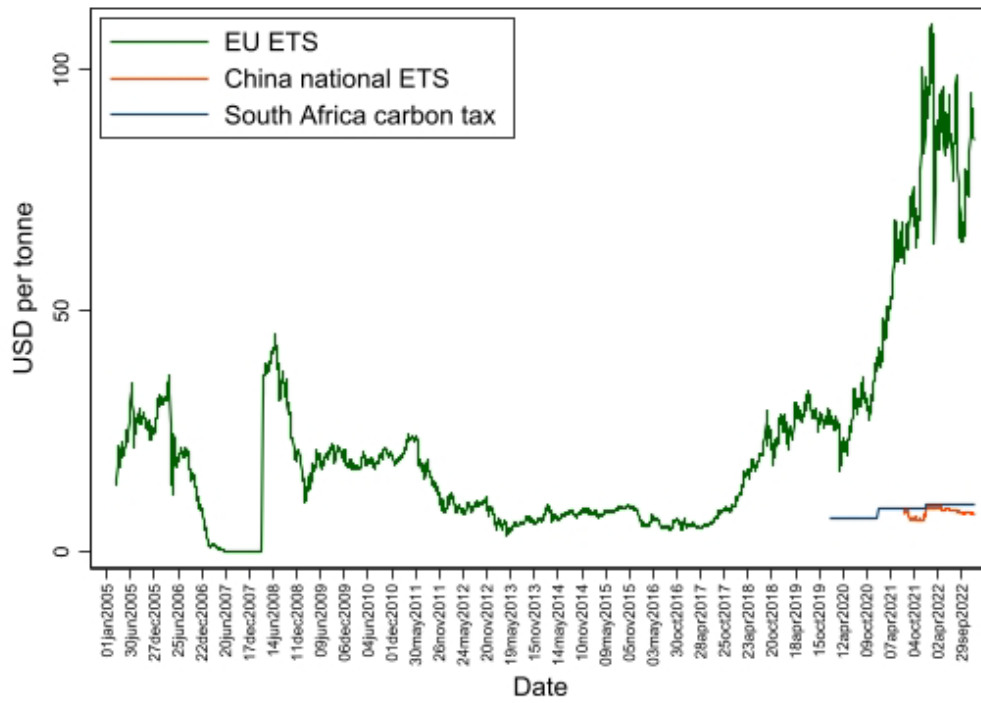
⁹ Electricity production covered by the regional cap and trade systems has transitioned to the national ETS.

Table 2. Status of Emissions-Reduction Policies in China, the EU and South Africa.			
	China National ETS	EU ETS	South Africa Carbon Tax
Status	In force (since mid-2021)	In force (since 2005)	In force (since 2019)
Total GHG emissions (2018)	13,740 MtCO _{2e}	4001 MtCO _{2e}	547 MtCO _{2e}
Share of jurisdiction's emissions covered	32.75%	40.72%	80.00%
GHG Reduction Target	CO ₂ peak before 2030; neutrality by 2060.	By 2030: At least 55% below 1990 GHG levels. By 2050: climate neutrality.	By 2050: net-zero emissions
GHG covered	CO ₂	CO ₂ , N ₂ O, PFCs.	CO ₂ , CH ₄ , N ₂ O, PFCs, HFCs, SF ₆
Sectors	Power sector. Future coverage of cement, aluminum, iron and steel, nonferrous metals, petroleum refining, chemicals, pulp and paper, and aviation. No specific timeline for expansion.	Power sector, manufacturing, and aviation (including flights from the EEA to the United Kingdom).	Businesses above a given threshold in energy production (including power), manufacturing, and transport. Does not apply to the residential sector or agriculture.
Point of Regulation	Combustion emissions from power generation.	Operators are liable for reporting the emissions covered under the EU ETS at a facility level and surrendering an equivalent amount of EU emission allowances (and eligible offsets).	Point source.
Number of entities	2,162 (2020 and 2021) Power entities covered by the Chinese regional ETS pilots have transitioned into the national market.	9,628 stationary installations. 349 aircraft operators.	Unavailable
Cap	No absolute cap on emissions.	1,597 MtCO _{2e} (2021)	N/A
Permit Allocation	Free allocation based on four fuel-based benchmarks: conventional coal plants below 300MW; conventional coal plants above 300MW; unconventional coal plants; and natural gas. Entities receive allowances based on output multiplied by the corresponding benchmark factor. Auctioning may be introduced in the future.	Auctioning; free allocation of permits to emissions-intensive and trade-exposed sectors.	Sector-specific tax-free allowance on emissions, up to 95% of total emissions.
<p>Notes: China has several regional ETS pilots in Beijing; Chongqing; Fujian, Guangdong, Hubei, Shanghai, Shenzhen, Tianjin. Shenyang is also considering an ETS. The EU ETS applies in the EU27 and Iceland, Norway, and Switzerland. Denmark, Estonia, Finland, France, Iceland, Ireland, Latvia, Luxembourg, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, and The Netherlands have carbon taxes. Austria and Germany have domestic ETs. The region of Catalonia in Spain is considering a carbon tax.</p> <p style="text-align: right;">Source: China's Emissions Trading Scheme (2020); South African Government (2019); South African Revenue Service (n.d.); The World Bank (2022a).</p>			

Figure 3 and Figure 4 show that stark pricing differences exist between the EU, and China and South Africa. The CBAM regulation offers exemptions for those countries that have equally stringent carbon pricing as the one applicable under the EU ETS, but these differences render China and South Africa unlikely to be exempt. In December 2022, the EU carbon permits were 85.12 USD whereas China's national carbon permits were 7.88 USD. Some of China's regional ETS pilot programs, such as Beijing, had higher prices than the national ETS (Figure 4). However, China's prices remain significantly below the EU ETS. In South Africa, the carbon tax was 9.48 USD in 2022. Carbon pricing in China and South Africa was 90% and 88% lower than the EU ETS. A best-case scenario for both countries is that they must only pay the difference between their current price and the CBAM rate (set at the ETS price level). However, the EU may choose to consider domestic policy design when calculating the CBA rate. For China, there are two complicating factors. First, the design of China's ETS allocates permits at no cost to facilities, providing an output subsidy (Goulder et al., 2022); how the EU will treat this is unclear with implications beyond China.¹⁰ Second, whether the EU recognizes the regional ETS pilots where they price emissions in CBAM sectors. If the EU does not recognize these pilots, then Chinese exports of aluminum, cement, fertilizer, hydrogen, and iron and steel will be fully exposed to the CBAM. For South Africa, the presence of tax-free emissions allowances for firms covered by the carbon tax reduces the average and marginal costs of emissions; the EU may choose to prorate the 'effective' South Africa price by the value of the allowances, increasing South African exports' exposure to the CBAM.

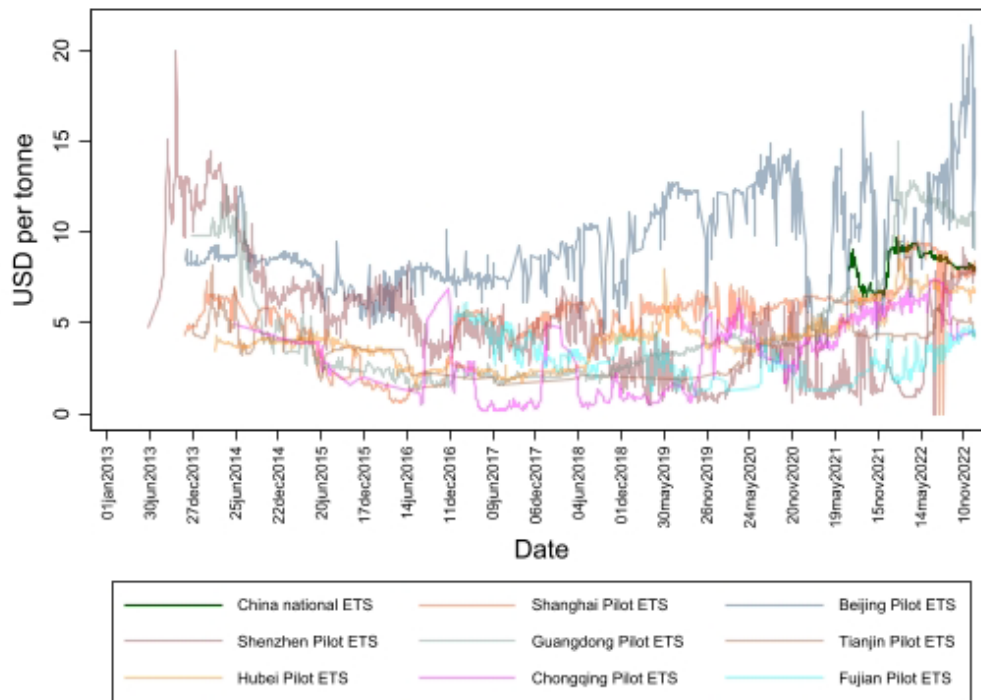
¹⁰ Many jurisdictions, including the EU ETS, use free allocations of permits to mitigate the cost of compliance with emissions pricing.

Figure 3: Emissions prices in the EU, China and South Africa, 2005 to 2022



Source: International Carbon Action Partnership (2023); The World Bank (2022a).

Figure 4: China Emissions Prices, 2013 to 2022



Source: International Carbon Action Partnership (2023).

Current Trade Relationships and Implications of the CBAM

The CBAM will affect countries proportionate to their exports to the EU, measured by value and the relative share of CBAM-sector exports in total exports.¹¹ To understand the effect of the CBAM on the trilateral trade relationships between the EU, China, and the EU's main trading partners in Africa, we explore the exposure of the exports of these countries to the policy change (Tables 5 through Table 11).

The EU is an important destination for Africa's CBAM-sector exports (trade data available in Tables 5 through 10 in the annex). However, even among the EU's six main African trading partners, there is large variation in potential exposure to the CBAM. Mozambique will be one of the most exposed countries, mainly because of its aluminum exports to the EU. The EU share of Mozambique's aluminum exports was 83% in 2019, 19% of Mozambique's total exports (Table 8). In comparison, although the EU's share of Egypt's total aluminum exports was 71%, aluminum was only 2% of Egypt's total exports, reflecting a relatively lower sectoral exposure to the CBAM (Table 6). South Africa is also among the most adversely affected economies with its exports to the EU in the CBAM sectors reaching \$1.5 billion in 2019 (Table 9).

China is the world's largest exporting country, and the EU is a major destination for Chinese exports. However, the CBAM will likely have limited effect on China's trade with the EU, as the CBAM sectors make up only 1.7% of China's total exports to the EU (Table 11). China is the top aluminum, iron and steel supplier to the EU and faces the greatest exposure to the CBAM in these sectors. In 2019, exports of these two sectors were 99.5% of China's CBAM-sector exports. By value, aluminum, iron and steel exports to the EU were \$6.22 billion, compared to \$23 million in fertilizer exports. Another indicator of China's limited exposure to the CBAM is China's low dependence on EU exports in CBAM sectors. Of China's total exports in these sectors, only 9% go to the EU.

Relative to the EU, Africa is a very small market for Chinese exports. Among the six African countries most exposed to the CBAM, South Africa is the leading destination for China's CBAM-sector exports. In 2019, China's exports to South Africa were \$650 million, only about 1% of China's CBAM-sector exports and 0.03% of China's total exports. South Africa is also the

¹¹ Economies that provide inputs for other countries to export to the EU in the CBAM sectors will face the indirect effects of this policy. For such countries, although the direct effect is low, indirect effects can be high if they depend on production linkages with directly-affected countries. In this section, we limit our focus to the CBAM's direct effects.

main destination for the two of China’s most exposed sectors (aluminum and iron and steel), but the shares of these sectors in China’s total sector exports are also about 1%. This implies that the potential for the CBAM to cause a major increase in Chinese exports towards Africa is low.

Similarly, China is not a major export destination in CBAM sectors for the six African countries. Existing trade flows shows that overall, the CBAM is unlikely to increase the exports of the six African countries to China. China receives a relatively substantial share of CBAM-sector exports from only Mozambique and South Africa. China’s share of Mozambique’s iron and steel exports is 4.5% and it is 17.5% for South Africa. Although the bilateral trade flows in CBAM sectors between these three regions indicate limited exposure the CBAM, this conclusion does not take into account the production linkages across countries, which we leave for future work.

Political Responses

To filter the international and national responses to CBAM from China and the six African countries, we present the major debates which emerged at COP 26 (Glasgow, UK, 2021) and COP 27 (Sharm el-Sheikh, Egypt, 2022) around mitigation work programs, CBAs, and carbon markets. China and the six African states are part of several major blocs and geopolitical groups presenting a unified voice at COP meetings (Table 3).

Table 3. UN Conference of the Parties major blocs and groups that include countries affected by CBAM.	
Bloc/ Group	Relevant Countries (African continent + China)
African Group	54 members from African countries including Algeria, Egypt, Morocco, Mozambique, South Africa and Tunisia .
Arab States	Algeria , Bahrain, Comoros, Djibouti, Egypt , Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco , Mauritania, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia , United Arab Emirates, and Yemen.
BASIC	Brazil, South Africa , India, China
BRICS	Brazil, Russia, India, China , South Africa
Coalition of Rainforest Nations (CfRN)	African members: Botswana, Cameroon, Central African Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique , Namibia, Nigeria, Republic of Congo, Sierra Leone, South Africa , Sudan, Uganda, Zambia.
Climate Vulnerable Forum (CVF)	African members: Burkina Faso, Benin, Chad, Comoros, Cote d’Ivoire, Democratic Republic of Congo, Eswatini, Ethiopia, The

	Gambia, Ghana, Guinea, Kenya, Lebanon, Liberia, Madagascar, Malawi, Morocco , Niger, Palestine, Rwanda, Senegal, South Sudan, Sudan, Tanzania, Tunisia , Uganda, Yemen.
Group77 + China	All developing countries in the global South. In total, 134 developing countries including China.
Least Developed Countries (LDC)	46 countries including Mozambique .
Like Minded Group of Developing Countries (LMDC)	Algeria , Bangladesh, Bolivia, China , Cuba, Ecuador, Egypt , El Salvador, India, Indonesia, Iran, Iraq, Jordan, Kuwait, Malaysia, Mali, Nicaragua, Pakistan, Saudi Arabia, Sri Lanka, Sudan, Syria, Venezuela and Vietnam.
Source: United Nations, n.d.	

The composition of country blocs and groups indicates priorities and international relations; Table 4 shows the main topics of contention, key issues raised by African countries and China, and negotiation stance by the bloc or group before COP 27. While most African countries negotiate within their respective country blocs, China also raises key issues independently. Importantly, not every country bloc released negotiation positions prior to COP27, as the positions developed throughout the negotiations.

Topic/Issue	Opinion
Doubling adaptation finance.	Top Concern: African Group; BRICS; CVF; G77+China; LDC
Give adaptation equal weight as mitigation.	Top Concern: African group; LMDC
Mitigation work program: based on CBDR and climate justice/equity.	Top Concern: African Group; LMDC Support: China
Mitigation work program: implementation and support for developing country nationally determined contributions.	Top Concern: African Group
New international obligations for developing countries.	Oppose: African Group; China; LMDC
Introduction of carbon border measures.	Oppose: BASIC; BRICS; China and India; LMDC
Language on ‘major emitters’ (by country).	Non-negotiable boundary: China; LMDC.
Remove trade barriers and sanctions that undermine low-carbon transition.	Support: China
Mitigation work program should not encourage trade protectionism and unilateralism.	Non-negotiable boundary: China
Integrity for all carbon markets.	Top Concern: LDC
Source: Chandrasekhar et al., 2022.	

Responses from Country Blocs and Coalitions

Several country blocs explicitly criticized and lobbied against the EU’s CBAM proposal, in particular those including China (G77, BRICS and LMDC). In October 2021, three months after

the EC introduced its CBAM proposal, the G77+China expressed concern during the United Nations Conference on Trade and Development “that there may be adverse impacts on the economies of developing countries resulting from carbon border taxes and non-tariff trade barriers imposed by developed countries, on the pretext of addressing climate change” (United Nations Conference on Trade and Development, 2021, p. 10). The bloc advocates for multilateral trade and to refrain “from any sort of unilateralism, in particular, unilateral coercive measures” (United Nations Conference on Trade and Development, 2021, pp. 3-4), which characterizes the CBAM proposal (Espa & Holzer, 2023; Venzke & Vidigal, 2022). In numerous communications, the G77+China group reference avoiding coercive and unilateral trade measures “incompatible with WTO Agreements” (G77, 2021, 2022).

In 2021, the BRICS environment ministers expressed “grave concern” for “proposals introducing trade barriers, such as unilateral carbon border adjustment, that are discriminatory” (BRICS, 2021). The statement describes CBAs as “discriminatory” trade measures and at risk of invoking WTO rules should the CBAM proceed without sufficient consideration for the principle of CBDR-RC. The joint communique issued at the BRICS High-Level Meeting on Climate Change, chaired by China in May 2022, states the BRICS “oppose any measures to restrict trade and investment and setting up new green trade barriers with the pretext of addressing climate change, such as the imposition of Carbon Border Adjustments, which are incompatible with multilateral rules under the World Trade Organization” (BRICS, 2022). Similarly, the BASIC group condemned “unilateral measures and discriminatory practices, such as carbon border taxes, that could result in market distortion and aggravate the trust deficit amongst Parties” (Department of Forestry, Fisheries and the Environment, 2022).

Another country bloc vehemently against CBAs is the Like Minded Group of Developing countries which includes Algeria, China and Egypt. In a ministerial meeting held in advance of COP26 in October 2021, the group declared:

“Unilateral coercive measures against developing countries and proposals by developed countries to introduce unilateral carbon border adjustment measures in the name of climate change responses are discriminatory towards developing countries and violate international trade rules, as well as the principles of equity and the UNFCCC provisions. Such measures must be strongly opposed, as they are detrimental to multilateral cooperation.” (LMDC, 2021)

The LMDC may offer the most condemning stance towards the CBAM. Article 3(5) of the Paris Agreement states “measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade” (United Nations, 1992). The LMDC labelled climate negotiations as a “history of broken promises” undermining the multilateral trade system (LMDC, 2021). In October 2022, ahead of COP 27, the LMDC ministers went even further and stated CBAs violate international trade rules, the principles of equity and CBDR, and the provisions of the UNFCCC.

The country blocs reactions we describe above include China. In contrast, the Coalition of Rainforest Nations (CfRN), which includes Mozambique and South Africa, is less outspoken against environmental trade measures. Instead of focusing on trade, the CfRN advocates for the reduction of emissions from deforestation and degradation (Coalition for Rainforest Nations, n.d.). The Climate Vulnerable Forum (CVF) focuses on loss and damages and includes countries such as Morocco and Tunisia that claim to be unable to adapt, either due to a lack of options or a lack of resources. Compared to all country blocs, those that include both China and South Africa are the most outspoken against CBAs.

National Responses to Carbon Border Adjustments

Many developing countries, including China, oppose CBAs in principle. China was among the earliest EU trading partners to offer a public response to CBAM, with strong opposition to climate change mitigation programs based on trade protectionism and unilateralism. In September 2021, China’s Ministry of Ecology and Environment declared the CBAM “essentially a unilateral measure to extend the climate change issue to the trade sector”, violating “WTO principles” (Reuters, 2021).

South Africa has examined the implications of CBAs for South Africa, and specifically the CBAM (Ward, 2023). Based on current exemptions outlined by the EU, “it seems unlikely that European policymakers will provide a full-scale exemption to the CBAM for South African producers” as the CBAM should apply in a “neutral” manner (Ward, 2023, p. 15). While the EU will provide technical assistance to developing and LDCs, it is not yet clear whether and what type

of exemptions based on developing country status will be granted¹². However, South Africa is an “upper-middle income country” and an exemption “seems implausible” (Ward, 2023, p. 15). Instead, South Africa’s response could be either to “pursue political and/or legal routes to challenge the entire validity of the CBAM proposal” or “encourage European policymakers to select or alter the design of the CBAM in a way that assuages some of South Africa’s concerns” (Ward, 2023, p. 15). As South Africa has a carbon tax, the government does expect some form of recognition; however, it is unlikely the EU would grant an exemption as the carbon price is significantly lower than the EU ETS.

Trade relations between the EU and Mozambique are governed by an Economic Partnership Agreement, in force in 2018¹³. The EU provides the Southern African Development Community with trade advantages and grants tariff-free and quota-free access for all goods, except arms and ammunition. Furthermore, in April 2021, the EU and the Organization of African, Caribbean and Pacific States (including Mozambique) concluded negotiations on a post-Cotonou agreement (European Commission, 2021d). The proposed text stresses “the urgency to tackle global environmental challenges, the importance of the Paris Agreement on climate change, the urgent need to build stable and sustainable low-carbon economies and societies resilient to climate change” (European Commission, 2021b, p. 7). In 2022, the EU and Mozambique held a bilateral political dialogue, where the EU emphasized green growth as a key priority in new programming assistance to Mozambique (European External Action Service, 2022). During the 2022 African, Caribbean and Pacific - EU Parliamentary Assembly, Mozambique underlined the need for simplified and additional financial resources “to tackle environmental preservation” (Government of Mozambique Portal, 2022b). While not addressing the CBAM or CBAs explicitly, at COP27, Mozambique’s president urged “climate finance providers for the carbon market to make balanced disbursements for the implementation of mitigation and adaptation initiatives to climate change” (Government of Mozambique Portal, 2022a). During COP27, Mozambique’s Minister of Land and Environment listed climate finance, nationally determined contributions (NDCs), renewable energy and forest degradation as key issues that the country aims to tackle with international

¹² The April 2023 CBAM regulation recommends that “the Commission should also explore the possibility of concluding agreements that take into account the carbon pricing mechanism of third countries. The Union should provide technical assistance for those purposes to developing countries and to least developed countries as identified by the United Nations” (European Parliament, 2023, p. 35).

¹³ The Agreement applies to the Southern African Development Community: Botswana, Lesotho, Mozambique, Namibia, Swaziland and South Africa (Official Journal of the European Union, 2016) .

support (Club of Mozambique, 2022). By indicating that carbon markets should consider a balanced approach, with consideration for NDCs, it is likely that Mozambique expects technical assistance as outlined in the updated proposal for a CBAM regulation (European Parliament, 2023a).

The responses from North African countries differ starkly from Sub-Saharan Africa. For example, the former President of the Tunisian Professional Association of Banks and Financial Institutions urged Tunisia to “create its own carbon market, support for ecological transition, achieve carbon neutrality and promote the funding of some business operation” (Agence Tunis Afrique Presse, 2022). Tunisia is moving to ready its industries for CBAM compliance. In January 2023, the National Agency for Energy Conservation organized a CBAM training course in cooperation with the United Nations Development Program, a technical and financial briefing plan for Tunisian industrial enterprises to “help them reduce the carbon content of their products and enhance their capacity competitiveness, especially in the European market” (National Agency for Energy Conservation, 2023). In February 2023, a partnership agreement on the CBAM was signed between the Tunisian Export Promotion Centre (a governmental institution operating under the Ministry of Trade) and AM Media Plus (a Tunisian agency specializing in CBAM certification and corporate social responsibility) to prepare exporting companies for CBAM compliance (Agence Tunis Afrique Presse, 2023).

In Morocco, the central bank (Bank Al-Maghrib) recommended a paradigm shift in public policy to fight climate change (Jouahri, 2021). The Bank identifies climate requirements as a “fundamental pillar” in policy, which also helps to preserve Morocco’s competitiveness in “the face of the multiplication of climate-related restrictions on trade, as is the case of the Carbon Border Adjustment Mechanism” (Jouahri, 2021, p. iv). Berahab & Dadush (2021) argue that although not among the most affected countries, Morocco may face a decline in net revenue from CBAM sector exports to the EU. Berahab & Dadush (2021) recommend Morocco express concerns about the CBAM as a discriminatory trade measure, similar to the opposition raised by China and South Africa. However, total CBAM sector exports are only 0.75% of total EU exports (Table 7), indicating Morocco’s limited exposure to the CBAM under current CBAM design. In February 2023, a conference was held on the implications of a CBAM for the Moroccan economy (Konrad Adenauer Stiftung, 2023). While attending experts warned of the potential negative effects on Morocco’s exports, they also recognized its ability to strengthen Morocco’s energy and

environmental transition; the recommendation was for Morocco to “adapt to the CBAM and take measures to reduce greenhouse gas emissions” (Konrad Adenauer Stiftung, 2023).

The dialogue between the EU and Algeria differs substantially. The CBAM, while not inconsequential for the Algeria-EU trade relationship, was not explicitly discussed between government representatives. Before the invasion of Ukraine, Algeria was the third largest supplier of natural gas to the EU, a position which will have likely increased since the decline of Russian gas exports to the EU (European Commission, n.d.). Algeria’s most affected sector will be aluminum. However, public support for an energy transition is currently lacking in Algeria on both environmental and public health grounds, particularly due to its reliance on fossil fuel exports (Farrand, 2022). The EC initiated a high-level dialogue on energy to strengthen energy relations (Simson, 2022). EU Commissioner Simson outlined three “win-win cooperation” areas for the EU and Algeria, focusing on natural gas and renewable energy, sectors that are currently not included in the CBAM proposal (Simson, 2022).

Similar to Algeria, the trade relationship between the EU and Egypt is also centered on fossil fuel energy and no official dialogue on CBAM took place between EU and Egyptian representatives. In April 2018, the EU and Egypt signed a memorandum of understanding (MOU) for a strategic partnership offering assistance to the Egyptian oil and gas sector, electricity sector reforms, joint measures and projects in renewable energy and the development of energy-efficient strategies, policies, and measures (European Commission, 2018). In June 2022, both Egypt and Israel signed an MOU on cooperation related to natural gas exports to the EU with the EC (European Commission, 2022). After Russia’s invasion of Ukraine, the EU began to strengthen its relationship with natural-gas-exporting countries to secure supply and increase energy security amidst geopolitical turmoil on the European continent. In the MOU, the EU acknowledged the importance of natural gas “in terms of energy consumption and electricity generation” until 2030 (European Commission, 2022, p. 1). Furthermore, all three parties committed to encouraging public and private sector corporations for achieving green energy goals and to combat climate change by utilizing renewable and low-carbon hydrogen, develop green energy solutions and promote energy efficiency.

Conclusion

The EU’s CBAM proposal is a trade mechanism to support its emissions reduction targets. This chapter argues the geopolitical implications of the CBAM will likely affect the trilateral trade

relationship between the EU, Africa and China. Developing countries and LDCs will be particularly exposed to the CBAM as the EU shifts the burden of implementing stringent climate policies to these countries (Balistreri et al., 2019; Erixon, 2021; Monjon & Quirion, 2011; Tamiotti, 2011; Winter, 2022). The most affected African countries, using the EU share of CBAM sector exports, are Algeria, Egypt, Morocco, Mozambique, South Africa, and Tunisia. However, our analysis shows that these countries are not equally exposed to the effects of the CBAM, due to their differing trade relationships with the EU and approaches to emissions-reduction measures. Mozambique will be among the most exposed African countries because of its extensive aluminum exports to the EU. In addition, Egypt (fertilizer and aluminum) and South Africa (iron and steel and aluminum) have major stakes in the EU market. Egypt's main exports to the EU are fossil fuels, not included in the current CBAM proposal, and its exposure to the CBAM is low.

South Africa's response to the CBAM proposal reflects its exposure in comparison to other African countries. The President of South Africa initiated a Presidential Climate Commission (Ward, 2023) which published a report specifically outlining the expected economic effects of the CBAM, including legal or political measures the country could take to challenge its validity. As South Africa's carbon tax is substantially below the EU ETS price, it is unlikely to be granted equivalency. This is also the case for China, as its national ETS only covers electricity generation, and several regional cap and trade programs may not be recognized. In a best-case scenario, both China and South Africa may need to pay the difference between their price and the CBAM rate. Mozambique emphasizes the need for balance in carbon market considerations, underlining the need for financial support to tackle climate change and its role as a LDC, which will likely be recognized by the EU during the implementation of the CBAM (European Parliament, 2023a). However, both Mozambique and South Africa have released extensive research outlining the effects of a CBA on their economies and presented potential counter-actions, including invoking international trade rules that render discriminatory trade measures illegal (Nuvunga, 2022; Ward, 2023).

Chinese representatives have taken a firm stance against CBAs, in cooperation with South Africa at BASIC group summits. China and South Africa's shared opinion of CBAs indicates the potential for joint action to invoke WTO rules against the EU's CBAM, potentially in concerted action with the other BASIC and BRICS members (Brazil and India, and potentially Russia). Furthermore, retaliatory trade measures from these countries could weaken the EU's relationship

with both South Africa and China, further strengthening their bilateral relationship. However, the CBAM is unlikely to significantly influence the trilateral relationship between the African continent, China, and the EU as North African countries continue to foster strong trade relationships with the EU. Both Morocco's and Tunisia's government and industry representatives are encouraged to partake in organized CBAM seminars and workshops that help exporters and trade ministries prepare for the reporting requirements under the CBAM regulation. This approach is different from that of Algeria and Egypt, whose trade relationship with the EU is still dominated by fossil fuel exports that are not included in the CBAM.

The direct effect of the CBAM on African countries is limited to those countries that have significant trade relationships with the EU, such as Mozambique and South Africa. Future research should consider the indirect effects of CBAM through trade in intermediate goods and resources. An examination of input-output linkages between African countries, for example, could reveal further implications of the CBAM for African exports to the EU.

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Annex

Table 5: Algeria's Total Trade (million USD) and Share of Total Industry Exports by value, 2019.

<i>Panel A: Total Trade and Trade with the EU and China</i>				
	Exports	Imports		Total
World	35,992.31	42,311.85		78,304.16
EU	20,650.92	19,077.68		39,728.59
China	1,141.25	6,941.78		8,083.03
EU Share	57.38%	45.09%		50.74%
China Share	3.17%	16.41%		10.32%
<i>Panel B: Global Trade in CBAM Sectors</i>				
	Value of Exports		Sector Share of Total Exports	
Aluminum	3.80		0.01%	
Cement	81.18		0.23%	
Electricity	10.72		0.03%	
Fertilizer	875.93		2.43%	
Iron and Steel	130.03		0.36%	
Total	1,101.66		3.06%	
<i>Panel C: CBAM Sector Trade with the EU</i>				
	Value of Exports to EU	EU Exports as Share of Sector Exports	Sector's Exports as Share of Total EU Exports	Sector's Exports as Share of Total Exports
Aluminum	1.83	48.24%	0.01%	0.01%
Cement	11.51	14.18%	0.06%	0.03%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	209.27	23.89%	1.01%	0.58%
Iron and Steel	50.03	38.48%	0.24%	0.14%
Total	272.65	24.75%	1.32%	0.76%
<i>Panel D: CBAM Sector Trade with China</i>				
	Value of Exports to China	China Exports as Share of Sector Exports	Sector's Exports as Share of Total China Exports	Sector's Exports as Share of Total Exports
Aluminum	0	0.00%	0.00%	0.00%
Cement	0	0.00%	0.00%	0.00%
Electricity	0	0.00%	0.00%	0.00%
Fertilizer	0	0.00%	0.00%	0.00%
Iron and Steel	0	0.00%	0.00%	0.00%
Total	0	0.00%	0.00%	0.00%

Source: United Nations Commodity Trade Statistics Database (2023).

Table 6: Egypt's Total Trade (million USD) and Share of Total Industry Exports by value, 2019.

<i>Panel A: Total Trade and Trade with the EU and China</i>				
	Exports	Imports		Total
World	30,828.83	77,310.31		108,139.14
EU	9,365.11	21,081.79		30,446.90
China	557.42	11,808.05		12,365.47
EU Share	30.38%	27.27%		28.16%
China Share	1.81%	15.27%		11.43%
<i>Panel B: Global Trade in CBAM Sectors</i>				
	Value of Exports		Sector Share of Total Exports	
Aluminum	545.79		1.77%	
Cement	156.79		0.51%	
Electricity	53.15		0.17%	
Fertilizer	1,182.48		3.84%	
Iron and Steel	696.22		2.26%	
Total	2,634.42		8.55%	
<i>Panel C: CBAM Sector Trade with the EU</i>				
	Value of Exports to EU	EU Exports as Share of Sector Exports	Sector's Exports as Share of Total EU Exports	Sector's Exports as Share of Total Exports
Aluminum	386.89	70.89%	4.13%	1.25%
Cement	4.30	2.74%	0.05%	0.01%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	426.40	36.06%	4.55%	1.38%
Iron and Steel	150.13	21.56%	1.60%	0.49%
Total	967.72	36.73%	10.33%	3.14%
<i>Panel D: CBAM Sector Trade with China</i>				
	Value of Exports to China	China Exports as Share of Sector Exports	Sector's Exports as Share of Total China Exports	Sector's Exports as Share of Total Exports
Aluminum	0.45	0.08%	0.00%	0.00%
Cement	0.01	0.00%	0.00%	0.00%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.02	0.00%	0.00%	0.00%
Iron and Steel	0.38	0.06%	0.00%	0.00%
Total	0.86	0.03%	0.01%	0.00%

Source: United Nations Commodity Trade Statistics Database (2023).

Table 7: Morocco's Total Trade (million USD) and Share of Total Industry Exports by value, 2019.

<i>Panel A: Total Trade and Trade with the EU and China</i>				
	Exports	Imports		Total
World	29,582.40	51,048.93		80,631.33
EU	19,776.85	27,109.50		46,886.35
China	283.35	5,179.91		5,463.26
EU Share	66.85%	53.10%		58.15%
China Share	0.96%	10.15%		6.78%
<i>Panel B: Global Trade in CBAM Sectors</i>				
	Value of Exports		Sector Share of Total Exports	
Aluminum	122.93		0.42%	
Cement	48.21		0.16%	
Electricity	60.72		0.21%	
Fertilizer	1.75		0.01%	
Iron and Steel	79.01		0.27%	
Total	312.62		1.06%	
<i>Panel C: CBAM Sector Trade with the EU</i>				
	Value of Exports to EU	EU Exports as Share of Sector Exports	Sector's Exports as Share of Total EU Exports	Sector's Exports as Share of Total Exports
Aluminum	66.13	53.79%	0.33%	0.22%
Cement	12.02	24.94%	0.06%	0.04%
Electricity	60.72	100.00%	0.31%	0.21%
Fertilizer	0.00	0.00%	0.00%	0.00%
Iron and Steel	9.54	12.07%	0.05%	0.03%
Total	148.41	47.47%	0.75%	0.50%
<i>Panel D: CBAM Sector Trade with China</i>				
	Value of Exports to China	China Exports as Share of Sector Exports	Sector's Exports as Share of Total China Exports	Sector's Exports as Share of Total Exports
Aluminum	4.18	3.40%	0.02%	0.01%
Cement	0.00	0.00%	0.00%	0.00%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.00	0.00%	0.00%	0.00%
Iron and Steel	0.97	1.23%	0.00%	0.00%
Total	5.15	1.65%	0.03%	0.02%

Source: United Nations Commodity Trade Statistics Database (2023).

Table 8: Mozambique's Total Trade (million USD) and Share of Total Industry Exports by value, 2019.

<i>Panel A: Total Trade and Trade with the EU and China</i>				
	Exports	Imports	Total	
World	4,722.31	7,638.74	12,361.05	
EU	1,457.30	1,010.26	2,467.56	
China	323.80	861.51	1,185.31	
EU Share	30.86%	13.23%	19.96%	
China Share	6.86%	11.28%	9.59%	
<i>Panel B: Global Trade in CBAM Sectors</i>				
	Value of Exports	Sector Share of Total Exports		
Aluminum	1,061.82	22.49%		
Cement	5.66	0.12%		
Electricity	435.15	9.21%		
Fertilizer	29.29	0.62%		
Iron and Steel	14.22	0.30%		
Total	1,546.14	32.74%		
<i>Panel C: CBAM Sector Trade with the EU</i>				
	Value of Exports to EU	EU Exports as Share of Sector Exports	Sector's Exports as Share of Total EU Exports	Sector's Exports as Share of Total Exports
Aluminum	879.73	82.85%	60.37%	18.63%
Cement	0.00	0.00%	0.00%	0.00%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.00	0.00%	0.00%	0.00%
Iron and Steel	0.69	4.83%	0.05%	0.01%
Total	880.42	56.94%	60.41%	18.64%
<i>Panel D: CBAM Sector Trade with China</i>				
	Value of Exports to China	China Exports as Share of Sector Exports	Sector's Exports as Share of Total China Exports	Sector's Exports as Share of Total Exports
Aluminum	0.00	0.00%	0.00%	0.00%
Cement	0.00	0.00%	0.00%	0.00%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.00	0.00%	0.00%	0.00%
Iron and Steel	0.64	4.50%	0.04%	0.01%
Total	0.64	0.04%	0.04%	0.01%
Source: United Nations Commodity Trade Statistics Database (2023).				

Table 9: South Africa's Total Trade (million USD) and Share of Total Industry Exports by value, 2019.

Panel A: Total Trade and Trade with the EU and China				
	Exports	Imports		Total
World	89,395.99	88,037.49		177,433.48
EU	21,771.48	26,119.37		47,890.85
China	9,595.42	16,264.73		25,860.15
EU Share	24.35%	29.67%		26.99%
China Share	10.73%	18.47%		14.57%
Panel B: Global Trade in CBAM Sectors				
	Value of Exports	Sector Share of Total Exports		
Aluminum	1,741.54	1.95%		
Cement	100.80	0.11%		
Electricity	739.87	0.83%		
Fertilizer	173.55	0.19%		
Iron and Steel	5,358.63	5.99%		
Total	8,114.40	9.08%		
Panel C: CBAM Sector Trade with the EU				
	Value of Exports to EU	EU Exports as Share of Sector Exports	Sector's Exports as Share of Total EU Exports	Sector's Exports as Share of Total Exports
Aluminum	548.23	31.48%	2.52%	0.61%
Cement	0.32	0.32%	0.00%	0.00%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.29	0.17%	0.00%	0.00%
Iron and Steel	962.12	17.95%	4.42%	1.08%
Total	1510.96	18.62%	6.94%	1.69%
Panel D: CBAM Sector Trade with China				
	Value of Exports to China	China Exports as Share of Sector Exports	Sector's Exports as Share of Total China Exports	Sector's Exports as Share of Total Exports
Aluminum	16.69	0.96%	0.08%	0.02%
Cement	0.00	0.00%	0.00%	0.00%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.02	0.01%	0.00%	0.00%
Iron and Steel	939.85	17.54%	4.32%	1.05%
Total	956.56	11.79%	4.39%	1.07%

Source: United Nations Commodity Trade Statistics Database (2023).

Table 10: Tunisia's Total Trade (million USD) and Share of Total Industry Exports by value, 2019.

<i>Panel A: Total Trade and Trade with the EU and China</i>				
	Exports	Imports		Total
World	14,944.09	21,573.85		36,517.93
EU	11,046.95	11,143.05		22,190.00
China	46.65	2,041.66		2,088.31
EU Share	73.92%	51.65%		60.76%
China Share	0.31%	9.46%		5.72%
<i>Panel B: Global Trade in CBAM Sectors</i>				
	Value of Exports		Sector Share of Total Exports	
Aluminum	109.67		0.73%	
Cement	84.82		0.57%	
Electricity	0.00		0.00%	
Fertilizer	0.89		0.01%	
Iron and Steel	147.09		0.98%	
Total	342.47		2.29%	
<i>Panel C: CBAM Sector Trade with the EU</i>				
	Value of Exports to EU	EU Exports as Share of Sector Exports	Sector's Exports as Share of Total EU Exports	Sector's Exports as Share of Total Exports
Aluminum	67.57	61.61%	0.61%	0.45%
Cement	7.97	9.39%	0.07%	0.05%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.48	53.62%	0.00%	0.00%
Iron and Steel	77.50	52.69%	0.70%	0.52%
Total	153.51	44.82%	1.39%	1.03%
<i>Panel D: CBAM Sector Trade with China</i>				
	Value of Exports to China	China Exports as Share of Sector Exports	Sector's Exports as Share of Total China Exports	Sector's Exports as Share of Total Exports
Aluminum	0.50	0.46%	0.00%	0.00%
Cement	0.00	0.00%	0.00%	0.00%
Electricity	0.00	0.00%	0.00%	0.00%
Fertilizer	0.00	0.00%	0.00%	0.00%
Iron and Steel	0.00	0.00%	0.00%	0.00%
Total	0.51	0.15%	0.00%	0.00%

Source: United Nations Commodity Trade Statistics Database (2023).

Table 11: China's Total Trade (million USD) and Share of Total Industry Exports by value, 2019.

<i>Panel A: Total Trade and Trade with the EU and CBAM-Exposed African Countries</i>						
	Exports	Export Share	Imports	Import Share	Total	Total Share
World	2,499,206.99		2,079,285.5		4,578,492.49	
EU	366,724.62	14.67%	252,718.29	12.15%	619,442.91	13.53%
Algeria	6,941.78	0.28%	1,141.25	0.05%	8,083.03	0.18%
Egypt	12,200.71	0.49%	1,000.72	0.05%	13,201.42	0.29%
Morocco	4,034.54	0.16%	633.35	0.03%	4,667.89	0.10%
Mozambique	1,957.70	0.08%	713.24	0.03%	2,670.94	0.06%
South Africa	16,542.94	0.66%	25,948.86	1.25%	42,491.80	0.93%
Tunisia	1,364.20	0.05%	209.10	0.01%	1,573.31	0.03%
<i>Panel B: Global Trade in CBAM Sectors</i>						
	Value of Exports		Sector Share of Total Exports			
Aluminum	26,077.78		1.04%			
Cement	347.12		0.01%			
Electricity	1,589.27		0.06%			
Fertilizer	2,435.93		0.10%			
Iron and Steel	39,414.70		1.58%			
Total	69,864.80		2.80%			
<i>Panel C: CBAM Sector Trade with the EU</i>						
	Value of Exports to EU	EU Exports as Share of Sector Exports	Sector's Exports as Share of Total EU Exports	Sector's Exports as Share of Total Exports		
Aluminum	3,583.61	13.74%	0.98%	0.14%		
Cement	6.29	1.81%	0.00%	0.00%		
Electricity	0.00	0.00%	0.00%	0.00%		
Fertilizer	22.53	0.92%	0.01%	0.00%		
Iron and Steel	2,640.56	6.70%	0.72%	0.11%		
Total	6,252.99	8.95%	1.71%	0.25%		

Source: United Nations Commodity Trade Statistics Database (2023).