TRADE & INDUSTRIAL POLICY STRATEGIES

POLICY BRIEF: 1/2023

The European Union's Carbon Border Adjustment Mechanism and implications for South African exports

OVERVIEW

In 2019, the European Union (EU) introduced the Fit for 55 policy package. The policy package aims to reduce the EU's net greenhouse gas (GHG) emissions by 55% by 2030 compared to 1990 levels and achieve carbon neutrality by 2050. It includes the Carbon Border Adjustment Mechanism (CBAM), a carbon border tax on embedded GHGs of carbon-intensive products imported into the EU.

The first proposal of the CBAM was published in July 2021. Since July 2021, the CBAM has undergone significant changes. In May 2022, the European Parliamentary Committee on Environment (ENVI), the implementing agent of the CBAM, published amendments to the CBAM. In June 2022, the European Parliament voted on and approved these amendments. In December 2022, members of the European Parliament reached a provisional and conditional agreement with the European Council on CBAM, with rules to apply from 1 October 2023 with a transition period. The agreement was endorsed by the ENVI in February 2023. It needs to be confirmed by ambassadors of the EU Member States and by the European Parliament and adopted by both institutions before its finalisation.

The TIPS policy brief, *European Green Deal: The Carbon Border Adjustment Mechanism and implications for South African and European Union trade* by Lerato Monaisa (2021), provided an initial analysis of the impact of the CBAM on South African exports. This policy brief provides an updated analysis, reflecting on the implications of the new provisionally agreed CBAM proposal for South African exports.

INTRODUCTION

The EU Fit for 55 policy package, which was introduced in 2019, aims to reduce the EU's GHG emissions by 55% by 2030 compared to 1990 levels and achieve carbon neutrality by 2050. Included in the Fit for 55 policy package is the Carbon Border Adjustment Mechanism, a carbon border tax on embedded GHGs of carbon-intensive products imported into the EU (Magacho et al., 2022). The CBAM will mirror and function in parallel with the EU Emissions Trading Scheme (ETS). It is intended to equalise the price of carbon between EU products and imports, ensuring importers face similar conditions to EU manufacturers and that the EU climate objectives are not undermined by carbon leakage (Monaisa, 2021).

Carbon leakage occurs when industries relocate to jurisdictions with weaker climate change policies or stay put and lose domestic and foreign market share due to increased carbon prices (Lo, 2021). Free allocations under the EU ETS have, to date, been the mechanisms used to address carbon leakage. With the introduction of the CBAM, free allocations will gradually be phased out in sectors covered by the EU ETS (Magacho et al., 2022).

The CBAM will have a negative impact on South Africa, along with other countries in the Global South. Carbon-intensive exports to the EU will become increasingly costly, due to added carbon pricing, and therefore uncompetitive (Montmasson-Clair and Monaisa, 2022). Companies from non-EU countries will have to proactively prepare for the CBAM and align their business models to a low-carbon future.

[1] *The ETS is a GHG cap-and-trade scheme that contributes towards emissions reduction targets by setting a cap on the maximum level of emissions for several sectors and allows the trading of emission permits at a market-generated price.*

[2] *Free allocation allowances allow industries to emit a percentage of GHG emissions freely under an overall emissions budget that caps total emissions across all sources combined.*

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OVERVIEW OF THE CBAM

The initial CBAM proposal only covered direct emissions from electricity and 29 product categories from the cement, fertiliser, iron and steel and aluminium sectors. In the new, provisionally agreed CBAM proposal, the scope has been extended to include hydrogen as well as indirect emissions (to be included in a well-circumscribed manner by 2026), certain precursors (input materials)[3] for production of the covered products, and some downstream products such as screws and bolts and similar articles of iron and steel. Organic chemicals and polymers (included in a previous draft) and possibly other goods (notably downstream products) will be assessed for inclusion in the CBAM by the European Commission before the end of the transition period (i.e. 2026) (European Commission, 2022; European Parliament, 2022). The methodology for the indirect emissions will also be drafted and reviewed before the end of a transitional period.

A transitional period will apply from 1 October 2023 and CBAM will enter into force in 2026 (Bond et al., 2022). During the transitional period, the burden will be administrative rather than financial, and importers will only report direct GHG emissions[4] embedded in their imports (European Commission, 2022). After the transitional period, importers will have to declare each year the quantity of imports to the EU in the preceding year and their embedded GHG emissions. They will then have to purchase digital CBAM certificates, at a price to be calculated based on the weekly average auction price of EU ETS allowance expressed in €/tonne of CO_2 emitted (European Commission, 2022).

The CBAM would be implemented for all sectors (based on assessments to be done after the transitional period) of the EU ETS by 2030, five years earlier than initially contemplated. Similarly, free allowances under the EU ETS will be phased out by 2030, five years earlier than in the initial proposal (Gide Loyrette Nouel, 2021).

The governance of CBAM will be centralised, with the European Commission responsible for most of the CBAM tasks, including doing assessments and reviewing the CBAM. This centralised governance of CBAM is designed to ensure that the implementation is efficient, transparent, cost-effective and prevents forum shopping from importers (European Parliament, 2021).

The prices of CBAM certificates will be linked to the prices of the emissions allowances under the ETS. Importers will be required to report on the embedded emissions in their products and surrender a corresponding amount of CBAM certificates that they would have purchased in advance. Only importers that have met the CBAM requirements will be permitted to import products which fall within the scope of the CBAM (Newman and Chipfupa, 2022).

Importers that do not have independently verifiable carbon-audited supply chains after the transitional period will have to use default values to determine embedded emissions in affected goods. The default values will be set at the average emission intensity of each exporting country for each covered good (European Parliament, 2021). Importers from countries that have their own carbon prices will be able to claim a reduction in the number of CBAM certificates, although exact modalities are yet to be established (European Parliament, 2021).

Every year, importers will be required to declare the amount of GHG emissions embedded in goods imported plus the number of CBAM surrendered in the previous year. The declaration should contain the total quantity of goods imported during the calendar year, expressed in megawatt-hours for electricity and metric tonnes for other goods, multiplied by the embedded emissions of each good (Monaisa, 2021).

Failure to report the amount of GHG emissions embedded in goods imported and the number of CBAM surrendered in the previous year, or the submission of false information, will result in a penalty. Importers will be liable to pay a penalty for the excess emissions too. The penalty will be €100 for each tonne of CO2 equivalent emitted. Payment of the penalty will not release the importer from the obligation to surrender the outstanding number of CBAM certificates (European Parliament, 2021). In addition to the fine, Member States may apply administrative or criminal sanctions for failure to comply with the CBAM legislation per their national rules.

It is currently unclear how the Member States would enforce these administrative or criminal sanctions on foreign companies (Monaisa, 2021).

[3] *Precursors/input materials will be specified in the relevant implementing acts prior to 2026.*

[4] *The agreement between the European Parliament and the European council on CBAM foresee that indirect emissions will be covered in the scope after the transitional period (2026) on the basis of a methodology to be defined during the assessment period.*

The new CBAM proposal includes both direct and indirect (from electricity consumption) GHG emissions. This is a problem for South Africa as the country is heavily reliant on coal-based power generation.

CBAM IMPLICATIONS FOR SOUTH AFRICAN EXPORTS

The EU is one of South Africa's major export destinations, accounting for 19% of its total exports in 2019 (Trade Map, 2022). A total of US$1.5 billion of South African exports (based on 2021 data) is at risk in the short term, with this number set to increase as the CBAM covers more and more products.

As shown in Graph 1, the iron and steel and aluminium industries are particularly at jeopardy. Likewise, the organic chemicals and plastics industries are also at risk (although their inclusion in the CBAM is still to be confirmed after the transitional period). The risk for chemical fertilisers as well as cement is marginal as the EU account for less than 1% of South African exports for both sectors. The newly provisionally agreed CBAM proposal includes both direct and indirect (to be included after 2026) GHG emissions. This is a problem for South Africa as the country is heavily reliant on coal-based power generation, which makes it one of the most carbon-intensive exporters.

The following subsections look at iron and steel, aluminium, organic chemicals and plastics – despite plastics and organic chemicals now to be included after the transitional period of CBAM. Electricity and hydrogen are not discussed as there are no direct exports of these products from South Africa to the EU. However, the underlying developments in the (green) hydrogen space in South Africa open the doors for export opportunities, depending on the acceleration of policy implementation.

Iron and steel

Iron and steel exports face significant risk. About 26 % (in value) of products included in the CBAM are exported to the EU. Iron and steel exports covered by the CBAM accounted for 4% of total South African exports in 2021. Importantly, the iron and steel exports covered within the CBAM exclude ferro-alloys and scrap.

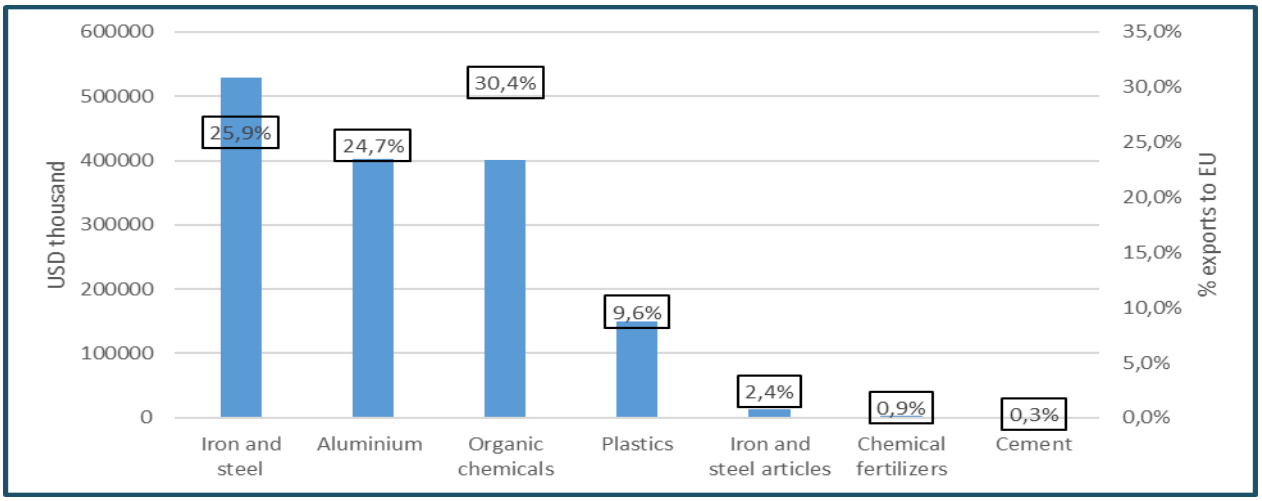
South African iron and steel production is highly carbon intensive. Iron and steel production is the largest source of Industrial Processes and Product Use (IPPU) sector emissions, producing 7 725 GgCO2e (about 24% of IPPU sector emissions in 2017) in South Africa (DEA, 2017). This is mainly due to the use of coal both as a feedstock (for primary production) and as an energy source (for secondary production). South African metals exports, which include iron and steel, are highly carbon intensive.

The carbon intensity of South Africa's metals export stands at about 5 000 tonnes of carbon dioxide equivalent (tCO2e) per US$ million, far exceeding other metal exporting countries. India, Russia and China have carbon intensities of 3 500, 2 200 and 2 500 tCO2e per US$ million respectively. Other South African competitors oscillate between 200 and 1 400 (Montmasson-Clair, 2020). In addition, South Africa is a marginal steel producer, ranking 35th in global production although it has a natural endowment of iron ore (World Steel Association, 2021).

Aluminium

Aluminium production, particularly primary aluminium, is highly energy intensive. Export risk is high as about 25% of the products covered in the CBAM are exported to the EU. Aluminium exports covered by the CBAM accounted for 1% of total South African exports in 2021. The main source of GHG emissions across the aluminium value chain is the use

Graph 1: CBAM sectors and the proportion exported to the European Union (2021)



Source: Trade Map, 2022. Bilateral trade between South Africa and the European Union (EU27).

of coal-powered electricity. In primary aluminium production, electricity accounts for 88% of Scope 1 and Scope 2 GHG emissions. Indirect (i.e. Scope 2) carbon intensity is 14.9 tCO2e/t aluminium which is significantly higher than the global average of 1.6 tCO2e/t aluminium, while direct (i.e. Scope 1) carbon intensity is 1.4 tCO2e/t aluminium, far below the global average of 8.5 tCO2e/t aluminium (South32, 2021). Similarly, electricity-related emissions accounted for 71% of emissions of aluminum semi-fabricator and recycler Hulamin in 2021 (Monaisa, 2022).

Organic chemicals

The organic chemicals sector's exposure to the CBAM is high. About 30% (in value) of the products covered by the CBAM were exported to the EU in 2021. Organic chemicals exports covered by the CBAM accounted for 1% of total South African exports in 2021. The chemicals industry was estimated to produce 893 GgCO2e (total greenhouse gas emissions) in 2017, about 2.8% of South Africa's IPPU sector emissions (DEA, 2017). The largest contributors to GHG emissions are ammonia production and nitric acid production. South Africa's chemicals and pharmaceutical products exports are more carbon intensive than most other countries, with a carbon intensity of exports at almost 1 200 tCO2e per US$ million (Montmasson-Clair, 2020).

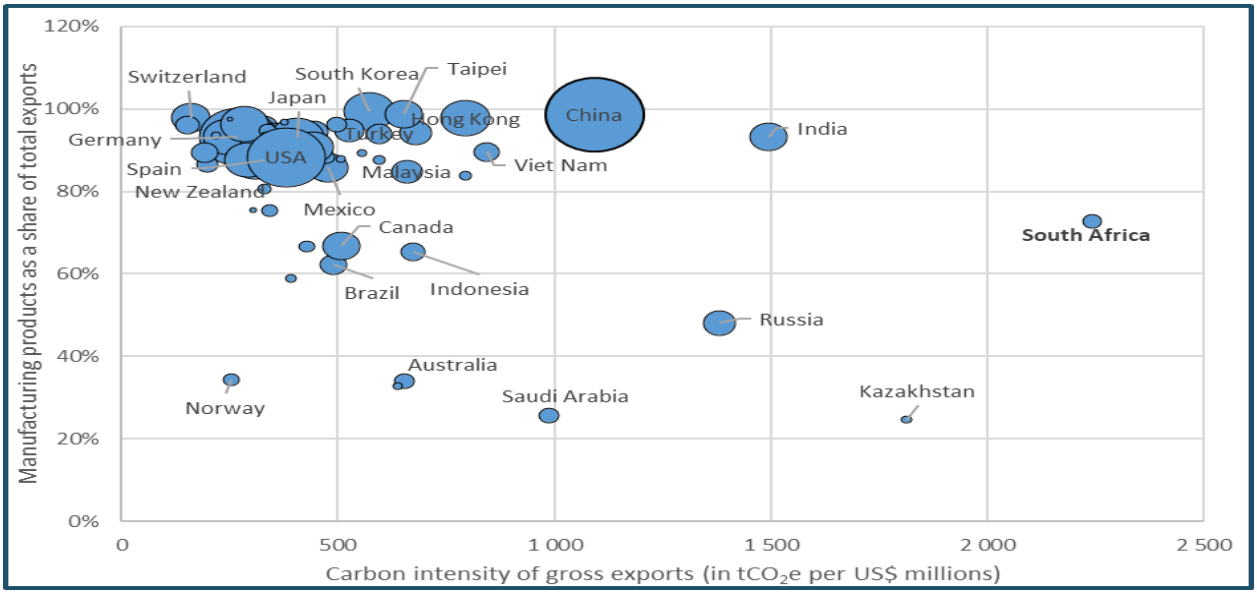
Plastics

In addition to these sectors, the exposure of plastic exports to the CBAM is high. About 10% (in value in 2021) of the products covered by the CBAM are exported to the EU. Plastics exports covered by the CBAM accounted for 1% of South Africa's total exports in 2021. The carbon footprint of the South African plastics value chain from cradle to grave was estimated at 17.9 million tCO2e in 2018, with 52% of these due to the local coal-based monomer production process (Bega, 2021). Coal is not only used to supply electricity and heat but is also a feedstock for plastics production. Emissions data from virgin polymer producer Safripol in 2019 showed that Scope 1 emissions made up 20% of their GHG emissions, while the remaining 80% was from electricity and steam consumption (Safripol, 2021). In contrast, Sasol, South Africa's largest plastic chemical producer and second biggest GHG emitter (after power utility Eskom), has much more prevalent Scope 1 emissions – direct emissions accounted for more than 50% of the company's emissions in 2021 (Sasol, 2021).

The carbon intensity of South Africa's rubber and plastics products is also comparatively highly carbon intensive. At about 2 500 tCO2e per US$ million, the carbon intensity of South Africa's rubber and plastics exports is higher than China's (at 1 300 tCO2e per US$ million) and the majority of plastic exporting countries (between 150 and 600 tCO2e per US$ million) (Montmasson-Clair, 2020).

In the future, more products and sectors are forecasted to be included in the CBAM. This will place more South African exports at risk. In terms of carbon intensity (measured in million tCO2e per US$ million), South Africa's manufacturing exports are an outlier. As shown in Graph 2, compared to other countries, in 2015, South Africa was the only country with an export carbon intensity of over 2 000 million tCO2e per US$ million. The majority of countries are spread from about 300 to 1 100 million tCO2e per US$ million. This places South Africa's manufacturing exports particularly at risk of climate change policies, such as the CBAM.

Graph 2: Manufacturing export per country per carbon intensity (in tCO_2e per US$ million), share of exports (percentage of the country's total exports) and export value (relative scale)



Source: Montmasson-Clair, 2020, based on data from the OECD, dataset on carbon dioxide emissions embodied in international trade, downloaded from https://stats.oecd.org in March 2020.

INTERNATIONAL RESPONSE AND IMPLICATIONS FOR GLOBAL ECONOMY

Countries across the world have had mixed reactions to the CBAM. Arguments in favour of the CBAM are that it could encourage investment in energy-efficient technologies, cleaner energy sources and technologies that reduce GHG emissions from production (De Jager, 2022). If a country's carbon intensive sectors make up significant proportions of their exports and domestic demand is not sufficient to absorb the products, then the CBAM could shift resources to lower-carbon sectors.

Concerns about the CBAM are that it will not only distort international trade but could also shift the burden of addressing climate change to low- and middle-income countries. Many low-income countries, while having very low GHG emissions (and an even lower historical responsibility for climate change), rely on energy-inefficient technologies. As such, their exports can be carbon intensive.

Another key concern is the policy's alignment with the Paris Agreement, specifically the principles of equity and of "common but differentiated responsibilities" in addressing climate change. The CBAM could conflict with these principles in that it expects countries to align with the EU or bear additional charges on their exports to the EU (Monaisa 2021). There is also the risk that the CBAM could result in resource shuffling, in which corporations could export lower-carbon products to the EU and export the rest of their production to countries with laxer carbon laws (White and Van Den Hende, 2021).

Brazil, Russia, India, China and South Africa (BRICS) have opposed the CBAM. The BRICS countries' primary concern is that the risks associated with the CBAM will not be equally distributed across the globe and may disproportionately impact the Global South. The extent of the risk not only depends on the policy exposure (the proportion of a country's exports to the EU) but also on the country's vulnerability (ability to adapt by shifting trade flows) and ability to reduce and report emissions (Eicke et al., 2021).

Non-EU countries also have concerns over the CBAM's World Trade Organization (WTO) compatibility. The CBAM's WTO compatibility will depend on implementation and notably whether it meets the General Agreement on Tariffs and Trade (GATT) double non-discrimination test: non-discrimination between domestic and foreign suppliers, and non-discrimination between foreign suppliers (Sapir, 2021).

As climate action intensifies, the CBAM could inspire other jurisdictions to implement mechanisms of their own or apply standards on carbon intensity to both domestic and foreign products. Already, countries, such as Canada and Japan, are considering introducing carbon border taxes (Price Waterhouse Coopers, 2021; Monkelbaan and Figures, 2022).

POTENTIAL MITIGATION MEASURES

Exporters and governments will need to proactively prepare by evaluating the administrative and financial implications of the scheme on their businesses and industries. Firms exporting to the European Union will also need to increase efforts to align their business models with a low-carbon future.

The CBAM will impose significant compliance costs. Exporting firms will have to account for, report and verify the embedded emissions in their products. The CBAM requires third-party verifiable carbon audits which can be costly even for large firms (European Parliament, 2021). As the capacity for tracking and reporting carbon content differ by industry, a domestic carbon reporting system, which could be led by the Department of Forestry, Fisheries and the Environment, could ease the administrative burden of South African firms. The reporting requirements could facilitate the design and adoption of standardised carbon accounting methodologies and reports. These standardised carbon accounting methodologies could potentially have benefits for enabling climate policies to be deployed more effectively.

In the long term, the scope of the CBAM could be expanded to include other sectors and downstream suppliers to the initial sectors. The following long-term measures apply:

- Decarbonising industries: Companies and governments should accelerate the decarbonisation of carbon-intensive industries. Increasing renewable energy-based distributed generation in production processes and investing in energy-efficient technologies will serve to decarbonise industrial sectors.
- Decarbonising South Africa's electricity system: South Africa's over-reliance on coal as a feedstock for electricity and liquid fuels production makes it one of the most carbon-intensive economies in the world. Increasing renewable energy in the national grid will decrease the indirect emissions of all sectors, notably those that consume large amounts of electricity.
- Introducing more ambitious climate change policies: Countries with domestic carbon pricing and strict carbon policies could see some level of exemption from the CBAM. South Africa's current climate change policies are not ambitious by global standards. An ambitious national climate change policy, most notably carbon pricing, is required to steer the country towards a low-carbon development trajectory and receive some meaningful relief from the CBAM.
- Reforming South Africa's carbon tax to reflect global carbon pricing will be critical to ensure that the country's carbon-intensive products reflect at least the EU price of carbon. Increasing the South African carbon price will stimulate heavy emitters to reform their business models and operations, as well as reduce the exposure to the CBAM.

CONCLUSION

The CBAM will undoubtedly have a negative impact on South African exports. The iron and steel and aluminum sectors are particularly at high risk. This is primarily due to the use of coal-powered electricity and coal as feedstock in these sectors (Gide Loyrette Nouel, 2021). As the EU plans to further expand the sectors covered by the CBAM, other industries will be at risk. In the short term, plastics and organic chemicals are expected to be included in the CBAM, post assessments by the European Commission after the transitioning phase (European Commission, 2022).

Governments and exporters need to proactively prepare for the CBAM and its financial, economic and social implications. Firms need to actively investigate low-carbon energy sources and shift their production methods to align with a low-carbon future. The South African government has to increase efforts to decarbonise the electricity mix and reform the carbon tax to reflect international carbon pricing.

The global economy needs to prepare for the disruptions in trade flows which may arise from the CBAM. Other markets, such as Canada, United Kingdom and Japan, are planning to implement their own border carbon taxes (Magacho et al., 2022). This will make trade increasingly difficult for South Africa if it does not decarbonise its energy and its carbon-intensive industries. The timeframes for the CBAM are shorter than initially expected. South Africa needs to take urgent action to mitigate against the CBAM and other carbon border taxes or be left behind to the detriment of its economy and people.

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