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Border Carbon Adjustments Research:
Strategic Pathways to Mitigate Adverse Impacts

BORDER CARBON ADJUSTMENTS RESEARCH: STRATEGIC PATHWAYS TO MITIGATE ADVERSE IMPACTS

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About this Report

This report outlines targeted entry points to be considered for mitigating adverse impacts associated with the rise of Border Carbon Adjustments (BCAs), with a particular focus on managing their effects in South Africas. The proposed interventions aim to safeguard and enhance South Africa's access to export markets while supporting the country's transition toward a low-carbon, competitive economy.

Interventions are grouped into four pathways, anchored by a foundational "no-regret" assumption: institutional arrangements must be established, and awareness of climate-trade dynamics must be significantly elevated across government, industry, labour, and civil society. Given the complexity of these interventions, a comprehensive and coordinated approach is essential to engage and align all stakeholders.

About the Presidential Climate Commission

The Presidential Climate Commission (PCC) is an independent, statutory, multi-stakeholder body established by South Africa's President Cyril Ramaphosa in 2020 with the purpose of overseeing and facilitating a just and equitable transition towards a low-emissions and climate-resilient economy in South Africa. The PCC engages with a wide range of stakeholders, including all spheres of government, business, labour, academia, communities, and civil society.

About Trade & Industrial Policy Strategies (TIPS)

Trade & Industrial Policy Strategies is an independent, non-profit, economic research institution focusing on two main areas of work: trade and inclusive industrial policy, and sustainable development. TIPS's main objectives are to undertake in-depth economic analyses, especially at the industrial level; to provide quality research as the basis for improving industrial policy as well as broad economic development strategies; and to support an increasingly dynamic and evidence-based discourse on industrial policy and inclusive growth with academics, other researchers and stakeholders.

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Authors

Seutame Maimele

Faizel Ismail

Muhammed Patel

Michael Hector

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ABBREVIATIONS

AfCFTA	African Continental Free Trade Area
AGOA	African Growth and Opportunity Act
AU	African Union
AMSA	ArcelorMittal South Africa
BCAs	Border Carbon Adjustments
CBAM	Carbon Border Adjustment Mechanism
CSIR	Council for Scientific and Industrial Research
DFFE	Department of Forestry, Fisheries and the Environment
DHET	Department of Higher Education and Training
DIRCO	Department of International Relations and Cooperation
DMPR	Department of Mineral and Petroleum Resources
DSTI	Department of Science, Technology and Innovation
the dtic	Department of Trade, Industry and Competition
EGD	European Green Deal
EU ETS	European Union Emission Trading System
EGS	Environmental Goods and Services
CBDR-RC	Common But Differentiated Responsibilities and Respective Capabilities
EC	European Commission
EGD	European Green Deal
EU	European Union
EUDR	European Union Deforestation Regulation
GATT	General Agreement on Tariffs and Trade
GHG	Greenhouse Gas
G20	Group of 20
IMF	International Monetary Fund
IPP	Independent Power Producer
IRA	Inflation Reduction Act (US)
ITAC	International Trade Administration Commission
JET-IP	Just Energy Transition Investment Plan
JETPs	Just Energy Transition Partnerships
LSF	Localisation Support Fund
MRV	Monitoring, Reporting and Verification
NCPC	National Cleaner Production Centre
Nedlac	National Economic Development and Labour Council
NDCs	Nationally Determined Contributions
OACPS	Organisation of African, Caribbean and Pacific States
OECD	Organisation for Economic Co-operation and Development
PCC	Presidential Climate Commission
PGMs	Platinum Group Metals
PPA	Power Purchase Agreement
PPPs	Public-Private Partnerships
R&D	Research and Development
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SPA	Single Point of Authority
SEIAS	Socio-Economic Impact Assessment System

SETA	Sector Education and Training Authorities
SABS	South African Bureau of Standards
SAGERS	South African Greenhouse Gas Emissions Reporting System
SARB	South African Reserve Bank
S&DT	Special and Differential Treatment
SDGs	Sustainable Development Goals
SMMEs	Small, Medium and Micro Enterprises
tCO_2e	Tonnes of CO_2 equivalent
TIPS	Trade & Industrial Policy Strategies
TVET	Technical and Vocational Education and Training
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WTO	World Trade Organization

EXECUTIVE SUMMARY

A global shift toward sustainable development is accelerating, reshaping the foundations of economic policymaking and international trade. This transition is broad and systemic, cutting across all levels of government and policy domains. While often framed around environmental goals, the transition also responds to deeper socio-economic challenges, with far-reaching implications for trade and industrial policy.

At its core, the global move toward sustainability is altering the structure and competitiveness of value chains. It influences how goods are produced, traded, and consumed – reshaping trade flows, industrial growth patterns, and economic performance. While this transition brings considerable risks, it also offers important opportunities. Key drivers include a shift in global demand away from carbon-intensive products and jurisdictions, the rapid rise of green industrial policies, and intensified competition for critical minerals. Increasingly, trade-related climate measures, such as Border Carbon Adjustments (BCAs), green subsidies, and non-tariff instruments like deforestation regulations, are being deployed across jurisdictions, particularly in the Global North.

It is within this context that South Africa must craft a response to the evolving climate-trade interface. This document outlines targeted entry points to be considered for such a response, focused particularly on managing the impacts of BCAs. The proposed interventions aim to protect and expand South Africa's access to export markets while supporting the country's transition to a low-carbon, competitive economy.

This research groups interventions into four pathways, underpinned by a foundational "no-regret" assumption: that institutional arrangements must be established, and awareness of climate-trade dynamics must be significantly raised across government, industry, labour, and civil society. These interventions are complex, which is why a comprehensive set of interventions are required to transcends stakeholders. These interventions were assessed through the Socio-Economic Impact Assessment System (SEIAS). The SEIAS approach aimed to strengthen policy consideration by improving the understanding of potential impacts (cost, benefits and risks) across different stakeholder groups of these interventions. These are detailed in the Annexures attached separately.

Strategic pathways and key interventions to consider:

1) NO REGRET OPTION: COORDINATE – A Coordinated Government-Industry Response

Effective coordination is essential to ensure institutional coherence and response implementation.

Key interventions to consider:

- Establish a Single Point of Authority (SPA), ideally co-located within the Department of Forestry, Fisheries and the Environment (DFFE) and the Department of Trade, Industry and Competition (the dtic), with the dtic leading the national BCA response.
- Launch a targeted awareness campaign across government, industry, labour, and civil society to deepen understanding of climate-trade risks and compliance needs.

2) PATHWAY 1: ADAPT – Adapting to Climate and Trade Policies to Sustain Market Access

This pathway focuses on aligning South African industries with emerging global climate-trade rules, such as BCAs.

Key interventions to consider:

- Implement firm-level greenhouse gas (GHG) accounting systems (e.g., scaling the Council for Scientific and Industrial Research (CSIR) Monitoring, Reporting and Verification (MRV) tool).

- Reform the carbon tax to align with global benchmarks and create a decarbonisation fund – this will soften the blow from BCAs and help retain carbon tax revenues domestically.
- Upgrade the South African Greenhouse Gas Emissions Reporting System (SAGERS) technologically to meet international GHG accounting standards and ensure interoperability with MRV systems.

3) PATHWAY 2: ADJUST – Adjusting to Shifting Global Trade Dynamics

This pathway addresses the changing structure of global trade, particularly the risks from BCAs and the opportunities in alternative markets and partnerships.

Key interventions to consider:

- Stimulate domestic demand through localisation, especially in vulnerable sectors.
- Strengthen trade with BRICS+ and Global South partners.
- Deepen African market integration via African Continental Free Trade Area (AfCFTA)-aligned strategies.
- Expand access to the United States (US) market, especially for aluminium and critical minerals.
- Limit imports of carbon-intensive goods through strategic trade measures.

4) PATHWAY 3: DECARBONISE – Decarbonising to Retain Export Competitiveness

This pathway centres on green industrial development and energy system transformation to reduce the carbon intensity of South Africa's exports.

Key interventions to consider:

- Promote energy-efficient technologies through incentives and certification.
- Expand renewable energy procurement from Independent Power Producers (IPPs).
- Facilitate public-private partnerships for dedicated renewable energy and storage solutions.
- Decarbonise the national electricity grid through Eskom's Just Energy Transition strategy.
- Support green innovation and product development (e.g., green steel, green hydrogen, green cement).
- Stimulate green market creation through public procurement, subsidy reform, and targeted reinvestment of climate levy revenues.

5) PATHWAY 4: ENGAGE – Diplomatic Engagement for a Fair International Trading System

This pathway promotes equitable participation in climate-trade governance through strategic diplomacy.

Key interventions to consider:

- Strengthen bilateral engagement with the European Union (EU) to negotiate differentiated Carbon Border Adjustment Mechanism (CBAM) compliance and promote a just transition.
- Champion reform of global trade, climate, and finance institutions to reflect the developmental needs of the Global South.
- Advance Africa-EU cooperation to promote green industrialisation, regional value chains, and critical mineral beneficiation, leveraging instruments like the EU-Africa Investment Package.

South Africa stands at a pivotal moment. The intersection of climate change and trade presents both significant risks and opportunities. By implementing a strategic, well-coordinated response, anchored in fairness, adaptation, competitiveness, and diplomacy, South Africa can safeguard its economic interests, retain market access, and lead a just, green industrial transition.

INTRODUCTION

A global shift toward a sustainable development pathway is underway and gaining momentum. This transition is comprehensive, cutting across all levels of government and policy domains. A sustainable transition moves beyond the sole concern with the environment and also relates to broader socio-economic challenges, with significant implications for economic development – particularly in trade and industrial policy. From this perspective, the transition affects the structure and dynamics of entire value chains, influencing competitiveness, trade performance, and patterns of industrial growth. The transition process is accompanied by both risks and opportunities. Currently, several channels are driving this shift, including changes in trade patterns away from carbon-intensive products and jurisdictions; the rise of green industrial policy; and intensified competition for critical minerals. Trade-related climate measures, such as Border Carbon Adjustments (BCAs) and non-tariff instruments like deforestation regulations are increasingly being deployed across jurisdictions.

The consideration and adoption of BCAs has reached the highest levels of policymaking. Key trade partners of South Africa, such as the European Union (EU), United Kingdom (UK), and United States (US) are advancing policies aimed at penalising the import of carbon-intensive goods, ostensibly to prevent carbon leakage. The growing use of BCAs is set to reshape global trade flows. Carbon-intensive developing economies will face higher export costs, reducing their competitiveness in key markets. This poses significant risks to carbon-intensive value chains that are strategically important to many developing countries, particularly those pursuing decarbonisation while operating in structurally disadvantaged positions in the global trading system.

This paper outlines the response to the global rise of green trade policies, with a particular focus on the implementation of BCAs, such as the EU and UK Carbon Border Adjustment Mechanisms (CBAMs). It begins with a contextual overview and situational analysis, followed by a diagnostic of the potential impacts of BCAs on South Africa's carbon-intensive export sectors, and notes the development process of how the strategic pathways to mitigate adverse impacts was developed. The paper identifies key risks and challenges and concludes with a set of policy recommendations, forming a comprehensive response to BCAs. Anchored in the principles of adaptation, coordination, adjustment, decarbonisation, and international engagement. The response aims to safeguard South Africa's market access and competitiveness in an evolving trade environment. As detailed in the Annexures (attached separately), the response is developed through a process-oriented methodology, using the Socio-Economic Impact Assessment System (SEIAS) and targeted stakeholder engagements to assess various policy options. These include diplomatic engagement; strengthening the greenhouse gas (GHG) reporting infrastructure; and advancing integrated green industrial, energy, fiscal, and trade policies.

1. CONTEXT AND SITUATIONAL ANALYSIS

This section provides a contextual foundation for understanding BCAs, tracing their origins and impacts on the South African economy. The section argues that BCAs risk distorting global trade and shifting the burden of climate action onto low- and middle-income countries, thereby complicating efforts to address carbon leakage.[1]

Climate change and the need for the major economies to decarbonise and dematerialise their production systems has caused a race to develop new technologies, using the power of the fourth industrial revolution innovations in digitalisation, the internet of things and AI, and the transition to new energy sources, such as solar and wind and building electric batteries and storage facilities. This

[1] 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.

has caused a race by the major economies to secure the critical raw materials and rare earths that are required to build these new technologies. This has pushed for securitising trade and reversing the earlier trend towards global value chains, as countries seek to control supply chains through "reshoring[2]" and "friendshoring[3]".

Along similar lines, climate and trade issues ranging from green standards, green industrial policy and border carbon adjustments have taken centre stage in debates around decarbonisation. Over the past five decades, the intersection of trade and sustainability has become a central theme in the international trade policy discourse. While initiatives such as the European Green Deal (EGD) may appear novel, the integration of environmental considerations into trade policy is not new. Environmental measures affecting trade have featured in international trade forums since the 1970s (Persaud, 2003). As early as 1971, the Environmental Measures and International Trade initiative was introduced, though it only became operational in 1991. Subsequently, the 1994 Marrakesh Agreement, emerging from the Uruguay Round[4], led to the establishment of the Committee on Trade and Environment within the World Trade Organization (WTO). This committee continues to engage with trade-related environmental issues. However, despite its longstanding mandate, it has struggled to secure consensus among WTO member states on many of these complex and politically sensitive matters.

In the early 1990s, the US imposed restrictions on the importation of tuna products from Mexico on the basis of harmful fishing practices increasing dolphin mortality, in essence restricting importation on the basis of production method rather than the quality of the product (Bechtel et al., 2012). In response, Mexico took the dispute to the WTO, and, in a landmark case, the WTO ruled that trade restrictions may not be imposed on production methods in the exporting country, even on sustainability grounds, which are beyond the jurisdiction of the importing country. Linking sustainability to trade raises concerns in some cases about the possible detrimental effect on market access, as it impose restrictions on certain goods that might have an environmental impact (Bechtel et al., 2012). However, environmental concerns in trade are becoming more prevalent, as more carbon intensive products are traded around the world.

The introduction of sustainable trade policies worldwide has created several constraints on trade, especially for Global South countries. These policies include the Fit for 55 policy packages introduced in the EU, also commonly referred to as the EGD. The EGD represents a novel and ambitious attempt to align environmental objectives with economic transformation. It covers a broad spectrum of sectors, including energy, industry, agriculture, transport, and trade, with the overarching goal of achieving climate neutrality in the EU by 2050.

One of its most consequential elements is the EU CBAM, the first BCA of its kind to be operationalised in the global trading system. The EGD introduces a suite of regulatory instruments designed to integrate climate objectives into both domestic and international economic policy. In addition to the CBAM, other key measures include the EU Taxonomy for Sustainable Activities, and regulations aimed at ensuring deforestation-free supply chains. Collectively, these instruments mark a strategic shift towards a green industrial policy that links climate action with economic competitiveness, innovation, and social inclusion.

Since its launch in 2019, the EGD has provoked extensive debate on the legitimacy of trade-related climate measures and their broader implications for global trade, particularly about the competitiveness of exports destined for the EU. Central to these debates is the question of policy intent: whether such measures are genuine decarbonisation efforts or instruments of disguised

[2] Multinationals abroad returning their manufacturing operations.

[3] Multinationals locating in countries considered friendly.

[4] The Uruguay Round was the eighth round of multilateral trade negotiations under the General Agreement on Tariffs and Trade GATT.

protectionism designed to favour EU industries. Other jurisdictions have followed suit. The UK, for example, has proposed its own UK CBAM, further intensifying competitiveness risks for carbon-intensive exporters and adding momentum to the global debate. These issues have increasingly surfaced in multilateral forums, including the United Nations Framework Convention on Climate Change (UNFCCC), the Group of 20 (G20), and the WTO.

The BCAs introduced to date have been subject to scrutiny from legal, economic, and environmental perspectives. Proponents argue that such mechanisms promote the adoption of national carbon pricing; help level the playing field for domestic producers; and incentivise broader international climate action. This is particularly relevant in light of growing concerns about the embedded carbon content of traded goods and the contribution of international trade to rising global GHG emissions (Tamiotti, 2011). The EU has adopted this and views the EU CBAM as a carbon border tax on embedded GHGs of carbon-intensive products imported into the EU. The mechanism 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 (EC, 2022). BCAs act as a direct barrier to market access, with the same effect as a tariff on a product subject to it (Davies, 2023). The EU aims to drive global decarbonisation by leveraging its trade position; however, the introduction of a BCA can also give rise to resource shuffling.[5]

The introduction of green trade policies has highlighted global disparities in development and trade. Countries in the Global North have prioritised decarbonisation within trade policy, as seen in the introduction of BCAs and substantial green industrial policy packages, such as the US Inflation Reduction Act (IRA) under the Biden Administration. These policies are often framed as a response to increasing competition from China, which has positioned itself as a leader in the production of technologies for the emerging green economy, as well as technologies associated with the fourth industrial revolution (Davies, 2023). These measures are introduced with the aim of protecting the well-being of citizens in the Global North, where many are concerned about the negative environmental consequences of intensified free trade (Bechtel et al., 2012). However, while the Global North has been proactive in implementing climate change policies affecting trade, many countries in the Global South view these policies as a form of green protectionism (Davies, 2023; Persaud, 2003).

The implementation of these environmental policies has been unilateral, protectionist, discriminatory, and unjust (Elkerbout et al., 2024), showing little concern for their impact on developing countries. This approach violates the principles of the WTO and UNFCCC (Davies, 2023; Lamy et al., 2024). Furthermore, these policies serve to protect domestic industries in the Global North (Davies, 2023; Ramos, 2023; Rasool et al., 2024). In their 2012 study, Bechtel et al. noted that protectionist behaviour in the Global North can be explained by the level of concern among citizens regarding climate change and its potential impact on their lives. Such policies are, therefore, introduced to appease voters and secure political support. Bechtel et al. (2012) highlight that environmental concerns are positively correlated with protectionist attitudes. This correlation extends to protectionism against globalisation (resistance to free trade), job-related protection (efforts to save jobs), and product-related protection (concerns about environmentally friendly production; consumer safety; and working conditions under which goods are produced) (Bechtel et al., 2012).

The growing adoption of environmentally driven measures, often referred to as “climate justified protectionism”, is driven by increasing competition and contestation over the dominance of low-carbon products, technologies, and solutions. These measures are typically unilateral in nature and are likely to exacerbate green protectionism (Davies, 2023). To address the rise in green protectionism, Persaud (2003) argued that the specific circumstances and characteristics of

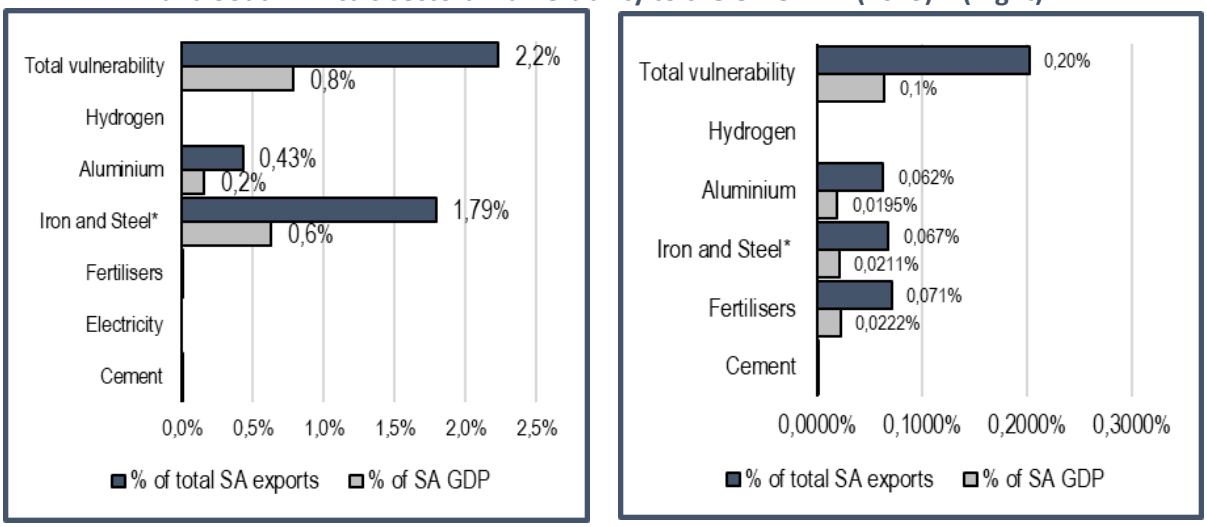
[5] Resource shuffling occurs when jurisdictions, which have both the capacity to produce sustainably produced and carbon-intensive products, export sustainably produced products into countries with punitive sustainable trade policies and re-routes carbon-intensive products into countries or regions with lower trade burdens.

developing countries should be considered, with mutual recognition in the decision-making process. Moreover, such measures should be introduced solely for environmental purposes, rather than as a means to protect domestic industries, particularly in Global North countries (Tamiotti, 2011).

Given the protectionist behaviour of the Global North in introducing environmental policies that affect trade, and the disregard for their impact on the Global South, these policies act as green trade barriers for the global economy, with particularly detrimental effects on the Global South. The introduction of these measures is likely to negatively impact developing countries. Below (Figure 1) is the impact of the introduced BCAs (the EU and UK CBAMs) on the South African economy.

Figure 1 highlights South Africa's EU and UK CBAM vulnerability based on the final list adopted in the EU CBAM legislation and the published consultation text for the UK CBAM.

Figure 1. South Africa's sectoral vulnerability to the EU CBAM (2022) – (Left) and South Africa's sectoral vulnerability to the UK CBAM (2023) – (Right)



Source: (Maimele, 2023, 2024b). *Note*: *Iron and steel include input materials (also known as precursors) and articles of iron and steel.

The EU plus the UK is a major destination for South African goods, accounting for 23% of South Africa's total exports in 2023 (Trade Map, 2023). Based on the finalised list of goods covered by the EU CBAM, as per the text adopted in May 2023, a total of US$2.8 billion (about R52.4 billion) of South African exports (based on 2022 Trade Map data) is at risk in the short term (Maimele, 2023).

This accounts for about 10.3% of South African exports to the EU, and about 2.2% of South African exports to the world, reflecting around 0.8% of South Africa's GDP (Figure 1 – Right). This number is set to increase as the EU CBAM widens in sectoral coverage and additional jurisdictions introduce CBAM-like measures.

With the EU being the first jurisdiction to introduce a BCA, other jurisdictions and important trade partners are starting to introduce similar measures, such as the UK. Additional jurisdictions such as Australia, Japan, Canada, Norway and the US are still exploring the introduction of BCAs. Based on the list of goods covered under the UK CBAM, a total of US$223 million (about R4.3 billion) of South African exports (based on 2023 Trade Map data) are at risk in the short term. This is about 4.2% of all South African exports to the UK, and about 0.2% of total South Africa exports to the world, and only 0.1% of total South African GDP (Figure 1 – Left) (Maimele, 2024b).

South Africa's iron and steel exports face significant risk. About 19% (in value) of South African iron and steel exports (including articles of iron and steel and iron ore) are covered in the EU CBAM. Iron and steel exports covered by the EU CBAM accounted for 2% (in value) of South Africa's total exports

in 2022. Importantly, the iron and steel exports covered by the EU CBAM exclude selected ferro-alloys and waste and scrap metals, and included products include articles of iron and steel and iron ore.

South Africa's aluminium export risk is also high, as about 28% (in value) of total South African aluminium exports are covered by the EU CBAM. Aluminium exports covered by the EU CBAM accounted for less than 1% of total South African exports in 2022. Importantly, aluminium exports covered by the EU CBAM exclude waste and scrap as well as table, kitchen, or other household articles.

Although plastics and broader chemicals are not included under both the EU and UK CBAMs, these sectors are still on the table for inclusion. In 2022, about 27% (in value) of South African exports of organic chemicals are likely to be covered by the EU CBAM (based on lists included in draft versions of the EU CBAM texts). Exports of organic chemicals to be potentially covered by the EU CBAM accounted for 1% (in value) of total South African exports in 2022 (Monaisa and Maimele, 2023). About 10% (in 2022 value) of plastic products exported to the EU are forecasted to be covered by the CBAM (based on previous EU CBAM drafts). Plastics exports to be covered by the EU CBAM accounted for 1% of South Africa's total exports in 2022 (Monaisa and Maimele, 2023).

2. DIAGNOSTIC OF CHALLENGES – IMPLICATIONS OF BORDER CARBON ADJUSTMENTS FOR SOUTH AFRICA

This section outlines the key challenges South Africa faces in the context of BCAs. It highlights gaps in awareness and examines the diplomatic challenges South Africa and other Global South countries encounter in responding to these evolving measures. The section also discusses the difficulties in establishing robust GHG accounting systems and the lack of institutional frameworks needed to effectively manage the intersection of climate and trade. In addition, it addresses competitiveness concerns related to higher input costs and the carbon intensity of domestic production and considers the implications of South Africa's domestic carbon tax.

2.1. Awareness of climate and trade-related challenges

Despite numerous efforts by researchers, governments, and industries to mainstream the trade risks arising from evolving global climate and trade policies, a significant lack of awareness persists within industry, government, and broader society. Although efforts have been focused on climate and trade issues since the 2010s, governments and industries, particularly in the Global South, have not yet fully grasped the risks posed by such policies or adequately prepared for their potential impacts. Between 2023 and 2025, there have been notable efforts to raise awareness of climate and trade issues, with increasing attention given to the EU CBAM among affected industries and policymakers. These efforts included a workshop organised by the dtic in collaboration with Trade & Industrial Policy Strategies (TIPS) in November 2023. Industry engagements throughout 2024, including those held at the National Economic Development and Labour Council (Nedlac), have contributed to raising awareness and fostering discussions on the potential impacts of BCAs. In addition, recent initiatives by the Western Cape Government have focused on raising awareness among firms in the Western Cape Province that may be affected by these climate-related trade policies.

Awareness efforts to date have revealed that stakeholders in impacted value chains, such as iron and steel, aluminium, and other key sectors, were not fully informed about the risks and costs associated with BCAs or the EU CBAM. Despite the EU CBAM being in the transition period, many South African firms exporting to the EU reported a lack of formal communication from EU importers about the requirement to report GHG emissions embedded in their products once the transition period began. This has; however, evolved and South African exporters have now started submitting EU CBAM reports. The lack of awareness around BCAs is largely due to the rushed implementation of these mechanisms by the EU. As the policy framework develops, requirements are being revised, with new proposals for 2025 aimed at amending and simplifying the mechanism.

These changes have led to an overwhelming influx of technical and legal information, creating uncertainty for industries and governments about the potential risks and costs they may face in the future. The EU CBAM is also seen as a unilateral measure without engagements with affected parties. Generally, a lack of understanding of climate change and decarbonisation exists in both government departments and affected industries in South Africa.

The lack of awareness of the EU CBAM or the UK CBAM will negatively affect impacted industries in South Africa. This includes South African industries being late in compliance; penalised for not being compliant; incorrect reporting of GHG emissions during and after the transition period; and as a result, business profitability impacted negatively. Generally, it will lead to South African firms being less competitive due to delayed technological adoption.

2.2. Lack of coordinated institutional mechanisms

Domestically, industries affected by BCAs have highlighted the lack of coordination during several engagements. As of this writing, there is no designated point of authority or contact within the South African government for climate and trade matters, revealing a significant gap in policy support, despite the introduction of laws such as the EU and UK CBAMs. South African industrial players have expressed growing concern over the need to respond to BCAs, with alarm evident in the sectors. However, progress has been made at the industrial level to address these climate and trade issues. A working group has been established to specifically address the EU and UK CBAMs, comprising various industry stakeholders, as well as representatives from research institutions and government.

Referring to the workshops held in November 2023, and recently by an Industry study on CBAM readiness, lack of coordination within the manufacturing industry as a whole in responding to BCAs has been noted as an immediate issue, applying both to large corporates and small, medium and micro enterprises (SMMEs). This challenge is worsened by the lack of coordination between government and industry, with calls for a more focused and targeted effort by the state. Industries have further claimed that there are no government engagements on BCA issues, despite South Africa being a front runner on climate and trade issues during United Nations Climate Change Conferences (COP28 and COP29) and at the WTO's Ministerial Conference 13 (MC13).

Stakeholders also cite a lack of clear ownership and leadership in responding to climate and trade issues, both by government and business. Further, the divide between political and business decision-making processes has been highlighted as a risk. A coordinated and collective response to the challenges of climate and trade is necessary. Therefore, enabling institutions are required to deal with the broader challenges related to the South African energy system to open opportunities in the green space.

Similarly detracting from institutional arrangements is the limited time and capacity available to fully understand and prepare for BCAs such as the EU CBAM. The scramble by domestic stakeholders, combined with the tight timelines for institutions, results in a lack of budgeting and prioritisation in board meetings. Compounding the institutional issues is the "legalese" of climate and trade regulations, which makes them difficult to interpret and translate into the practical actions that industry and governments need to achieve. This also places a burden on domestic firms to outsource or procure services to understand the implication of the regulations.

In addition, the implementation timelines of the climate and trade regulations introduced are too short for such a major paradigm shift for developing economies, and the unilateral imposition of BCAs is unhelpful and creates conflict and confusion. The lack of a coordinated response to climate and trade issues within both governments and industries, and across government and industries, portrays an immediate issue that both the South African government and industries need to solve. This

coordinated response is needed to stay ahead in mitigating the risks that comes with the introduction of climate and trade policies such as the EU and UK CBAMs.

2.3. Approach to international engagement and diplomacy

The onset of the EU CBAM transition period has coincided with intensifying geopolitical, economic, and social tensions, underscoring the complex dynamics between developed and developing countries. These relationships have been strained by persistent challenges across all three dimensions, particularly disputes over decarbonisation; the principle of special and differentiated treatment; and broader concerns about climate justice. Such disagreements have shaped the discourse around BCAs, triggering a spectrum of diplomatic responses from developing countries, ranging from strong governmental objections to varied industry-level reactions.

It is becoming increasingly evident that Global South and Global North countries are forming strategic alliances in response to rising geopolitical tensions, particularly around climate and trade. The BRICS+[6] bloc has articulated its opposition to the EU CBAM by invoking two foundational principles enshrined in the General Agreement on Tariffs and Trade (GATT) and the Paris Agreement: equity and Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC). Member states such as Brazil, South Africa, China, and India, key trading partners of the EU, have consistently raised serious concerns about the introduction of unilateral trade measures like BCAs, viewing them as discriminatory and contrary to these principles.

Tensions have reached a critical point at the WTO, where countries such as India and South Africa have signalled their intent to escalate disputes over the CBAMs. While proactive engagement with foreign governments and multilateral institutions like the WTO is seen as crucial for facilitating CBAM implementation, current interactions, especially those led by BRICS+, have contributed to continued delays and growing frustration.

The reactions from BRICS+ states have revealed both disunity and uncertainty. Industry stakeholders have generally adopted a more pragmatic stance, cautiously engaging with the EU despite significant implementation concerns. In contrast, government actors have voiced strong criticism and increasingly relied on multilateral institutions to contest the CBAM. However, the WTO's ongoing arbitration processes and institutional inertia have deepened dissatisfaction with the CBAM's rollout among these states. (*See* Annexure subsection: Reform of global governance and trade, finance and climate change (Global South Alliance) for more detail).

In Africa, responses have coalesced around addressing trade disparities. Regional actors and stakeholders have adopted coalition-based approaches, arguing within multilateral fora that the CBAM must be adapted to avoid hindering growth and development. The African Group at the WTO has contended that applying carbon taxes to level the playing field instead entrenches inequality between industrialised and developing economies. They have further advocated for the reinvestment of CBAM revenues into supporting African decarbonisation efforts. Core to African engagement are the principles of Special and Differential Treatment (S&DT) and CBDR-RC. African coalitions have also criticised the EU and other Western countries for undermining trust in multilateralism through the creation of exclusive "carbon clubs", while the EU maintains that the CBAM aims to promote global decarbonisation.

In South Africa, diplomacy remains the government's primary strategy for shaping global climate and trade discourse. This is reflected in its active participation in multilateral negotiations, such as the COPs, WTO ministerial conferences, and the recent 8th South Africa-European Union Summit held in March 2025. Yet, despite these diplomatic efforts, little progress has been made in easing

[6] BRICS plus countries include Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Iran, and United Arab Emirates.

the administrative burdens posed by the EU CBAM, leaving affected South African exporters in a vulnerable position. Beyond the immediate policy disputes, structural criticisms have also emerged about the WTO framework itself. Many Global South countries view the system as inherently unilateral, exclusionary, and insufficiently climate compatible. WTO rules, they argue, fail to prioritise sustainable development and do not adequately accommodate emerging climate measures. This has amplified tensions between Global South nations and the climate policies of developed countries, especially those targeting emissions embedded in trade and in areas like deforestation-linked agricultural standards. While countries in the Global South have raised equity-based concerns about the compatibility of BCAs with climate and trade goals, mechanisms such as the EU CBAM are widely seen as misaligned with core WTO principles, including Most-Favoured Nation treatment, national treatment, tariff bindings, and restrictions on quantitative measures.

2.4. Availability of GHG reporting infrastructure

BCAs will impose significant financial and compliance costs on both exporting firms and the South African government. Exporting firms will have to account for, report and verify the embedded emissions in their products. The BCAs such as the EU and UK CBAMs require third-party verifiable carbon audits which can be costly – even for large firms. In South Africa, industries affected by the BCAs are busy preparing infrastructure for accounting and reporting GHG emissions for the requirements of the introduced BCAs. However, the preparation of this infrastructure could take some time, with at least five years being required to build a well-functioning GHG accounting system.

South African industrial stakeholders, during workshops held in November 2023, noted that they have neither the means nor the time to account and report actual emissions by the end of the EU CBAM transition period (2025). This is mainly because of local technical challenges in measuring, reporting, and verifying emissions data, and the misalignment of the EU CBAM and the global accounting and reporting GHG protocols.

The technical challenges are driven by a lack of clarity on what needs to be measured (confusion around indirect emissions), and how this needs to be done (frequency of reporting and methodologies). Technically, South Africa does have a GHG emission accounting system in place, called South African Greenhouse Gas Emissions Reporting System (SAGERS), that was introduced in 2019. SAGERS is a web-based platform or portal for registering and submitting GHG emissions data. This system calculates GHG emissions for the energy and industrial processes and product use sectors, which include EU CBAM-covered industries. However, it monitors and reports GHG emissions at an industrial level, based on companies' submission of GHG emissions data. This is not in line with the EU CBAM requirements, which requires that GHG emissions should be reported at a product level.

The unpreparedness of South African industries in complying with the EU CBAM is also driven by the misalignment of the EU CBAM and the global GHG protocols, which guides SAGERS. Globally, industries have been using these protocols to monitor and report GHG emissions across industries, including South Africa. The introduction of the new and different GHG emissions accounting and reporting legislation by the EU CBAM creates confusion in the accounting and reporting of GHG emissions. For example, the global protocols differentiate between three types of accounting of GHG emissions. These include Scope 1 (direct emissions from sources a company owns), Scope 2 (indirect emissions from electricity usage) and Scope 3 (emissions from transportation and distribution), while the EU CBAM legislation differentiates between only two types, indirect and direct emissions. These different typologies and scopes in reporting creates confusions in the international space, and locally in South Africa.

In addition, the EC has not clarified how indirect emissions will need to be accounted for under the EU CBAM. As noted in the workshops, this has created much uncertainty for South Africa's affected industries, given the high reliance on a coal-based and emissions-heavy electricity generation system, over which firms do not have control. The EU CBAM legislation (in its final text) does not differentiate

between Scope 2 and 3 emissions, while later publications related to the mechanism do differentiate between Scope 2 and 3 emissions. The final EU CBAM text does highlight that only Scope 2 emissions will need to be accounted for. It is uncertain whether Scope 3 emissions will be included, although emissions from input materials and/or precursors will need to be accounted for. As the assessment period of the EU CBAM get closer, Scope 3 emissions might be included, as the EU Emission Trading System (EU ETS) covers maritime and aviation emissions.

The inconsistency of the EU CBAM legislation with global GHG protocols and the local GHG infrastructure (SAGERS) has made the law unpredictable. South African firms have had to work on a range of assumptions about emissions reporting and reduction measures that may turn out to be incorrect in the case of the EU CBAM. A notable concern raised during the workshops in November 2023 is the lack of clarity on reporting mechanisms with indirect emission tracking and pricing. Although emissions can be easily tracked throughout local production processes it becomes much more complicated, complex, and burdensome when accounting for indirect emissions, especially Scope 3 emissions.

Other issues pertaining to the monitoring, reporting and verification infrastructure, include how to secure storage of data and transfer of emissions data to prevent data manipulation. This will be addressed when the recent EU CBAM proposals are considered and approved by the European Parliament and Council, allowing EU importers (or exporters from South Africa, or their agents) to directly upload (and share) their data on a digital EU CBAM registry. These issues, as has been noted in the workshops, will arise as South African firms start to adapt to the legislation. Also, there is a lack of global standards to guide industries on reporting GHG emissions at a product and production process level (which could be the reason for the misalignment in policies affecting countries globally).

The confusion, presented by the misalignment of EU CBAM with global GHG protocols and the local GHG accounting infrastructure (SAGERS), present cascading issues for the local industries in complying with the BCAs. The misalignment means that South African exporters cannot demonstrate to clients that they are making progress on compliance. Also, firms cannot demonstrate that they are setting out a viable glide path on reduction in emissions more generally. This risks a delay in responding and aligning with CBAM and thus incurring competitiveness costs in the destination market. This in turn will result in loss of business and access to markets.

2.5. Key factors influencing the competitiveness of South African BCA-covered goods

2.5.1. Domestic industrial bottlenecks – Transnet, AMSA, Eskom

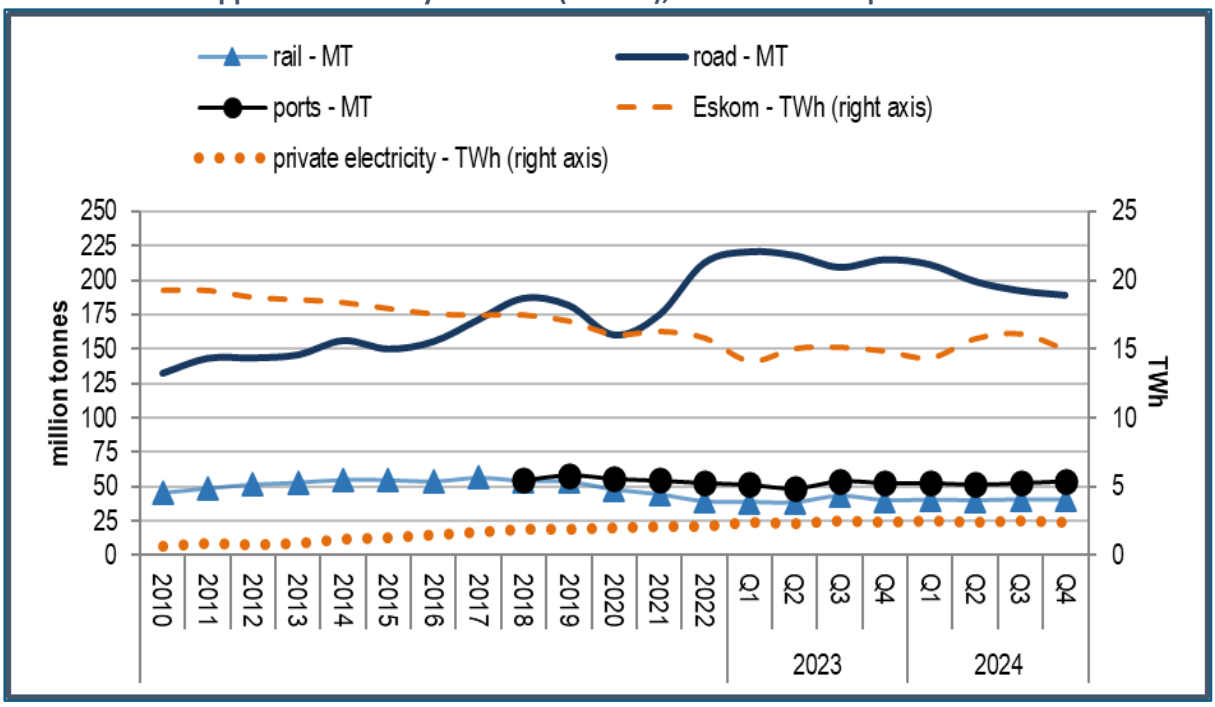
South African infrastructure data on electricity, road, rail and ports points to significant infrastructure bottlenecks. Rail and electricity infrastructure has declined consistently, characterised by a decline in transported tonnages and continual loadshedding with the Eskom grid continually failing. While rail and state power utility infrastructure continues to fail, road and private electricity infrastructure has showed signs of improvement.

As shown in Figure 2 it is evident that, from the 2010s to the last quarter of 2024, rail tonnages have decreased by 10%, while tonnages moved by road have increased by 35%. In the same vein, port tonnages have declined marginally from 2018 to the last quarter of 2024, by 1%. Electricity produced by Eskom has declined by 21% from the 2010s to the last quarter of 2024, while private electricity increased by close to 200%, in the same period.

The inefficiency in the South African economic infrastructure adds costs to South African producing firms as they have to invest in infrastructure that allows them to stay in business. At the centre of these inefficiencies are the BCA-affected value chains, i.e., iron and steel, aluminium and chemicals value chains. For example, the primary steel producer in South Africa, ArcelorMittal South Africa

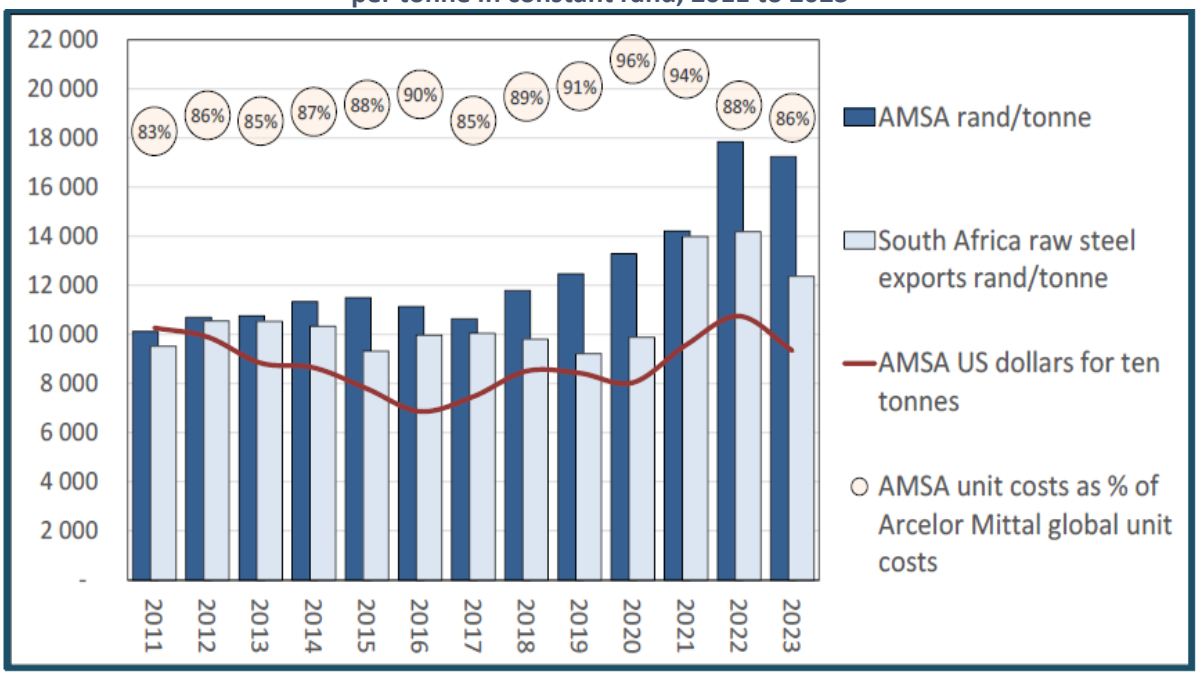
(AMSA), faces structural change issues characterised by increased input costs. Since the late 2010s, AMSA has been faced with a surge in raw material, energy and bulk freight cost (Makgetla, 2024). The unit costs at AMSA have increased from the late 2010s, with a spike in 2022, due to the Russian invasion of Ukraine, which supported iron ore and coal prices (Makgetla, 2024) (Figure 3).

Figure 2. Road, rail and ports tonnage carried (in million tonnes) and Eskom and other grid suppliers' electricity available (in TWh), 2010 to fourth quarter 2024



Source: TIPS, 2025. Real Economy Bulletin Q4 2024. Calculated from Statistics South Africa. Electricity generated and available for distribution. Excel spreadsheet from 2000; and Land Transport Survey. Excel spreadsheet. Downloaded from www.statssa.gov.za in May 2025. For ports, Transnet National Ports Authority. Port Statistics. Webpage. Accessed at https://www.transnetnationalportsauthority.net/Commercial%20and%20Marketing/Pages/Port-Statistics.aspx in May 2025.

Figure 3. AMSA unit costs per tonne in constant (2022) rand and US dollars and as percentage of Arcelor Mittal global unit costs in US dollars, and South African export unit cost per tonne in constant rand, 2011 to 2023



Source: Makgetla, 2024.

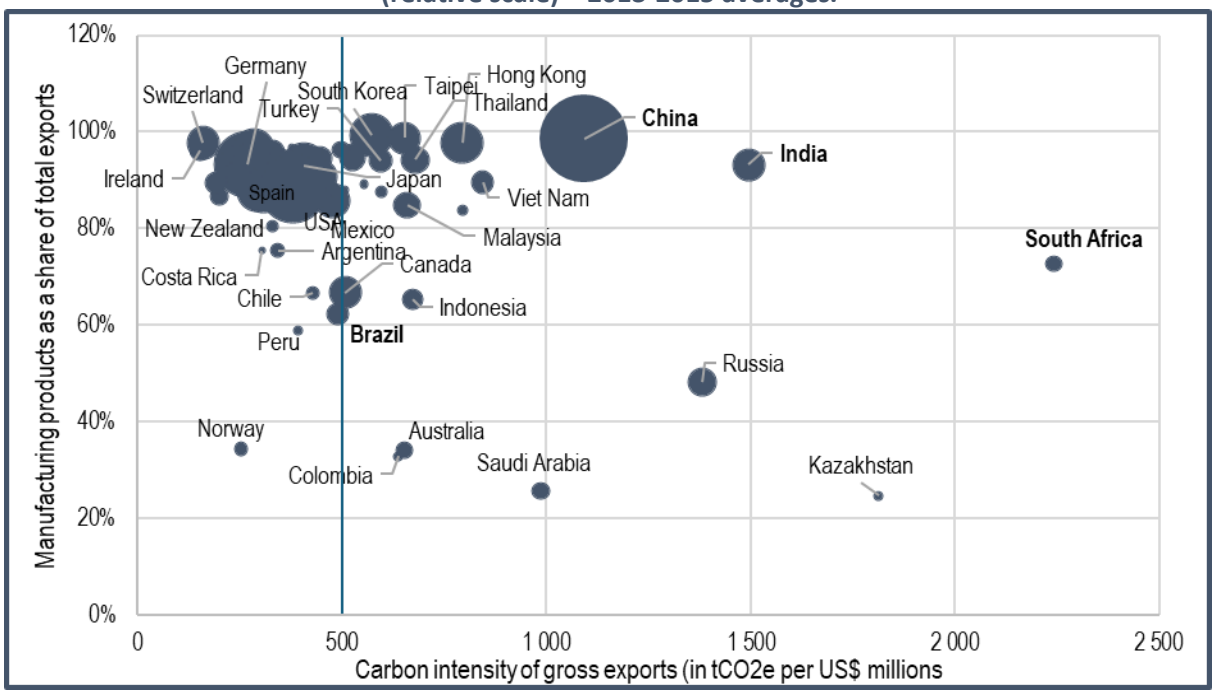
AMSA's operating costs per tonne also exceeded national export prices in most decades, which equalled average import prices (Makgetla, 2024). In addition, with freight infrastructure issues intensifying from the 2020s, this also meant that transport costs for AMSA to transport raw materials such as coal and ore from ports to their inland plants increased. This forced the entity to increasingly rely on road transport. In 2023, around a third of AMSA's shipments of bulk inputs were carried by road, substantially more than in 2022 (Makgetla, 2024). According to Makgetla (2024), AMSA placed the total cost of Transnet's shortcomings in 2023 at over R1.4 billion, mostly because of the higher cost of road freight and the need to pay demurrage to shippers when the ports-imposed delays.

The affected BCA industries are battling with rising costs in South Africa due to the inefficiencies in the South African economic infrastructure. These domestic issues add to the burden that South African BCA-affected industries have to battle with, in terms of administrative costs in complying with the requirements of the BCAs. Overall, the increasing domestic issues of increasing input costs for BCA affected firms will add costs to South African exports. This will result in South African exports losing competitiveness in the international market.

2.5.2. GHG emission intensity – default values

Global South countries face high levels of carbon-intensity in production. Figure 4 indicates that most of the countries have a carbon-intensity of over 500 tCO_2e (tonnes of CO_2 equivalent) per US$ million, with most of the Global North countries below 500 tCO_2e per US$ million. Looking at the original BRICS countries, South Africa, India, Russia and China have the most carbon-intensive manufacturing sectors. Saudi Arabia, a new entrant, also portrays a higher carbon-intensity for its manufacturing sector. Global South countries, as a result of their carbon-intensity combined with historically lower industrialisation and greater structural challenges than Global North countries, need to be given more space and flexibility to industrialise, by introducing a more flexible and differentiated carbon pricing floor to allow international equity in the midst of BCAs being introduced (Parry et al., 2021).

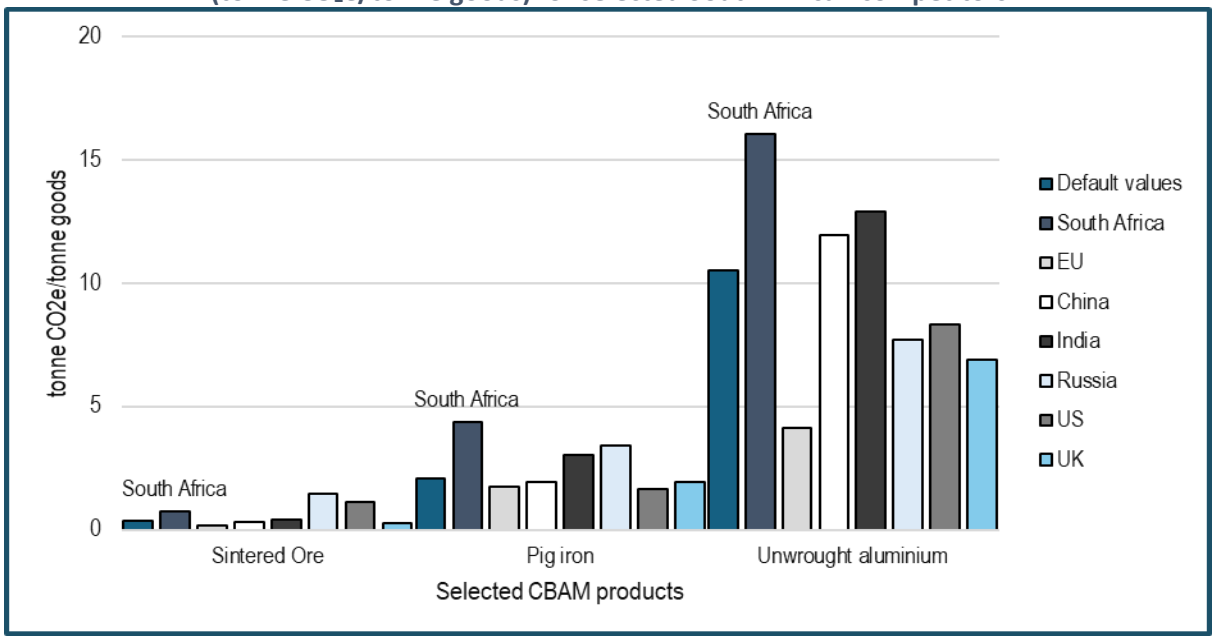
Figure 4. Manufacturing export per country per carbon intensity (in tCO_2e per US$ million), share of exports (in percentage of the country's total exports) and export value (relative scale) – 2013-2015 averages.



Source: Adapted from Montmasson-Clair, 2020, based on data from the OECD (Organisation for Economic Co-operation and Development). Dataset on carbon dioxide emissions embodied in international trade, downloaded from https://stats.oecd.org in March 2020.

Among the BRICS+ members, South Africa's manufacturing exports are at extreme risk. South Africa is an outlier compared to other countries, with 2243 tCO_2e per US$ million (Montmasson-Clair, 2020). South Africa is the only country with a carbon intensity of over 2000 tCO_2e per US$ million. This can largely be explained by the high carbon intensity of South Africa's energy supply (electricity and fuels), combined with a poor (although improving) performance in energy. South Africa's energy production is still dependent on coal, with over 80% of South African electricity produced from coal. Other outliers are also BRICS+ countries in terms of tCO_2e per US$ million, and these include India (1495), Russia (1381), China (1092) and Saudi Arabia (987). The bulk of the countries are spread from about 300 to 1100 tCO_2e per US$ million. These countries are highly reliant on fossil fuels for their industrial activities.

Figure 5. Total emissions embedded in selected iron and steel and aluminium products (tonne CO_2e/tonne goods) for selected South African competitors



Source: Maimele, 2024a's calculations, based on EC, 2023a. *Note*: Default values are based on the EC defaults, and countries and EU's estimates are based on the EC JRC technical report (EC, 2023a).

Most firms operating in developing countries are still in the early stages of developing GHG accounting systems. While these systems are being established, companies will likely have to rely on pre-determined default emissions values set by the EU. The use of default values could lead to punitive penalties, particularly for BRICS+ countries, which tend to have higher carbon intensities (Figure 4). Many exporters in developing countries lack the infrastructure to account for and report GHG emissions accurately. As noted, the EU CBAM allows the use of default values, making this a common option for many low- and middle-income countries.

Although default values will be used mostly during the transition period in the case of the EU CBAM, (EC, 2023b), during the implementation period of the EU CBAM, default values will also apply in the absence of measurement and verification systems (Maimele, 2024a). These values will be set at the average emission intensity of each exporting country, increased by a proportionately designed mark-up (EC, 2023b). These default values will be determined through an implementing Act planned for adoption in 2025.

Figure 5 contrasts the emission intensity for the EU and South Africa in iron and steel and aluminium products. South Africa's embedded emission estimates for selected EU CBAM products, default values (which are weighted average from the European Commission (EC) Joint Research Centre technical report), and the EU's emissions and selected competitor's emissions are presented in Figure 5. The default values provide lower estimations (which are viable in the short term), but South Africa still has higher carbon intensities embedded in EU CBAM products. Generally, the South African emissions embedded in the EU CBAM products, especially iron and steel, and aluminium products, are higher than the EU's default values, and higher than most competitors. This will be an issue going forward, as adjusting the default values will be based on country estimations. Therefore, using local GHG emissions infrastructure in reporting GHG emissions at a product level would reduce CBAM costs and align
more realistically in the longer term – instead of relying on EU estimates, which they do not have control over.

Failure to report GHG emissions, or incorrect reporting of specific embedded emissions will result in penalties, which in the case of actual emissions will add another cost for BCA-affected firms. The

EU CBAM legislation notes that EU importers that fail to comply during the transition will pay a penalty of between €10 and €50 per tonne of unreported and incorrectly reported emissions, and the penalty will increase in accordance with the European Union Consumer Price Index (EC, 2022). Also, if more than two incomplete or incorrect reports, or no reports, have been submitted in more than six months a higher penalty will apply, and importers will likely pass these penalties on to the exporting firms, affecting South African exporting entities.

Overall, competitiveness risks prevail in South African-affected BCA firms. These risks add costs of operating and exporting BCA covered goods, such as iron and steel, aluminium and chemicals. The competitiveness issues are exacerbated by increasing costs in inputs cost (such as energy and logistics) and the carbon intensity of the South African grid, which will affect the proportionate cost of indirect emissions of affected firms. What is evident is that these issues contribute to the deterioration of South African competitiveness, affecting the competitiveness of BCA-affected exports.

2.6. Consequences of a low domestic carbon tax rate

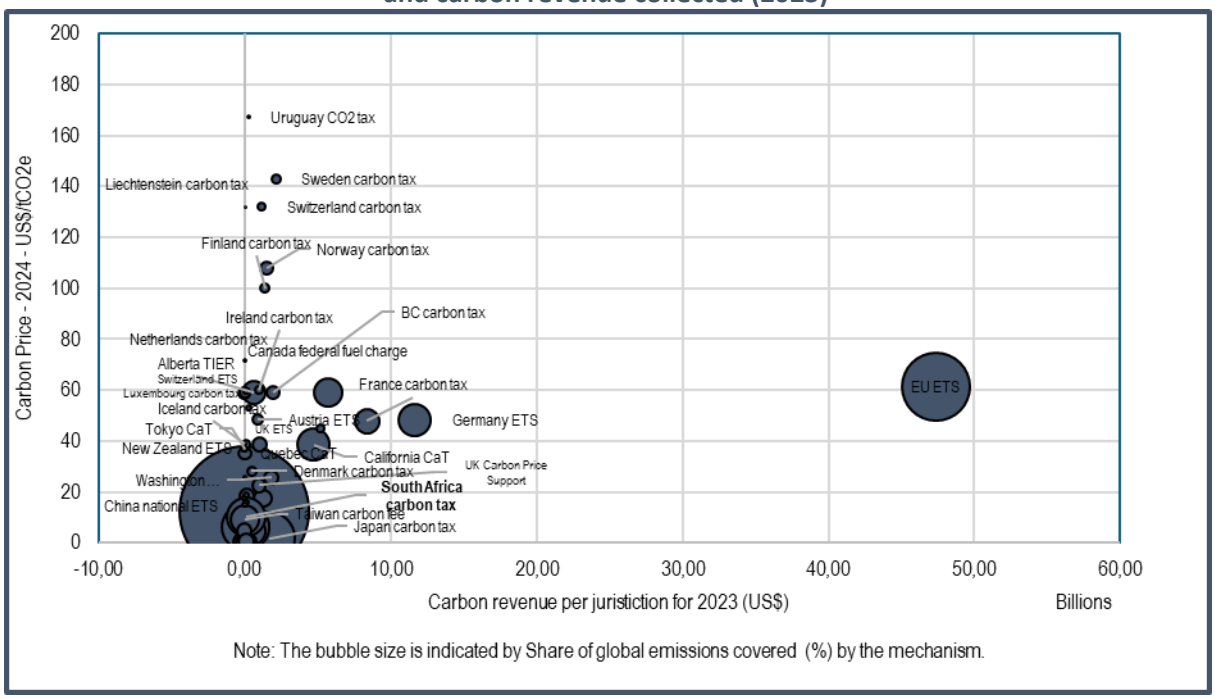
There are currently at least 110 active carbon pricing schemes worldwide, spanning 53 national and 40 subnational jurisdictions. Collectively, these mechanisms cover approximately 24% of global GHG emissions. The adoption of carbon pricing is increasingly becoming a global trend. However, many countries in the Global South perceive the proliferation of these mechanisms as a strategy that ultimately enhances the competitiveness of Global North economies. In the absence of a unified global carbon price, the unilateral implementation of carbon pricing by individual jurisdictions can reduce their international competitiveness. This is primarily due to the increased cost of goods resulting from carbon pricing, which can make exports from these jurisdictions more expensive compared to those from regions without such measures. Despite the growing momentum of global carbon pricing, countries in the Global South, particularly in Africa, remain largely unprotected from its implications. This is due to either the absence of carbon pricing systems or the relatively low carbon prices in place, leaving them vulnerable to external mechanisms like the EU CBAM.

In Africa, carbon pricing has been implemented only in South Africa. However, several other African countries, including Botswana, Senegal, Côte d'Ivoire, Morocco, Gabon, and Nigeria, are actively exploring the introduction of carbon pricing mechanisms. Across the Global South, carbon pricing instruments vary, typically taking the form of carbon taxes or ETSs, with price levels ranging from as low as US$0.61 to US$12/tCO_2e.

In contrast, countries in the Global North have implemented significantly higher carbon prices. As illustrated in Figure 6, carbon pricing in these countries starts at around US$17/$tCO_2e$ and can reach up to US$142/$tCO_2e$. Nations charging over US$100/$tCO_2e$ include Norway, Sweden, Switzerland, Finland, Liechtenstein, and Uruguay. With the exception of Uruguay, these are all Global North countries, and notably, most are exempt from the EU CBAM. This exemption is likely due to their higher domestic carbon prices, which exceed the average price under the EU ETS, estimated at around US$60/$tCO_2e$, according to World Bank data updated on 1 April 2024.

As shown in Figure 6, the EU ETS is the world's largest carbon market in terms of revenue. In 2023 alone, it generated over US$47 billion, according to World Bank data. Complementing the EU ETS, the EU CBAM is projected to raise an additional €9.1 billion in revenue.

Figure 6. Main carbon pricing mechanisms globally according to their carbon price (2024) and carbon revenue collected (2023)



Source: Authors based on data from World Bank, 2024. Accessed at: https://carbonpricingdashboard.worldbank.org/sites/default/files/data-latest.xlsx.

South Africa maintains a comparatively low effective carbon price by global standards. According to the South African Reserve Bank (SARB), once generous tax-free allowances for emissions-intensive and energy-intensive sectors, such as iron and steel (up to 90%) and aluminium (up to 95%), are taken into account, the effective carbon price paid by firms ranges between US$0.30 and US$2.60/tCO_2e). This is significantly below the global average of approximately US$6/$tCO_2e$. Such a disparity raises concerns about potential revenue leakage. To address the risks associated with BCAs, the SARB advocates for a balanced policy mix that includes both price-based and non-price-based climate instruments, tailored to South Africa's unique economic conditions.

Another key issue arising from the divergence in carbon pricing mechanisms is the EU's objective of establishing global carbon price parity, often framed as "levelling the playing field". The EU aims to ensure that all trading partners face carbon costs comparable to those within the EU, aligning global carbon pricing standards (which don't exit). However, this approach is at odds with the UNFCCC principle of CBDR-RC. For global carbon pricing to be equitable and effective, differentiated pricing should be considered, potentially through the application of Purchasing Power Parity adjustments that allow developing countries to pay discounted carbon prices relative to their economic capacity.

Although South Africa's domestic carbon price (at the range of US$8-US$10/tCO_2e) is substantially lower than both global (around US$50/$tCO_2e$) and EU levels (up to US$100/$tCO_2e$), exporters are still required to pay the EU CBAM levy, increasing the cost burden on exports. The low domestic carbon price also limits the extent to which South African firms can benefit from any potential discounts on the CBAM charges at the border. This underscores the broader challenge faced by developing countries: balancing domestic economic constraints with the demands of an increasingly carbon-constrained global trade environment.

3. THE DEVELOPMENT PROCESS

The response to Border Carbon Adjustments for South Africa consists of a set of recommendations grouped into pathways that can be pursued when addressing the introduction of BCAs. This section outlines the development process through which this responding to BCAs was formulated.

The first step involved a desktop review of existing BCA literature. This was supported by deep triangulation, which applied multiple methods, data sources, and perspectives to verify and validate findings, ensuring a more robust and accurate analysis.

The second step entailed applying SEIAS. Options for responding to BCAs (see Annexures attached separately), particularly the EU and UK CBAMs, were assessed using SEIAS. The SEIAS approach aims to strengthen policy responses by improving the understanding of potential impacts across different stakeholder groups. Key features of the SEIAS methodology include: a separate evaluation of anticipated costs, benefits, and risks for affected groups; recognition that impacts differ across constituencies; and reliance on descriptive rather than quantitative analysis in cases where meaningful quantification is not possible due to data limitations or externalities. In such cases, assumptions were not treated as empirical data; instead, further investigation and negotiations around specific measures were used to refine the understanding of impacts.

The SEIAS evaluated the impact of response options on the following stakeholder groups:

- Labour – workers employed in affected sectors such as aluminium, iron and steel, cement, and chemicals (including fertilisers, hydrogen, and plastics).
- Communities – those located around impacted firms and industrial hubs.
- Government – relevant departments and agencies across multiple levels: national (e.g., Department of International Relations and Cooperation (DIRCO), DFFE, National Treasury, CSIR, Department of Science, Technology and Innovation DSTI), Department of Mineral Resources and Energy, Department of Energy and Electricity, Eskom); regional (e.g., the African Union (AU), AfCFTA Secretariat, and regional economic bodies); alliance partners (e.g., BRICS+ countries).
- Industry partners and associations (including but not limited to the South African Iron and Steel Institute, AMSA, Hulamin, Hillside, Columbus Stainless, Samancor and the Aluminium Federation of South Africa); and
- Multilateral institutions (such as the WTO, World Bank, International Monetary Fund (IMF), and UN agencies working on climate change).

Each policy option was assessed using the following criteria: the likelihood of timely success in implementation (risk and impact); the number of workers affected and the resulting community impact; the readiness of key stakeholders to engage and respond to interventions; and the potential for transitional arrangements to mitigate associated costs and risks.

Based on this assessment, options were identified and incorporated into the response to BCAs. These options build on existing and potential partnerships, both public and private, that can support South Africa's transition and response to green trade barriers such as BCAs.

Finally, the SEIAS was presented to various stakeholders for validation, including industry, labour, and government. Some stakeholders were thoroughly engaged and consulted, while others were informed through information sharing sessions.

4. RESPONSING TO BORDER CARBON ADJUSTMENTS

Following the evaluation of available options (as in the Annexures attached), this section presents the responding to Border Carbon Adjustments options in South Africa for consideration, articulated as a set of recommendations based on the analysis in the Annexures (attached separately).

The recommendations are anchored in the principles of adaptation, coordination, adjustment, decarbonisation, and international engagement, with the overarching goal of maintaining South Africa's competitiveness and access to markets implementing green trade measures. The recommendations adopt a phased approach, short (2027)-, medium (2030)-, and long-term (beyond 2030) – to enable a comprehensive, flexible, and adaptive response over time.

This section presents four strategic pathways, along with one no-regret option to be considered. The pathways are: (1) adapting to climate and trade policies; (2) adjusting to shifting global trade dynamics; (3) decarbonising to retain the competitiveness of South African goods; and (4) engaging diplomatically to promote a fair international trading system.

The overarching objective of these pathways is to enhance the competitiveness of the South African economy through greener production methods, while maintaining and expanding access to export markets. The pathways serve as channels for targeted interventions, as noted in the detailed section after Figure 7. As illustrated in the schematic representation (Figure 7) and elaborated in a form of a summary (below), interventions are prioritised by period, indicating what needs to happen now (2025-2027) and beyond 2030.

A) Immediate Priorities (2025-2027)

1. Establish a Single Point of Authority (SPA) on Climate and Trade (the dtic and DFFE, 2025) – mandated to coordinate climate-trade issues, monitor CBAM and BCA developments, and shape proactive policy responses.
2. Launch a targeted awareness campaign (Presidential Climate Commission (PCC), 2025-26) across government, industry, labour, and civil society to deepen understanding of climate-trade risks and compliance needs.
3. Scale up the CSIR MRV Solution (CSIR, the dtic, affected businesses, 2026) – deliver a cost-effective, reliable emissions measurement and reporting framework for impacted industries.
4. Align with global carbon pricing standards to offset BCA costs (National Treasury, 2025-26) – increase carbon tax to align with global carbon pricing to retain revenue locally and introduce mechanisms such as a decarbonisation fund to recycle carbon revenues and support industry transition.
5. Engage bilaterally with the EU and support multilateral reform (Climate and Trade SPA, 2025-26) – advocate for differentiated treatment under the European Green Deal, seek temporary CBAM/ EU Deforestation Regulation (EUDR) relief measures, and ensure equitable Global South participation in multilateral forums.
6. Strengthen trade with alliance partners (BRICS+) and domestically (the dtic, 2026) – launch infrastructure programmes with localisation requirements, boost demand for local goods, and deepen trade in critical minerals with BRICS+ markets.

B) Medium-Term Key Actions (2027–2030)

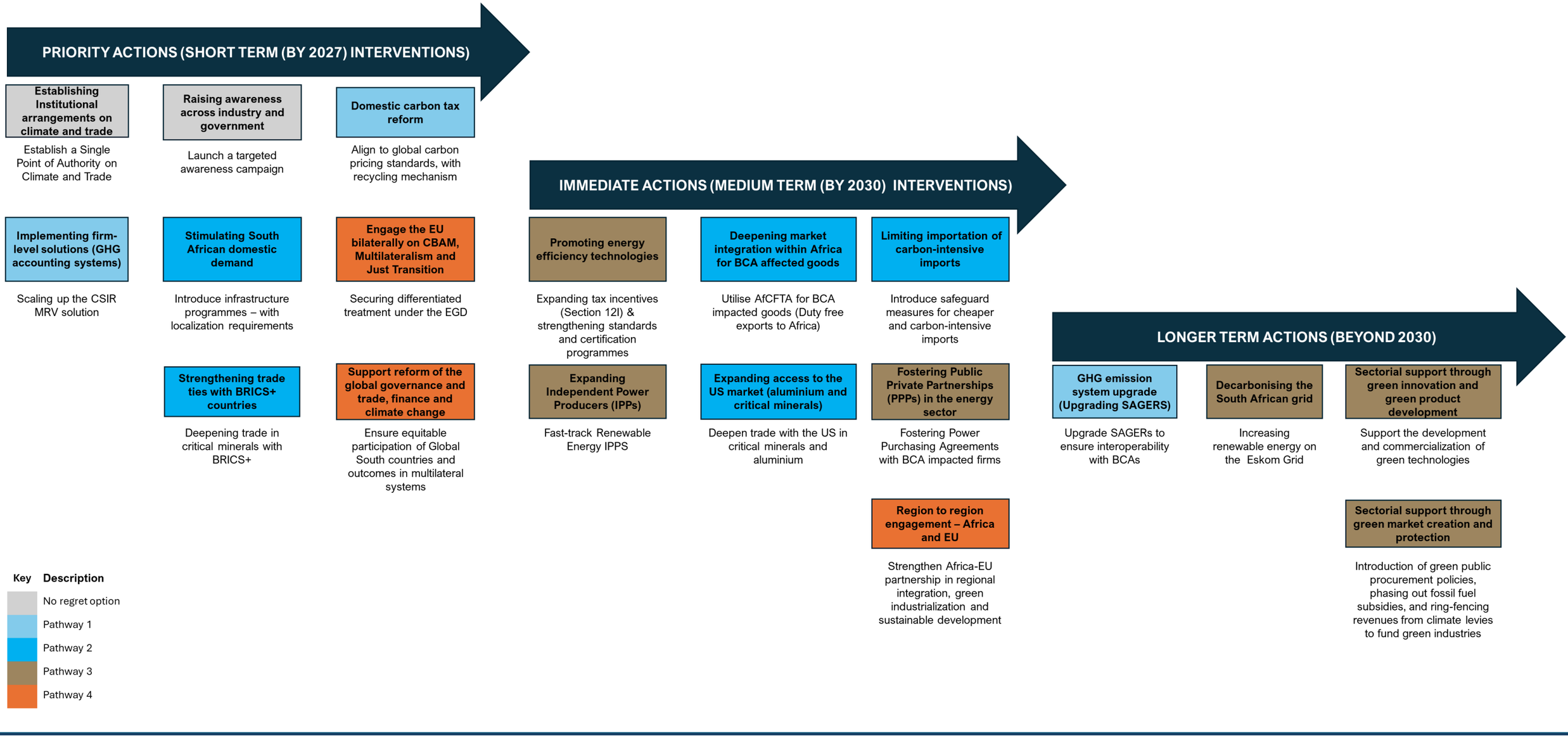
1. Support Energy Decarbonisation (National Treasury, the dtic, 2027) – expand tax incentives (e.g., Section 12I); strengthen standards and certification programmes; accelerate Renewable Energy IPPs; and promote Power Purchase Agreements for BCA-impacted firms.
2. Identify Alternative Markets for Displaced Exports (the dtic, 2027) – leverage AfCFTA for duty-free exports to Africa; expand trade with the US in critical minerals and aluminium; and implement safeguard measures against cheaper, carbon-intensive imports.
3. Foster Region-to-Region Engagement (Africa-EU, 2027-2030) – strengthen cooperation on regional integration, green industrialisation, and sustainable development.

C) Longer-Term Solutions (2030 and beyond)

1. Upgrade South Africa's GHG Accounting System (SAGERS) (DFFE, 2030) – ensure full interoperability with global BCAs.
2. Accelerate Grid Decarbonisation (Eskom, 2030) – significantly increase renewable energy capacity on the Eskom grid.
3. Implement a Green Industrial Policy (the dtic, 2030) – develop and commercialise green technologies, promote green market creation and protection (e.g., green public procurement); phase out fossil fuel subsidies; and ring-fence climate levy revenues to fund green industries.

The analysis highlights that South Africa's export future depends on aligning trade policy with an accelerated yet socially just decarbonisation pathway. Delayed action will lock in CBAM-related costs and erode industrial jobs, whereas decisive action can transform climate ambition into a new source of competitiveness. Delivering on these priorities will convert the response from paper to practice, positioning South Africa as a resilient, competitive exporter in a carbon-constrained world.

Figure 7. Responding to Border Carbon Adjustments (BCAs) – A schematic representation of options to mitigate adverse impacts



NO REGRET OPTION: COORDINATE

A coordinated approach led jointly by industry and government to implement the response

Despite ongoing efforts by researchers, governments, and industries to raise awareness of trade risks linked to evolving global climate and trade policies, significant gaps remain, particularly among other impacted industries. Since the 2010s, limited understanding and preparation have hindered effective responses, although awareness has grown between 2023 and 2025 through initiatives such as the dtic-TIPS workshops, industry engagements, Nedlac engagements, and Western Cape Government outreach to affected sectors. Industries like iron and steel and aluminium were initially unaware of the EU CBAM's requirements, with many exporters only recently beginning to submit reports due to the rushed and complex implementation process. This confusion, compounded by frequent policy revisions, has left industries vulnerable to compliance failures, penalties, and competitiveness losses. Another key challenge is the lack of coordinated institutional mechanisms in South Africa, with no designated authority for climate-trade issues and limited collaboration between government and industry. Against this backdrop, it is essential to pursue no-regret options, including the establishment of clear institutional arrangements for climate and trade and the scaling up of awareness initiatives across both industry and government.

1) Establishing institutional arrangements on climate and trade

From an institutional capacity perspective, a SPA should be established, preferably to be co-located within the DFFE and the dtic, with the dtic leading South Africa's response to BCAs and climate and trade. This SPA should be empowered to coordinate actions within and across affected industries, as well as between industry, labour, and government. Its establishment is a no-regret option, aimed at enhancing institutional coherence and fostering collaborative solutions to the complex interface between climate and trade policy. CBAM is iterative, there are continued changes in the scope of products and value chains covered, and this will mean that the SPA would also have the responsibility of monitoring developments and changes in the CBAM and BCAs more broadly and developing responses to those. Also, the SPA should track the effectiveness of the response to Border Carbon Adjustments.

2) Raising awareness across industry and government

While awareness of emerging climate and trade measures is growing among government and industry, it remains fragmented and insufficient. To address this, a targeted and coordinated awareness campaign should be launched to deepen understanding of the risks, obligations, and implementation challenges linked to BCAs and related measures.

Such a campaign should prioritise key stakeholders, including relevant government departments and directly affected sectors. Tools such as technical workshops, media engagement, and opinion pieces can support this effort by promoting informed dialogue and policy alignment.

Awareness-raising efforts should also aim to improve policy coherence and readiness, particularly in relation to major and emerging trade partners. Implementing agencies must develop a strong, practical understanding of BCA requirements. To support this, existing institutions, including research organisations, the PCC, and industry associations, can be mobilised to work alongside government departments in building the necessary technical and institutional capacity.

PATHWAY 1: ADAPT

Adapting to climate and trade policies to sustain market access

BCAs such as the EU and UK CBAMs, are expected to impose significant financial and compliance burdens on both South African exporters and the government. Exporting firms will be required to account for, report, and verify the embedded emissions in their products and buy CBAM certificates. Notably, the EU and UK CBAMs mandate third-party verifiable carbon audits, which can be prohibitively expensive, even for large firms.

In response to these challenges, the first strategic pathway focuses on adapting to the evolving landscape of climate and trade policies. These include BCAs; green subsidies aimed at protecting domestic industries; and the introduction of green standards that may act as non-tariff barriers. This pathway comprises three strategic interventions, implemented across short-, and long-term timelines.

Strategic Interventions:

a) Implementing firm-level GHG accounting systems

During the EU CBAM transition period, between 2023 and 2025, firms were required to monitor and report the GHG emissions embedded in their exports to the EU, with verification remaining on a voluntary basis. South African firms have begun investing in system solutions to monitor, report, and verify the GHG emissions embedded in their products; however, this exercise is very costly, even for large firms such as AMSA. In this context, a more streamlined solution that is both cost-effective and efficient for monitoring and reporting GHG emissions embedded in exported products should be invested in.

The first strategic, short-term intervention involves scaling up the CSIR's MRV solution from pilot to full commercial deployment. The CSIR is creating a platform that integrates hardware such as energy meters and Raspberry Pi devices to collect real-time data on energy consumption throughout the production processes of industries. This data is used to calculate product-level GHG emissions and is recorded using blockchain technology. The system produces dashboards and emissions reports that can support compliance with international emissions reporting requirements, including those mandated by the EU's CBAM. As a digital, blockchain-based solution, the platform aims to deliver accurate, verifiable, and product-specific GHG data for exporters operating under increasingly stringent carbon accountability frameworks. This solution only monitors and reports GHG emissions, and verification is not taken into account. However, the platform also aims to provide a powerful, wide-angled view of emissions patterns across South Africa's industrial landscape. In particular, the platform is aimed at small companies which lack the funds, technology and expertise to undertake emissions monitoring themselves. Although many firms are already investing in GHG accounting, widespread implementation requires automation and real-time reporting. The CSIR system is well-placed to fulfil this role but will require dedicated funding for development and deployment.

- Primary stakeholders: Affected businesses (especially those subject to BCAs)
- Secondary stakeholders: CSIR (technology development), European Commission (capacity building), Labour (job safeguarding and new job creation)

Businesses should provide access to their facilities for piloting the CSIR tool. The CSIR will be responsible for developing the solution, with technical support from the European Commission. Labour representatives should ensure that the transition supports employment outcomes.

Scaling the CSIR MRV solution from pilot to commercial deployment across entities would enhance understanding of GHG emissions intensity in South Africa. The costs would involve project management expenses related to the design and implementation of the platform. The primary risk is

that the platform does not currently incorporate verification, a process required under both the EU and UK CBAMs, which would impose significant additional compliance costs on entities. Although the solution is already in the pilot phase, integrating verification features may pose challenges but remains feasible. However, this approach is only a short-term measure, as the CSIR lacks the regulatory authority to maintain long-term dominance. While it may provide temporary financial relief (by providing automation and real-time reporting to firms), a more durable, long-term solution will ultimately be necessary.

b) Domestic carbon tax reform

The EU CBAM legislation notes that if a company can prove that it paid a carbon tax or price in its jurisdiction of operation, the carbon charge will be deducted from the CBAM charge to be paid in the EU. Therefore, if an exporting firm has paid an EU CBAM aligned charge, the firm will be paying no CBAM charge to the EU at all. In South Africa, the carbon tax remains low compared to international benchmarks (as noted in Section 2.6) and is misaligned with emerging global carbon pricing mechanisms and BCAs. Under the EU CBAM, carbon pricing paid in the jurisdiction of operation will need to be adjusted when purchasing CBAM certificates (paying the carbon border tax). This means that the carbon tax paid in South Africa will need to be deducted from the CBAM charge when exporting to the EU. On this basis, a short-term intervention is called for, aligning the domestic carbon tax with the global carbon price corridor (US$50-US$100/tonne CO_2) for key high-emission sectors (such as iron and steel, aluminium, and chemicals), while establishing a dedicated decarbonisation fund to recycle revenue.

Raising the carbon tax would serve multiple strategic objectives. It would incentivise high emitters to transform their business models and invest in low-carbon technologies. It would reduce the risk of exposure to external carbon pricing mechanisms such as the EU and UK CBAMs. Although the domestic carbon tax would impose similar costs on firms as CBAMs, it would allow South Africa to retain carbon revenue, rather than losing it to foreign jurisdictions. Crucially, the revenue collected domestically could be recycled into a dedicated decarbonisation fund, supporting the transition of highly exposed sectors such as iron and steel, aluminium and chemicals. This fiscal recycling would help cushion the economic impact on local producers and maintain competitiveness. Transparency across the development process and implementation of this intervention should be promoted at all levels.

For this system to function effectively, South Africa must also phase out free allowances (for impacted sectors) at a pace comparable to the EU ETS. This alignment would ensure fairness and compatibility in international carbon pricing.

Ultimately, a harmonised approach, aligning with the global carbon price corridor and introducing strong recycling mechanisms, would position South Africa to: ensure its carbon-intensive exports reflect a minimum carbon price equivalent to the EU benchmark; prevent local production, especially in key sectors like iron and steel, from being adversely affected by abrupt cost increases; and establish a more predictable, equitable, and strategically-aligned carbon pricing framework.

- Key stakeholders: National Treasury, the dtic, business, and labour

The National Treasury should lead the alignment of the carbon tax and design the recycling mechanism. Already, the National Treasury is looking into a response to CBAM from a fiscal position. The dtic should emphasise the trade risks of South Africa's low carbon price. Affected businesses must advocate for the creation of a dedicated decarbonisation fund to support industrial transition. Labour should support the reform in ways that protect workers and livelihoods.

c) Upgrading the South African GHG Emissions System (SAGERS)

Globally, there are no aligned standards for monitoring, reporting, and verifying GHG emissions embedded in products. The EU CBAM has added to the incompatibilities across existing GHG emissions systems, highlighting the need for interoperability among these systems.

South Africa already has a Greenhouse Gas Emissions Reporting System in place called SAGERS. This system can be leveraged and further upgraded to align to the proposed EU and UK CBAMs and identify possible entry points to be leveraged to help both firms and the government in reprieving the compliance cost. The system could prioritise the most impacted industries, like iron and steel (including iron ore) and aluminium in the short term. This could also include chemical products, as the EU CBAM is envisioned to expand to include the industry in the near future. It is on this basis that a longer-term intervention involving the upgrading of SAGERS to align with international GHG accounting and verification systems, and ensure interoperability with BCAs, becomes apparent. This would allow South African exporters to meet product-level emissions reporting standards.

Key benefits would include continued access to markets requiring MRV of GHG emissions at the product level (e.g., UK and EU); enhanced government understanding of emissions across product levels; enabling expanded policy space; and reduced verification costs for businesses through the provision of auditing services. This intervention will incur costs related to human resource development and technological upgrades. Although the risk of policy delays remains uncertain, any postponement in system upgrades could result in loss of market access, particularly to jurisdictions implementing BCAs.

- Key stakeholders: DFFE, SABS, CSIR, EU and UK, business, labour

The DFFE should lead the upgrade by establishing legal mandates and building verification capacity. Industries must align with these requirements. The South African Bureau of Standards (SABS) should develop domestic standards and contribute to international standard-setting. The CSIR will serve as the implementing agency for firm-level accounting systems. In the longer term, there is potential to integrate the CSIR GHG Observatory with SAGERS. The fact that the GHG Observatory uses blockchain as a trust mechanism is significant, particularly in light of future direct CBAM data uploads to EU and UK servers. Furthermore, due to data sovereignty considerations, it is essential that this data remains within South Africa and is safeguarded as a national asset, meaning it should not be stored on international cloud platforms such as Amazon Web Services, Google, or Azure. South Africa also has substantial potential to leverage the collected data for emissions insights, using advanced tools such as big data analytics, AI and machine learning, and data modelling. The EU and UK should provide technical support, while labour unions should facilitate worker engagement and technology adoption.

PATHWAY 2: ADJUST

Adjustment to shifting global trade policies

The EU has been a historical and key trade partner for South Africa, constituting almost a quarter of South Africa's trade. However, the current trade volatility in global trade as a result of US President Donald Trump's 2025 tariff policy provides some insight into the potential responses by countries to lost competitiveness in key markets – that is, seeking to diversify exports by exporting to other countries (i.e., Africa, BRICS+ and the US for aluminium). Market diversification efforts are already apparent with the current US tariff saga going on; for example, the dtic has been looking at Saudi Arabia, Morocco and other countries recently to find new markets for South African exports. A similar approach could be mainstreamed as a CBAM response, which arguably would outlast a single president's term as it is firmly rooted in policy, unlike Trump who will have to vacate after his current term. Seeking alternative markets for South African BCA-affected exports is seen as a last resort option. Rerouting volumes to other markets is costly and time-consuming. This option, however, may

be unavoidable should South African exports become too expensive and uncompetitive to enter the EU market, South Africa's biggest trading partner.

This pathway addresses the evolving landscape of global trade policy, including the rise of BCAs, green industrial policy, and regional trade realignments. It comprises five strategic interventions, to be implemented across short- and medium-term timelines.

Strategic Interventions:

a) Stimulating domestic demand through localisation

To mitigate BCA impacts, South Africa should stimulate domestic demand, especially in vulnerable sectors such as steel, cement, chemicals, and aluminium. Programmes like the infrastructure-driven new build initiative present key opportunities to drive demand for locally manufactured products. Embedding robust localisation requirements, particularly for strained sectors like steel, will ensure that increased demand supports domestic production. This short-term intervention would provide relieve to displaced exports to the EU.

While boosting local demand through localisation measures is a sound policy objective, poor design and implementation risk undermining the intended outcomes. South Africa's high exposure to cheap imports amplifies these risks. To ensure high-impact and inclusive industrial outcomes, localisation efforts must be carefully calibrated, well-funded, and accompanied by clear, consistent policy signals.

- Key stakeholders: the dtic, Localisation Support Fund (LSF), business (such as steel, aluminium, chemicals), downstream industries (e.g. construction), and labour.

The dtic should implement localisation tools, including designations and selective tariffs. The LSF can support targeted demand-enhancing measures. Business would require policy certainty to invest in local capacity. Downstream industries would seek reliable and competitively priced local inputs. Labour should support localisation policies that promote job creation.

b) Strengthening trade ties with BRICS+

With the EU and UK implementing BCAs, South Africa's exports face increasing costs. Deepening trade with BRICS+ countries offers an alternative. By leveraging South Africa's critical minerals and BCA-affected exports, BRICS+ can become a key strategic bloc. This short-term intervention could also provide relief for displaced exports to the UK and EU. However, the risk of unbalanced trade agreements remains, which could lead to a surge in cheaper imports from BRICS+ countries and limited gains for South African exports.

- Key stakeholders: the dtic, BRICS+ governments, business, and labour

The dtic should facilitate expanded trade agreements. BRICS+ countries are encouraged to adopt reciprocal measures to accommodate South African exports. Business should pursue duty-free access for affected goods. Labour must safeguard jobs and support labour mobility within BRICS+.

c) Deepening market integration within Africa

Africa remains a growth frontier for iron and steel, aluminium, and chemicals. South Africa can position itself as a regional supplier of low-carbon goods, aligned with the AfCFTA's goals. This enables climate-resilient industrialisation across the continent. This medium-term intervention could provide relief to displaced exports and support ambitions of regional integration in Africa. Regional integration in Africa remains at an early stage. The introduction of BCAs presents an opportunity to advance climate-resilient developmental regionalism under the AfCFTA framework.

While South Africa already exports much of its chemicals (fertilisers and hydrogen) and cements to Africa, Africa remains an island of opportunities in consumption and production of iron and steel and aluminium regionally. Due to lack of industrialisation on the continent, opportunities for aluminium

and iron and steel remains in the production and supply side, rather than on the demand and consumption side. However, the introduction of BCAs such as the EU CBAM present an opportunity to look at the African continent for steel, aluminium, chemicals and cements, both for consumption and production.

This intervention is a medium- to long-term solution that necessitates an institutional framework supporting regional integration for effective implementation. The relative risk is moderate, presenting a significant opportunity for Africa to connect its markets and benefit from economies of scale.

- Key stakeholders: the dtic, AfCFTA Secretariat, AU, business, and labour

The dtic should fast-track AfCFTA implementation in priority sectors. AfCFTA and the AU must lead on climate-aligned regional integration. Business should explore market expansion and regional value chains. Labour must support regional employment protections and cross-border worker mobility.

d) Expanding access to the US market (aluminium and critical minerals)

The EU and US together account for over 64% of South Africa's aluminium exports. With EU market access increasingly constrained by the CBAM, expanding exports to the US is becoming essential. While the US remains a key market for both aluminium and critical minerals, political volatility, particularly under President Donald Trump's administration, poses challenges for long-term trade planning and makes risk assessments for this intervention uncertain. In addition, past US concerns regarding security and governance in South Africa could impact the willingness of the US government to pursue reciprocal trade agreements. This is therefore considered a medium-term intervention (post Trump administration).

- Key stakeholders: the dtic, US government, business, and labour

The dtic should deepen trade engagement with the US. The US government should pursue reciprocal trade agreements. Business must provide data to support market access for aluminium and minerals. Labour should support trade initiatives that protect local jobs. However, given the current administration, this intervention is constrained in how effectively it can be implemented. Some relevant dynamics include the Section 232 duty on South African aluminium, and stricter origin rules for battery-grade minerals. These barriers make the immediate large-scale diversion of CBAM-affected exports to the US unlikely.

In the medium term, potential measures could include: Section 232 relief through negotiating product-specific exclusions or a limited quota post-2026 tariff review; a Critical Minerals Agreement for South African lithium, manganese and platinum group metals (PGMs); a climate-aligned African Growth and Opportunity Act (AGOA) reboot covering low-carbon aluminium and other green-trade products; and domestic content partnerships, such as joint research and development (R&D) or US-based refining, to qualify under climate rules.

These measures depend on US political will and should complement, not replace, EU market re-entry and BRICS+ diversification strategies.

e) Limiting imports of carbon-intensive goods

Iron, steel, and aluminium products are expected to be the most affected by BCAs in South Africa. While aluminium is primarily an export-oriented sector with relatively low import levels, carbon leakage is becoming a growing concern in the iron and steel market. In recent years, South Africa has witnessed a notable increase in imports of carbon steel. South Africa's steel trade performance has historically remained steady and positive, maintaining a trade surplus since 2001. However, this trade balance has gradually deteriorated over time, largely due to rising imports. The steel trade surplus declined from R30 billion in 2001 to R9 billion in 2023 (in constant 2022 prices), representing a 71% decrease. This trend was exacerbated in the post-COVID-19 period, during which steel imports surged (see the Annexures for more detail), placing significant pressure on domestic steel producers.

The rise in low-cost steel imports, notably from China, threatens local production. A temporary 9% duty on hot-rolled steel was implemented in July 2024. Longer-term safeguards are needed to prevent carbon leakage and protect domestic industries from high-emission imports. This is medium-term intervention.

The risk of this policy option remains high, as it requires balancing the deteriorating economic infrastructure with the need to safeguard industries. Safeguard measures must carefully consider socio-economic implications. Although this may be viewed as a medium- to long-term intervention, it will have immediate ramifications, and these trade-offs must be thoughtfully managed.

- Key stakeholders: International Trade Administration Commission (ITAC), the dtic, business (steel), downstream industries, and labour.

ITAC must apply safeguard measures to prevent market flooding. The dtic should support ITAC through faster and more accountable tariff processes. Business should advocate for long-term import protections. Downstream industries should prioritise competitively priced, low-emission local inputs. Labour must campaign for employment protection by limiting high-carbon imports.

PATHWAY 3: DECARBONISE

Decarbonise to retain competitiveness of South African goods

To maintain the competitiveness of South African exports, decarbonisation must be central to the response to BCAs. The South African government has already taken significant steps toward a just green energy transition through initiatives such as the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), the Integrated Resource Plan, the Just Energy Transition Investment Plan (JET-IP), Eskom's decarbonisation strategy, and, more recently, the South African Renewable Energy Masterplan. Together, these initiatives support the country's goal of energy decarbonisation.

Building on these efforts, the following interventions aim to further accelerate energy decarbonisation (focusing only on reducing indirect emissions) while enhancing the competitiveness of South African goods in the face of rising BCAs. Decarbonisation is not only critical for sustaining global competitiveness but also aligns with South Africa's long-term sustainability commitments. This pathway is structured around two core themes, 1) green industrial policy and 2) energy system decarbonisation and proposes six strategic interventions for medium- to long-term implementation.

Strategic Interventions:

a) Promote energy-efficient technologies

The South African iron, steel and aluminium industries are energy intensive, and reduction in energy use of these sectors will contribute positively to decarbonising the South African grid. It is believed that AI applications in energy-intensive industries can reduce energy consumption by an estimated 10.35% to 18.89%, thereby lowering operational costs and significantly reducing GHG emissions.

This intervention involves scaling up support for energy efficiency by expanding tax incentives (e.g., Section 12I) and strengthening standards and certification programmes like ISO 50001. These measures are especially critical for energy-intensive sectors, such as mining, steel, aluminium, and cement, where reducing energy intensity directly improves competitiveness and sustainability. This is a medium-term intervention. This intervention has a moderate to high risk profile. Nevertheless, energy-efficiency technologies have a proven track record of reducing both energy consumption and carbon emissions. Strategic investment in this area could significantly enhance the competitiveness of South African products in global markets.

- Key stakeholders: the dtic, CSIR, National Cleaner Production Centre (NCPC), business, and labour

The dtic should expand tax-based incentives and support certification uptake. CSIR and NCPC should develop and incubate energy-efficient technologies, seeking additional public and private funding. Business must adopt cost-effective energy efficiency solutions. Labour should support workforce development for emerging energy efficiency roles.

b) Expand Independent Power Producers

South Africa has already procured over 20 GW in renewable energy projects from IPPs. As of September 2024, 6180 MW have been integrated into the national grid. To accelerate the phase-out of coal and increase access to low-carbon electricity, expanding IPPs remains essential. This is a medium-term intervention. This intervention has a heightened risk profile, primarily due to potential political instability in South Africa and Eskom's financial risks and baseload constraints that could disrupt progress in expanding renewable energy capacity.

- Key stakeholders: Eskom, IPPs, business, and labour

Eskom should continue integrating renewable capacity into the grid through improved grid infrastructure and creating an enabling environment for private sector investment in Greenfields. IPPs must provide affordable and reliable power to industry. Business should procure renewable electricity at competitive rates. Labour must advocate for job creation in IPP construction and operation.

c) Foster Public-Private Partnerships (PPPs) for renewable power

Eskom should partner with high-energy industrial users, like Hillside Aluminium and steel producers, to develop dedicated renewable energy and storage projects through revised Power Purchase Agreements (PPAs). Projects like the Tubatse hydro-battery are potential models for delivering green and stable electricity to industrial users. This is a medium-term intervention. The risk associated with fostering PPPs is uncertain but significant. This intervention requires substantial investment in project and programme management. If well-executed, it could yield moderate positive socio-economic impacts over the long term. However, Eskom's financial risks and baseload constraints mean this intervention is unlikely to happen.

- Key stakeholders: National Treasury, Eskom, affected businesses, and labour

National Treasury should facilitate and derisk PPPs in green energy. Eskom must negotiate PPAs that deliver reliable low-carbon power to key industries. Business should actively partner in securing clean, competitively priced energy. Labour should ensure worker protection and job retention through transition plans.

d) Decarbonise the national grid

Eskom's Just Energy Transition Strategy aims for net-zero carbon emissions by 2050 through a diversified energy mix, including renewables, nuclear, and storage technologies. A decarbonised grid will significantly reduce the embedded carbon in South African exports, mitigating BCA risks. This is a long -term intervention.

- Key stakeholders: Eskom, business, and labour

Eskom should accelerate investments in clean technologies and grid expansion and should consider its sales of green and nuclear attributes as they increase the emissions factors of Eskom, going against its decarbonisation efforts. Business must gain access to green electricity to remain globally competitive. This should be done by government, creating an enabling environment for private sector investment in Greenfield projects, such as optimisation of the permitting and authorisation systems. Labour should support the creation of quality jobs in the emerging energy landscape.

e) Sectoral support for green innovation and product development

South Africa must build its capacity for green innovation (considering that these technologies are still under development to reach commercial feasibility/parity with incumbent fossil-heavy technology) to compete in the future global economy. This involves supporting the development and commercialisation of green technologies, such as green hydrogen, green ammonia, bioplastics, and low-carbon steel and cement, through R&D incentives and skills development. This is a long-term intervention.

- Key stakeholders: the dtic, DSTI, CSIR, Department of Mineral and Petroleum Resources (DMPR), Mintek, Department of Higher Education and Training (DHET)

The dtic should introduce targeted subsidies to commercialise green technologies. DSTI and CSIR must increase investment in R&D, including the creation of innovation hubs and derisking platforms. DMPR should support Mintek in advancing sustainable mineral processing. DHET must align Technical and Vocational Education and Training (TVET) curricula and Sector Education and Training Authorities (SETA) programmes with emerging green skills.

f) Green market creation and protection

Once green products are developed, building and protecting markets around them is crucial. This involves implementing green public procurement policies, phasing out fossil fuel subsidies, and ring-fencing revenues from climate levies to fund green industries. This is a long-term intervention. This intervention presents a high risk due to potential perceptions of protectionism, which may raise international concerns. However, if implemented effectively, it can deliver substantial long-term benefits to the South African economy by supporting job security and creating sustainable livelihoods.

- Key stakeholders: the dtic, National Treasury, business, and labour

The dtic should adopt green procurement policies and gradually phase out fossil fuel subsidies. National Treasury must ring-fence carbon tax and plastic levy revenues for reinvestment into green industry. Business should innovate and scale climate-friendly production models. Labour should champion the growth and protection of jobs in emerging green sectors.

PATHWAY 4: ENGAGE

Engage diplomatically to promote a fair international trading system

The current multilateral systemic crises present developing countries with an opportunity to leapfrog technologically and transform their economies. While developed countries have a responsibility and obligation to provide adequate climate finance to support mitigation, adaptation, and resilience in the Global South, this cannot be achieved under the existing imbalanced, asymmetrical, and inequitable global governance architecture in finance, trade, and technology.

This pathway focuses on sustained diplomatic efforts, bilaterally, regionally, and through Global South coalitions, to shape a more just, inclusive, and development-friendly international trade architecture. It comprises three strategic interventions, implemented across short- and medium-term timelines.

Strategic Interventions:

a) Bilateral engagement with the EU on CBAM, multilateralism, and the just transition

The SA-EU Strategic Partnership provides a strong platform to deepen cooperation on climate, trade, and inclusive development. South Africa should leverage this relationship to engage the EU on securing differentiated treatment under the EU CBAM and other green trade policies. Already, the South African government is engaged in this process, through continually submission of commentary to the European Commission, to help shape the policy development of the EU CBAM. In September 2025, the dtic made a submission to the European Commission, reiterating that (i) South Africa should

be granted exemptions and differentiated treatment, in line with a just transition; (ii) mutual recognition and equivalence for the South African carbon tax; (iii) climate finance and technology transfer, (iv) meaningful capacity-building support; (v) and/or a longer transition period. These engagements should also reinforce joint commitments to multilateralism, decarbonisation and equitable global governance across G20 platforms and beyond. This is a short-term intervention. The risk of non-cooperation between South Africa and the EU on climate and trade issues across these stakeholders is low; however, the likelihood of success remains uncertain. Achieving cooperation could have a high impact by fostering greater global buy-in and strengthening compliance capacity among trading partners.

- Key stakeholders: South African government (the dtic, DIRCO, the Presidency), European Commission and Council, business, and labour.

The South African government should lead bilateral dialogue to align CBAM implementation with principles of equity and developmental fairness. Business should advocate for tailored compliance pathways in climate and trade measures such as CBAM and EUDR. Labour should safeguard employment in sectors exposed to CBAM and other EU trade measures. EU institutions should consider differentiated compliance mechanisms that account for developmental contexts.

b) Reforming global governance in trade, finance, and climate change

A reformed global governance framework is essential to ensure equitable participation and outcomes in multilateral systems. South Africa, in collaboration with Global South alliances, should champion the integration of equity principles, such as CBDR-RC and S&DT, into trade, climate, and finance regimes. This is a short-term intervention (with long-term impact). This includes:

- Advocating for a time-limited climate waiver and peace clause on climate-related goods and services for developing countries.
- Ensuring inclusive Environmental Goods and Services (EGS) negotiations that involve Africa, Latin America, and Asia.
- Reinstating the WTO Appellate Body to uphold fairness in trade dispute resolution.
- Proposing the creation of a Trade and Environment Fund to support developing countries in the low-carbon transition.

Key stakeholders: Global South alliances (BRICS+, Africa), WTO Climate Task Force, IMF, OECD, United Nations Conference on Trade and Development (UNCTAD), World Bank, African Group at the WTO, Organisation of African, Caribbean and Pacific States (OACPS), Mercosur, India.

Global South alliances should lead a unified reform agenda focused on differentiated rules and climate justice. WTO and related institutions should support carbon pricing flexibility, capacity-building, and a multilateral EGS framework. The African Group, OACPS, Mercosur, and India should jointly propose climate-related waivers and dispute resolution reform.

The risk of non-cooperation among WTO members and other global fora in reforming global governance in trade, finance, and climate change systems appears to be low to medium. However, urgent cooperation between the Global South and Global North is essential as global fragmentation persists. The Global South's voice is growing stronger, and differentiated treatment is gaining increasing attention. Nonetheless, the pace of acceptance for reform remains uncertain (see a more detailed analysis in the Annexures attached separately).

c) Region-to-region engagement: Africa–EU cooperation on green industrialisation

There has been a great deal of attrition in the EU-Africa trade and climate relationship during the past decade, reflected in the failure to achieve an agreement on a post-2020 Cotonou Agreement. However, the current crisis of multilateral trade and climate governance create an opportunity for the EU and Africa to reset their trade and investment and climate relationship.

This intervention calls for strengthening the Africa-EU partnership to promote regional integration, green industrialisation, and sustainable development in Africa. The €150 billion EU-Africa Investment Package offers a critical opportunity to support climate-aligned industrial policy, regional value chains, and job creation through beneficiation of Africa's critical minerals. This is a medium-term intervention. The risk of non-cooperation between Africa and the EU on climate and trade issues is low to medium, influenced by evolving geopolitical tensions, political buy-in, and Africa's emerging global role. Engagement on critical minerals, beneficiation at source through regional value chains, and techno-financial support will be key to securing EU concessions on climate and trade matters. Successful cooperation in these areas could have a profound socio-economic impact on the continent's development.

- Key stakeholders: African Union, AfCFTA Secretariat, European Union, WTO, the African Group, businesses, labour, and civil society.

The AU should engage the EU to deliver on its investment commitment and ensure alignment with regional development priorities. The AfCFTA Secretariat and Advisory Council should advocate for EU support for green manufacturing, infrastructure, and value chain development. The EU should streamline and scale up Just Energy Transition Partnerships (JETPs), placing greater emphasis on grants rather than loans. Businesses across Africa should invest in low-carbon models and support local beneficiation of critical minerals. The WTO should adopt differentiated treatment rules for developing economies. The African Group should propose a CBAM revenue recycling mechanism to support African decarbonisation and industrial upgrading. Labour and civil society should campaign for job protection and the creation of new employment opportunities in green value chains.

CONCLUSION

The introduction of Border Carbon Adjustments is increasing, even in countries where climate policy has historically been compromised, such as the United States, where climate and trade policy is beginning to gain momentum. For developing countries, the rise of BCAs presents an offsetting challenge, as they remain caught in their developmental dilemma. On one hand, they are expected to contribute to the global fight against climate change; on the other, they must prioritise pressing development needs, including job creation, reducing inequality, and alleviating poverty, despite having contributed far less to global GHG emissions.

South Africa is among those countries at the centre of this dilemma: whether to industrialise or to focus on addressing the effects of climate change. Attempting to do both brings both opportunities and challenges, but risks diverting attention from urgent socio-economic priorities such as unemployment, inequality, and poverty. With the EU CBAM set to take effect in 2026, and the UK CBAM in 2027, and given that the EU (including the UK) is South Africa's largest export market, BCAs pose a significant threat. South African exports are likely to face displacement as goods become less competitive due to the additional border carbon tax, which raises the cost of entry into these markets.

This technical report highlights key interventions that should be considered to position South African exports within the rising landscape of border carbon adjustments. These interventions are framed as offensive rather than defensive strategies. A defensive approach to the introduction of BCAs risks wasting valuable time in delayed engagement or prolonged negotiations with jurisdictions implementing such mechanisms. As noted in the Annexures, outright opposition to BCAs would have far more detrimental consequences for the South African economy than adapting to their introduction. It is therefore strongly recommended that South Africa adopt an offensive strategy, guided by the principles of adapting, coordinating, adjusting, decarbonising, and engaging.

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ANNEXURES

ANNEXURE A: COST-BENEFIT-RISK AND IMPACT MATRIX

Table 1. Responding to Border Carbon Adjustment (BCA) Cost-Benefit-Risk and Impact Matrix

#	Intervention	Objective of the intervention	Primary stakeholder	Secondary Stakeholders	Cost Ranking	Benefit Ranking	Risk Ranking	Likelihood of success	Socio-Economic Impact	Term of Intervention
1	Engage the European Union (EU) bilaterally on the Carbon Border Adjustment Mechanism (CBAM), Multilateralism and Just Transition	Differentiated treatment in compliance requirements on climate and trade.	Department of Trade, Industry and Competition (the dtic)	Department of International Relations and Cooperation (DIRCO), Presidency, Business, Labour, European Commission and European Council	Low	Moderate	Low	Moderate	Uncertain	Short term
2	Reforming the global governance and trade, finance and climate change	Promotion of a more inclusive, fair, just, and development-oriented global governance system.	Global South alliance (BRICS+ countries and Africa)	African group at the World Trade Organization (WTO), Organisation of African, Caribbean and Pacific States (OACPS), Mercosur and India	Moderate	High	Low	Low	High	Short term
3	Implementing firm-level solutions (greenhouse gas (GHG) accounting systems)	Scaling the Council for Scientific and Industrial Research (CSIR) Monitoring, Reporting and Verification (MRV) solution from pilot to commercial deployment across entities.	Affected businesses	CSIR, European Commission and Labour	High	High	Low	High	Moderate	Short term
4	Using EU Default values to report GHG emissions	Utilise the EU's default emissions values.	Affected businesses	Labour	Low	Moderate	High	Moderate	Moderate	Short term
5	Domestic carbon tax reform	Align the domestic carbon tax with the global carbon price corridor (US$50–US$100/ton CO_2) for selected high-emission sectors, with revenue recycling mechanisms through a dedicated decarbonisation fund.	National Treasury	The dtic, Business and Labour	Moderate	High	High	Low	High	Short term
6	Strengthening trade ties with BRICS+ countries	Increase exports with BRICS+ countries	The dtic	BRICS+ countries, business and labour	Moderate	Low	High	Low	Low	Short term
7	Stimulating South African domestic demand	Encourage localisation	The dtic	Localisation Support Fund (LSF), business, Downstream industries (construction) and labour	High	High	High	Moderate	High	Short term
8	Region to region engagement – Africa and EU	Engage the EU to support regional integration (green industrialisation) and sustainable development in Africa	African Union (AU)	African Continental Free Trade Area (AfCFTA) secretariate (including the Advisory Council), European Union, Businesses on the continent, WTO, African Group and Labour and civil society on the continent	Low	Moderate	Low	Moderate	Moderate	Medium term

#	Intervention	Objective of the intervention	Primary stakeholder	Secondary Stakeholders	Cost Ranking	Benefit Ranking	Risk Ranking	Likelihood of success	Socio-Economic Impact	Term of Intervention
9	Promoting energy efficiency technologies	Expand tax incentives (e.g., Section 12I), standards, and certification programs	The dtic	CSIR, National Cleaner Production Centre (NCPC), Business and Labour	High	Moderate	Moderate	Moderate	Moderate	Medium term
10	Expanding Independent Power Producers (IPPs)	Increase renewable energy on the South African grid.	Department of Electricity and Energy (DEE)	Eskom, Renewable Energy Business (IPPs) and Labour	High	Moderate	Uncertain	Moderate	Moderate	Medium term
11	Fostering Public-Private Partnerships (PPPs) in the energy sector	Encourage partnership between Eskom and private sector firms in renewable energy initiatives.	National Treasury	Affected business, Eskom and labour	High	Moderate	Uncertain	Moderate	Moderate	Medium term
12	Deepening market integration within Africa for BCA-affected goods	Regional integration (accelerating the implementation of the AfCFTA)	The dtic	AfCFTA secretariate and the AU, business and labour	High	High	Moderate	Moderate	Moderate	Medium term
13	Expanding access to the United States (US) market (aluminium and critical minerals)	Increasing aluminium and critical minerals exports to the US	The dtic	US government, Business and Labour	Low	High	Uncertain	Uncertain	High	Medium term
14	Near-shoring (Powershoring) carbon-intensive manufacturing	Moving carbon-intensive industries to renewable energy intensive economies.	The dtic	Regional bodies and countries (Southern African Customs Union (SACU), Zimbabwe, Mozambique, Malawi), Business, Downstream industries and Labour.	High	Moderate	Moderate	Uncertain	Moderate	Not viable
15	Limiting importation of carbon-intensive imports	Introducing safeguard measures for increasing carbon-intensive imports.	International Trade Administration Commission (ITAC)	The dtic, affected business, downstream industries and labour	High	Low	High	Low	Moderate	Medium term
16	GHG emission system upgrade (Upgrading the South African Greenhouse Gas Emissions Reporting System – SAGERS)	Upgrade SAGERS to ensure interoperability with BCAs	Department of Forestry, Fisheries and the Environment (DFFE)	South African Bureau of Standards (SABS), Business, CSIR, EU and United Kingdom (UK), and Labour.	High	Moderate	Uncertain	Moderate	High	Long term
17	Sectorial support through green innovation and green product development	Advancing green technologies such as green iron, green steel, and green chemicals (including green ammonia, green hydrogen, bioplastics, and green cement)	The dtic	Department of Science, Technology and Innovation (DSTI), CSIR, affected business and labour	High	High	Moderate	High	High	Long term
18	Sectorial support through green market creation and protection	Green industrial support through implementation of green public procurement requirements, ring-fencing climate levies and a gradual phase-out of fossil fuel subsidies.	The dtic	National Treasury, ITAC, Business and Labour	High	High	High	Moderate	High	Long term
19	Decarbonising the South African grid	Reduce coal produced electricity	Eskom	Affected business and labour	High	High	High	Moderate	High	Long term

#	Intervention	Objective of the intervention	Primary stakeholder	Secondary Stakeholders	Cost Ranking	Benefit Ranking	Risk Ranking	Likelihood of success	Socio-Economic Impact	Term of Intervention
20	Support a global carbon pricing	Development of a WTO-compatible carbon pricing framework	WTO taskforce	Global South countries (BRICS+, Africa, and others) – inclusive of Business, Labour and Government	Low	Moderate	Uncertain	Low	Moderate	Long term
21	Use of EU default carbon pricing (extended to developing countries)	Lower and tailored BCA charge for South Africa	The dtic	Business and the EU	Low	Uncertain	High	Low	Moderate	Not viable
22	Introducing a South African CBAM	Internationally aligned South African BCA, which prevents carbon leakage	National Treasury	The dtic, DFFE, The Presidency, Business and labour	High	Moderate	Low	Low	Moderate	Not viable
23	Advocate for a differentiated carbon price (tailored for South Africa)	A South African tailored BCA charge, reflecting South Africa's developmental status.	The dtic	National Treasury, EU, Business, WTO and United Nations Framework Convention on Climate Change (UNFCCC)	Low	High	High	Low	Moderate	Not viable

Assumptions

Established institutional arrangements on climate and trade.	Single Point of Authority (SPA) has been introduced.	The dtic, DFFE	Affected stakeholders (Industry, Labour, Government departments, Research organisations and agencies)	Low	High	Low	High	High	No Regret Option
Awareness drive on climate and trade.	Increased awareness on climate and trade issues.	Research institutes and agencies	Affected stakeholders, such as Industry, Labour, and Government departments	Low	High	Low	High	High	No Regret Option

Ranking – Key

Low
Moderate
High
Uncertain

Period - Key

Short term	less than 2 years (2027)
Medium term	Between 2 and 5 years (2030)
Long term	More than 5 years (beyond 2030)
Not viable	
No Regret Option	

Methodological note on the Cost – Benefit – Risk and Impact Matrix

The rankings of low, moderate, high, and uncertain are used to assess both the probability and severity of an intervention occurring. For example, a low-risk ranking indicates a low probability and/or minimal impact, while a high-risk ranking indicates a high probability and/or significant impact.

ANNEXURE B: METHODOLOGY AND STRATEGY DEVELOPMENT

This section defines the methodology used to develop the strategic pathways to mitigate adverse impacts of BCAs. It presents an analysis of available policy options for the explored pathways, using the Socio-Economic Impact Assessment System (SEIAS) as the foundational framework. Through the application of SEIAS, the section evaluates the costs, benefits, and risks associated with each option to inform the final recommendations. It also assesses the roles and perspectives of various stakeholders within the SEIAS framework.

METHODOLOGY – THE DEVELOPMENT PROCESS

The options for responding to BCAs, specifically those under the EU and UK CBAMs, are assessed using the SEIAS as the foundational methodology for developing the strategic pathways to mitigate adverse impacts of BCAs. The SEIAS approach is designed to improve policy responses by enhancing the understanding of potential impacts across different stakeholder groups.

Key features of the SEIAS methodology include:

- Separate evaluation of anticipated costs, benefits, and risks for affected groups, recognising that impacts differ across constituencies.
- Descriptive rather than quantitative analysis, when meaningful quantification is not possible due to data limitations or the presence of externalities. In such cases, assumptions are not treated as empirical data. Instead, further investigation and negotiations around specific measures are used to refine the understanding of impacts.

The assessment evaluated the impact of the response options (as illustrated in Figure 8) on the following stakeholder groups:

- Labour – Workers employed in affected sectors such as aluminium, iron and steel, cement, and chemicals (i.e., fertilisers, hydrogen and plastics).
- Communities – Communities located around impacted firms and industrial hubs.
- Government – Relevant departments and agencies at multiple levels:
    - National – e.g., DIRCO, DFFE, National Treasury, CSIR, DSTI, Department of Mineral Resources and Energy, DEE, Eskom.
    - Regional – AU, AfCFTA Secretariat and regional economic bodies.
    - Alliance partners – e.g., BRICS+ countries.
- Industry partners and associations – Including but not limited to the South African Iron and Steel Institute (SAISI), ArcelorMittal South Africa (AMSA), Hulamin, Hillside, Columbus Stainless, Samancor, and the Aluminium Federation of South Africa.
- Multilateral institutions – such as the WTO, World Bank, International Monetary Fund (IMF), and UN agencies working on climate change.

Each policy option is assessed using the following criteria:

- The likelihood of timely success in implementation (risk and impact).
- The number of workers affected and the resulting impact on their communities.
- The readiness of key stakeholders to engage and respond on key interventions.
- The potential for transitional arrangements to mitigate associated costs and risks.

Based on this assessment, the most feasible options were identified and incorporated into the strategic pathways to mitigate adverse impacts to BCAs. These options build on existing and potential partnerships (both public and private) that can support South Africa's transition and response to green trade barriers, such as those portrayed by BCAs.

The SEIAS was also presented to various stakeholders for validation. Some key stakeholders were thoroughly engaged and consulted, while others were only informed through information sessions.

APPLYING THE METHODOLOGY – OPTIONS FOR SOUTH AFRICA

This section outlines a range of policy options for South Africa to mitigate adverse impacts to BCAs. A total of 19 options (excluding the assumptions) are assessed and organised under four pathways that encompass various mechanisms and tools (Figure 8).

The proposed options include diplomatic engagement, such as bilateral engagement with the EU on CBAM; multilateral approaches emphasising a just transition; engagement through the AU to strengthen strategic partnerships; and global governance reform aimed at transforming international systems related to trade, finance, and climate change through enhanced cooperation among Global South countries.

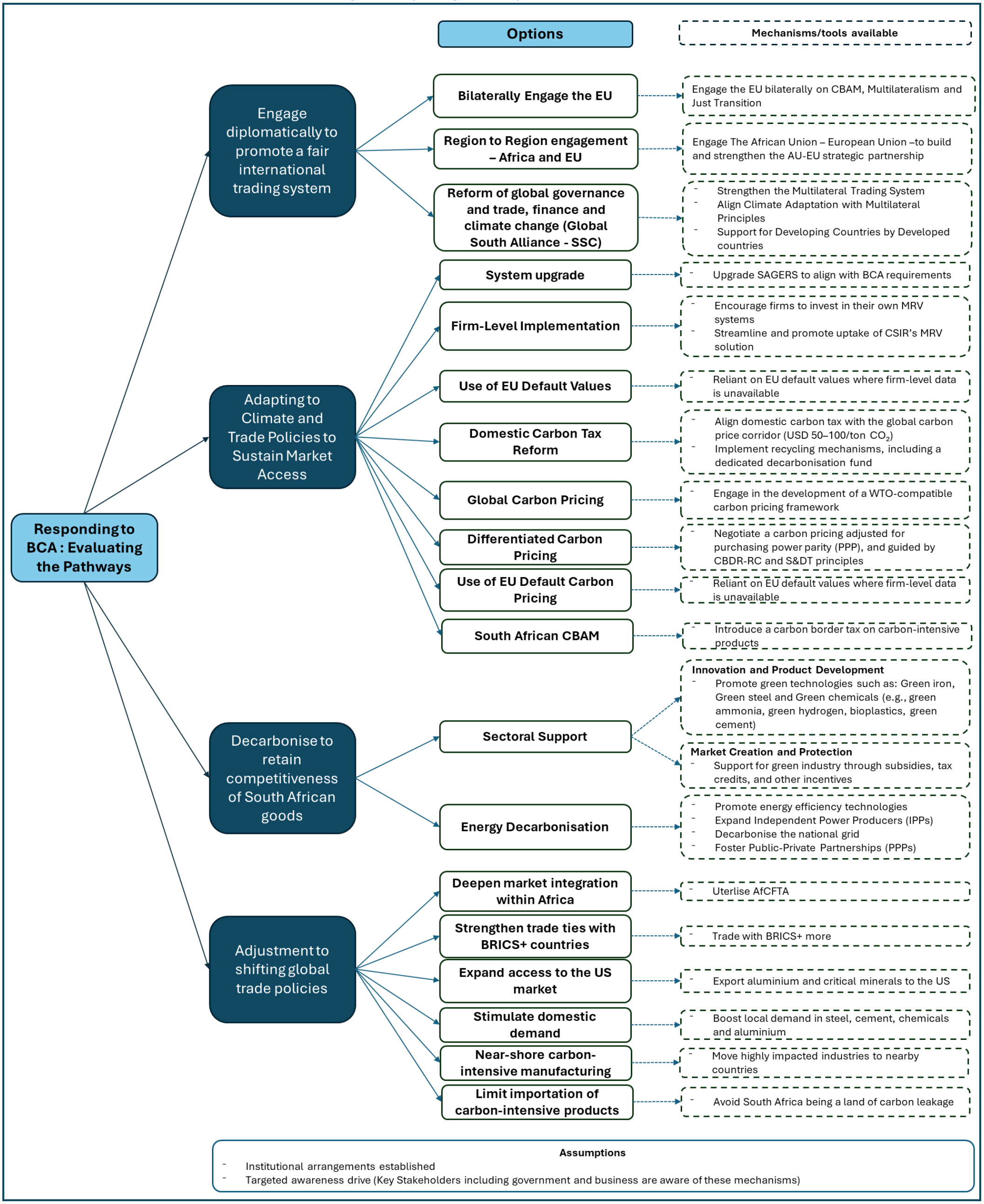
These options also encompass technical system upgrades, including improvements to South Africa's existing GHG accounting systems; the use of default emissions values; and the development of firm-level emissions tracking solutions.

Sectoral and policy support options involve advancing green industrial policy; accelerating energy sector decarbonisation; and reforming carbon pricing, which includes revisiting the South African carbon tax; exploring the feasibility of a global carbon price; adopting default carbon prices; establishing a domestic BCA mechanism; and negotiating for a more differentiated carbon price.

Finally, trade policy refinement measures include deepening market integration within Africa; strengthening trade relations with BRICS+ countries; expanding market access to the US; stimulating domestic demand; promoting the near-shoring of carbon-intensive goods; and limiting imports of such products.

These options are not mutually exclusive and can be pursued in combination as part of a comprehensive and flexible national response strategy to mitigate adverse impacts of BCAs.

Figure 8. Responding to BCA: Options for South Africa



Source: Authors' representation.

ENGAGE – ENGAGE DIPLOMATICALLY TO PROMOTE A FAIR INTERNATIONAL TRADING SYSTEM

The current multilateral systemic crises present developing countries with an opportunity to leapfrog technologically and transform their economies. While developed countries have a responsibility and obligation to provide adequate climate finance to support mitigation, adaptation, and resilience in the Global South, this cannot be achieved under the existing imbalanced, asymmetrical, and inequitable global governance architecture in finance, trade, and technology.

Against this backdrop, this section proposes three key levels of policy recommendations:

a) Bilateral engagement with the EU on CBAM, multilateralism, and the just transition.

b) Region-to-region dialogue between Africa and the EU; and

c) Advocacy for structural reform of global governance systems in trade, finance, and climate change through a unified Global South alliance.

The following subsections provide a detailed socio-economic analysis of the three key levels of policy recommendations for South Africa to strategically engaging on climate and trade issues.

1) Bilateral engagement with the EU on CBAM, multilateralism, and the just transition

In the wake of the Trump (2.0) presidency and his administration's most far-reaching dismantling of the post-second world war multilateral institutions and trade rules, South Africa and EU leaders met at their eighth summit in Cape Town, South Africa, on 13 March 2025. The President of the European Council, António Costa, together with European Commission President Ursula von der Leyen, represented the EU, and South Africa was represented by President Cyril Ramaphosa. The leaders discussed the crisis in governance in both climate and trade that was evident, before the second Trump Presidency.

In a powerful declaration the leaders were unequivocal in reaffirming "their unwavering commitment to multilateralism, a consistent approach to the rules-based order, and the centrality of the United Nations Charter." They also committed to a) advancing the UN Sustainable Development Goals (SDGs); b) the Paris Agreement, and keeping 1.5°C within reach; c) pursuing just transition pathways towards global net zero emissions; and d) helping developing countries to close the digital gap. Importantly for South Africa, the EU expressed its full support for South Africa's Group of 20 (G20)[7] presidency, including its theme of solidarity, equality and sustainable development. The EU also explicitly committed to "a partnership that supports economic growth, sustainable development, industrialisation, beneficiation of critical minerals at source, partnerships with local industries and decarbonisation in a manner consistent with their respective needs and concerns at different levels of economic development" (DIRCO, 2025).

The EU also announced its Clean Trade and Investment Partnerships, through a global gateway investment package of €4.7 billion, based on three building blocks: a) expanding South African vaccine production and boosting local pharmaceutical value chains; b) support for the just energy transition through the development of critical raw materials, safe and sustainable low carbon hydrogen value chains and energy infrastructure; and c) the connectivity infrastructure, including transport and digital.

The SA-EU Strategic Partnership is an excellent foundation to build on in strengthening their mutual interest and political commitment to multilateralism, sustainability and equity. Thus, the cooperation

[7] The G20 comprises of 19 countries (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, the United Kingdom, and the United States), the European Union, and since 2023, the African Union

at the G20 (and beyond) between the two players can contribute to building solidarity and reaffirming the need for a strengthened global governance in climate, trade and finance.

In strengthening the mutual interest and political commitment to multilateralism, sustainability and equity of the EU and South Africa, different stakeholders, as outlined in Table 2, present how they will be impacted by this intervention. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 2. Socio-economic implications of engaging the EU bilaterally on CBAM, multilateralism and the just transition

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
Government (the dtic, DIRCO, Presidency)	The South African government, including key departments such as the dtic, DIRCO, and the Presidency, should strengthen cooperation with the EU on climate and trade.	Enhanced trade relations between the EU and South Africa. Support for a rules-based trading system that is inclusive, fair, just, and geared towards development.	Delayed engagement could render South African products less competitive, potentially restricting access to EU markets.	The EU may reduce its engagement with the South African government after the G20 presidency. A more ambitious EU climate agenda could lead to increased inward focus and protectionist tendencies.	There is a high risk of the EU disengaging from South Africa and a medium risk of rising EU protectionism, with an overall uncertain chance of success. Support for multilateralism and cooperation on climate and trade may have an uncertain impact on jobs and economic development, particularly if the EU engages only with South Africa.
Business	Differentiated treatment in compliance requirements on climate and trade (i.e., European Union Deforestation Regulation (EUDR) and CBAM).	Enhance competitive-ness and reduce exposure to EUDR and CBAM.	Delayed adoption could lead to market losses, as EU importers shift to sourcing cleaner products elsewhere.	If not properly framed, it may be incompatible with WTO rules.	Low risk, with an uncertain likelihood of success. High impact on businesses by easing compliance costs and improving financial capacity for regulatory alignment.
Labour	Secure jobs to be affected by climate and trade policies.	Livelihood for people employed in the value chains affected by climate and trade policies.	The support for decarbonisa-tion might result in loss of traditional jobs.	Job losses in affected value chains may occur without the creation of new employment opportunities.	Medium risk with a definite chance of success. Significant impact on employment within affected value chains.
European Commission and European Council	Support on differentiated treatment in compliance requirements.	Secured support from developing and least developed countries (LDCs) for the introduction and implementa-	Reduced CBAM revenue collection in the short term. May prompt other countries to seek similar concessions,	If not properly framed, it may be incompatible with WTO rules.	Low risk, with an uncertain likelihood of success. High impact on businesses by easing compliance costs and improving financial capacity for regulatory alignment.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
		tion of climate and trade policies.	potentially undermining the EU's climate ambitions and actions.		

The South African government, led by the dtic with DIRCO and the Presidency, must enhance cooperation with the EU on climate and trade to sustain strong bilateral trade relations. This collaboration, as reaffirmed at the 8th SA-EU Summit in March 2025, could strengthen trade ties and support a fair, inclusive, and development-oriented rules-based trading system. However, delayed engagement risks making South African products less competitive, thereby limiting access to the EU market. In addition, there is a risk that the EU may reduce engagement with South Africa after its G20 presidency, while an increasingly ambitious EU climate agenda could foster inward-looking protectionism. Overall, this presents a medium to high risk with uncertain outcomes, particularly for jobs and economic development if South Africa remains the EU's sole partner in the Global South.

South African businesses are another critical stakeholder group requiring differentiated compliance treatment under climate and trade frameworks such as the EUDR and the EU CBAM. Such differentiation could enhance competitiveness and reduce exposure to EU regulatory costs. However, delayed adoption risks losing EU market share as importers might shift to cleaner alternatives. There is also a low risk of WTO incompatibility if the differentiated treatment is not properly framed, though principles such as Special and Differential Treatment (S&DT) and Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) of the UNFCCC could protect South Africa's position. While the chance of success remains uncertain due to potentially prolonged engagement processes, the impact on businesses would be significant, offering financial relief and improved compliance capacity.

Workers represent another key stakeholder group needing support to secure jobs potentially affected by climate and trade policy shifts. Protecting livelihoods within value chains vulnerable to decarbonisation is essential. The transition to low-carbon industries may lead to losses of traditional jobs without immediate replacements, posing a clear risk to vulnerable sectors. Overall, this presents a medium risk with a reasonable chance of success and a high impact, especially in the most affected industries.

Finally, the European Commission and European Council should support differentiated compliance treatment for developing countries under climate and trade regulations. This approach would build goodwill and secure support from developing countries and LDCs for EU climate trade initiatives. However, such concessions could reduce CBAM revenue in the short term and may prompt other countries to seek similar treatment, potentially undermining EU climate ambitions. There is a risk of WTO incompatibility if not carefully structured.

Overall, the risk of non-cooperation between South Africa and the EU on climate and trade issues across these stakeholders is low; however, the likelihood of success remains uncertain. Achieving cooperation could have a high impact by fostering greater global buy-in and strengthening compliance capacity among trading partners.

2) Region to region engagement – Africa and EU

There has been a great deal of attrition in the EU-Africa trade and climate relationship during the past decade, reflected in the failure to achieve an agreement on a post-2020 Cotonou Agreement.

However, the current crisis of multilateral trade and climate governance create an opportunity for the EU and Africa to reset their trade and investment and climate relationship.

African leaders have taken a number of initiatives to address the impact of climate change; build their renewable energy infrastructure; develop programmes to advance green industrialisation; and create a conducive environment for sustainable investment. They have taken at least three significant initiatives. First, African leaders made a far-reaching commitment to address the challenges of climate change at the Africa Climate Summit in Nairobi, Kenya, from 4th to 6th September 2023. Second, at the COP28 UN Climate Change Conference, held in Dubai, United Arab Emirates, from November 30 to December 13, 2023, the African Green Industrialisation Initiative (AGII) was formally launched. The AGII's main goals are to develop renewable energy infrastructure; promote eco-friendly industries; and reduce Africa's reliance on fossil fuels. Third, the AfCFTA Protocol on Investment adopted at the February 2023 AU Heads of State meeting aims to create a conducive investment climate in AfCFTA State Parties by providing additional measures around investor protection and facilitation. The Protocol balances State parties' right to regulate and investors' protection by including obligations on investors in relation to sustainable development. The Protocol advocates for investments that support actions to mitigate GHG emissions, and measures to adapt to the negative impacts of climate change. The Protocol is expected to lead to more and higher-quality intra-African investment, given the expansion of the market coupled with a more predictable rules framework.

This foundation provides a platform for the AU and the EU to build and strengthen the AU-EU strategic partnership. In building and strengthen the AU-EU strategic partnership, Table 3 presents how different stakeholders will be impacted by this intervention. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 3. Socio-economic implications of a region-to-region engagement – Africa and EU

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
African Union	Engage the EU on its commitment to support regional integration and sustainable development through a €150 billion package by 2027.	Increased foreign direct investment flows to the continent, supporting sustainable development and regional integration.	The investment package may rely heavily on loans, potentially increasing the continent's debt burden.	The EU may withhold financial support for Africa's development if its priorities shift.	Given the volatile geopolitical landscape, particularly under the Trump administration, there is a high risk that the EU may reduce financial support for Africa. However, the impact of sustained financial support on Africa's sustainable development would be significant.
AfCFTA Secretariat (including the Advisory Council)	Engage the EU to support the development of sustainable industrialisation (green manufacturing) and regional value chains leveraging critical minerals in Africa.	Promote economic development in both Africa and the EU through the establishment of regional value chains and the beneficiation of critical minerals in Africa.	Investment in new regional value chains, including investment in technology, human capital and infrastructure.	Securing political buy-in for the creation of regional value chains may pose a challenge within both the AU and the EU.	There is a high risk that political buy-in for supporting the development of regional value chains using critical minerals in Africa may not materialise, particularly given significant competitiveness and security concerns. However, developing these value chains and the beneficiation at source of critical minerals in Africa would have a substantial

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
					impact on economic development.
European Union	Advancing the streamlining of Just Energy Transition Partnerships (JETPs) across Africa by promoting less stringent conditions, including a greater emphasis on grants rather than loans.	Fostering Global South acceptance and support for the EU Green Deal, while reinforcing the EU's position as a global leader on climate action.	A shift toward grant-based investment may yield lower financial returns for the EU.	The EU is unlikely to provide grants to African economies without a clear expectation of reciprocal benefits.	With the US withdrawing from the South African JETP, there is a risk that other EU member states may also pull back from supporting decarbonisation efforts on the continent, complicating negotiations around JETP concessions.
Businesses on the continent	Invest in climate-friendly business models focused on value addition and beneficiation of critical minerals.	Increased return on investment driven by competitive business models.	Investment in emerging industries, skill development, and advanced technologies.	High investment costs with uncertain returns on capital.	The evolving economic landscape, marked by the emergence of new industries and value chains, presents high risks and uncertain returns on investment. However, if climate-friendly products become more affordable, this could significantly boost economic development and business profitability.
WTO	Support differentiated treatment rules.	Promotion of a rules-based trading system that is inclusive, fair, just, and geared towards development.	Financial support for human capital that will work on climate and trade at the WTO.	The WTO's dispute settlement system has collapsed, and engaging on issues of climate and trade might not feature on the WTO agenda.	Non-support for differentiated treatment rules for developing countries at the WTO is considered medium risk, primarily because related discussions have already taken place. Such differentiated treatment for Africa is expected to have a significant positive socio-economic impact.
African Group	In engaging with the EU, the African Group should propose a revenue recycling mechanism to support decarbonisation efforts and the equitable redistribution of CBAM revenues.	Financial support for decarbonising African economies.	Payment of a CBAM charge with the expectation that revenues will be recycled back to the continent.	The EU may be reluctant to implement revenue recycling mechanisms for Africa or other developing economies.	Revenue recycling mechanisms currently apply only to EU institutions and member states. However, as global competition to enhance economic competitiveness intensifies, the EU might not consider extending support to other countries and regions.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
Labour and Civil Society on the continent	Protecting existing jobs and creating new employment opportunities in emerging value chains and sectors.	Job creation and protection that enhance livelihoods across Africa.	Support for decarbonisation and the development of new mineral-based industries in emerging economies may lead to the loss of traditional jobs.	Job losses without corresponding creation of new employment opportunities.	Job creation and addressing unemployability are critical challenges in Africa. While support for new industries aims to tackle these issues, it may not generate enough jobs to fully resolve unemployment and unemployability, thereby increasing the risk associated with job losses to a high level. However, if emerging value chains based on critical minerals successfully develop across the continent, they could have a profound positive impact on livelihoods in African communities.

The AU and the AfCFTA should actively engage the EU on its pledge to support regional integration and sustainable development with a €150 billion package by 2027. This partnership can be further strengthened by building on the robust support provided through the G20 Compact with Africa platform, established under the German G20 Presidency to promote private sector-led development and improve the investment climate. A key benefit of this collaboration would be increased foreign direct investment flows to the continent, fostering sustainable development and regional integration.

However, the investment package may include a significant share of loans, potentially exacerbating Africa's debt burden. In addition, shifting EU priorities could reduce financial support for Africa's development. Given the volatile geopolitical landscape (exemplified by the unpredictability of the Trump administration) the risk of the EU withholding financial support is elevated. Nonetheless, sustained financial backing would have a substantial positive impact on Africa's sustainable development.

The AfCFTA aims to promote sustainable industrialisation (including green manufacturing) and the development of regional value chains across the continent, guided by strategic inputs from the AfCFTA Advisory Council to the Secretariat and Secretary General. African Ministers of Trade are actively discussing strategies to add value to the continent's abundant critical minerals, transforming them into electric batteries and other green technologies to support decarbonisation.

The AfCFTA's overarching objectives include promoting sustainable development, enhancing economic competitiveness, and advancing industrial development. Priorities such as economic diversification, regional value chain development, agricultural growth, and food security are embedded within its agenda.

Building on this foundation, the AfCFTA Advisory Council should engage the EU to support the development of sustainable industrialisation and regional value chains, leveraging Africa's critical minerals. This partnership would benefit both continents by fostering economic development through beneficiation of critical minerals and the creation of resilient regional value chains.

Realising this vision requires significant investment in technology, human capital, and infrastructure. Securing political buy-in for such initiatives may also present a challenge within both the AU and the EU. There is a high risk that political support for developing regional value chains based on Africa's critical minerals may not materialise, particularly given prevailing competitiveness and security concerns. Despite these challenges, successful development of these value chains would deliver substantial economic benefits and contribute meaningfully to sustainable development in Africa and beyond.

The JETPs, launched with global partners to support low-carbon, sustainable energy transitions in African countries, hold significant potential for Africa's energy future. South Africa's JETP, established in 2021, involves France, Germany, the UK, the US (which has since withdrawn), and the EU, with a commitment to mobilise US$11.5 billion. This initiative focuses on: (a) decarbonising the electricity sector by accelerating coal-fired power plant retirements and scaling renewable energy; (b) developing green hydrogen and electric vehicle (EV) industries; and (c) supporting workers and communities affected by the coal-to-renewables transition.

In 2023, Senegal launched its own JETP with France, Germany, the UK, Canada, and the EU, securing €2.5 billion to support its renewable energy transition. The programme aims to increase the renewable share of Senegal's electricity mix to 40% by 2030 and improve energy access and reliability.

On this basis, the AU should advocate for expanding and streamlining JETPs across the continent, emphasising less stringent conditions, specifically, and more grants and fewer loans. This approach would enhance the legitimacy and acceptance of the EU Green Deal across the Global South, reaffirming the EU's role as a global climate leader.

However, grant-based models may yield lower returns on investment, potentially making the EU reluctant to extend such support without clear reciprocity. Moreover, the US withdrawal from South Africa's JETP raises concerns about the long-term commitment of other EU member states, which could jeopardise international support for Africa's decarbonisation and complicate negotiations around JETP-related concessions.

Businesses across Africa should invest in climate-friendly business models centred on value addition and beneficiation of critical minerals, supported by investments in emerging industries, skills development, and advanced technologies. While these efforts promise increased returns driven by competitive models, they also entail high investment costs and uncertain returns due to the evolving economic landscape. Nonetheless, if climate-friendly products become more affordable, this could significantly boost economic development and business profitability.

The WTO could support differentiated treatment rules that promote an inclusive, fair, and development-oriented rules-based trading system. Financial support is also essential to build human capital focusing on climate and trade issues within the WTO. However, with the WTO's dispute settlement system currently non-functional, climate and trade topics may receive limited attention. Non-support for differentiated treatment rules for developing countries at the WTO is considered medium risk, primarily because discussions are already underway. Importantly, such treatment for Africa is expected to yield significant positive socio-economic benefits.

The African Group contends that the EU's CBAM is a unilateral measure contrary to WTO rules and should be discussed within the WTO to consider African countries' interests. Should the EU maintain a reformed CBAM, African countries should use the upcoming EU-Africa Summit to propose a revenue recycling mechanism to support decarbonisation and redistribute CBAM revenues. Many African countries emphasise that any recycled CBAM revenues should be clearly earmarked as trade and industrialisation financial support, effectively acting as financial aid for decarbonising African economies. This entails paying CBAM charges with the expectation of revenue recycling back to the continent.

However, there is a risk that the EU may be reluctant to implement revenue recycling mechanisms for Africa or other developing economies. At present, such mechanisms apply only to EU institutions and member states. Given the global competition to boost economic competitiveness, the EU may be hesitant to extend similar support to external countries and regions.

Securing existing jobs and creating new employment opportunities in emerging value chains and sectors is vital to sustaining livelihoods across Africa. While decarbonisation and development of minerals-based industries may lead to the loss of traditional jobs, particularly in agriculture, failure to generate sufficient new employment could exacerbate unemployment and unemployability, elevating the risk associated with job losses to a high level. However, successful development of emerging value chains centred on critical minerals could substantially improve livelihoods and economic well-being in African communities.

Overall, the risk of non-cooperation between Africa and the EU on climate and trade issues is low to medium, influenced by evolving geopolitical tensions, political buy-in, and Africa's emerging global role. Engagement on critical minerals, beneficiation at source through regional value chains, and techno-financial support will be key to securing EU concessions on climate and trade matters. Successful cooperation in these areas could have a profound socio-economic impact on the continent's development.

3) Reform of global governance and trade, finance and climate change (Global South Alliance)

Jim O'Neil, a then Goldman Sacks analyst, created the acronym BRIC (Brazil, Russia, India and China) in 2001. He used the term to focus investors' attention on the major fast emerging countries. The BRIC group of countries was launched in 2009, with the first BRIC Summit, in Yekarinburg, Russia. In 2011 at the Sanya, China, Summit, South Africa became a member of the group, adding an S to the acronym (BRICS). The sixteenth annual BRICS (whose membership has grown from Brazil, Russia, India, China, and South Africa to also include Egypt, Ethiopia, Iran, and the United Arab Emirates) summit was held in Kazan, Russia, on 22-24 October 2024. This was the first expansion of the group since South Africa joined in 2010. Not only did the summit add four new members, but more than 30 countries reportedly expressed interest in future membership. Although no further countries were invited to join the alliance as full members, 13 nations have been added as partners: Algeria, Belarus, Bolivia, Cuba, Indonesia, Kazakhstan, Malaysia, Nigeria, Thailand, Türkiye, Uganda, Vietnam and Uzbekistan. The Summit committed its members to "the objectives, principles and provisions of the UNFCCC, its Kyoto Protocol and its Paris Agreement, including its principles of CBDR-RC" (BRICS, 2024).

The Summit condemned unilateral measures introduced under the pretext of climate and environmental concerns and reiterated their commitment to enhancing coordination on these issues (BRICS, 2024). The Declaration went on to state: "We reject unilateral, punitive and discriminatory protectionist measures, that are not in line with international law, under the pretext of environmental concerns, such as unilateral and discriminatory CBAMs, due diligence requirements, taxes and other measures and reconfirm our full support for the call in COP28 related to avoidance of unilateral trade measures based on climate or environment. We also oppose unilateral protectionist measures, which deliberately disrupt the global supply and production chains and distort competition" (BRICS, 2024). This position of the BRICS nations had been deliberated in previous ministerial meetings of the BRICS Environment Ministers.

The BRICS High-level Meeting on Climate Change organised virtually on 13th May 2022 and hosted by China opposed "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 Adjustment Mechanisms, which are incompatible with multilateral rules under the World Trade Organization" (BRICS, 2022). This meeting also agreed that BRICS members "carry out information exchanges and cooperation at the national, local, industrial and enterprise levels, in multiple fields

including clean energy, low-carbon technology, sustainable and resilient infrastructure construction, carbon market and climate change adaptation;, jointly promote the policy research on low-carbon green growth, technology cooperation and joint pilot projects" (BRICS, 2022).

As global approaches to international cooperation continue to evolve, BRICS countries have launched various initiatives that link trade, climate action, and sustainable development. These efforts reflect an alternative framework grounded in the principles of S&DT under the General Agreement on Tariffs and Trade (GATT) and CBDR-RC under the Paris Agreement. Major EU trading partners, such as Brazil, South Africa, China, and India, have strongly opposed unilateral measures like the EU CBAM, arguing that such policies violate principles of equity and fairness.

The opportunity to strengthen this position and develop further strategies to engage the EU on CBAM will be in the process towards the next BRICS Summit to be held in Brazil that will be hosted under the motto: "Strengthening Global South Cooperation for More Inclusive and Sustainable Governance" (BRICS, 2024).

It is on this premise that a comprehensive reform of global governance is needed to create a more inclusive and flexible multilateral system that supports the development goals of all countries, especially in trade, finance, and climate change. This includes recognition of equity principles – CBDR-RC and S&DT (differentiated treatment – more time and flexibility, differentiated carbon pricing); inclusive and multilateral negotiations of the Environmental Goods and Services Agreement (EGSA) (inclusion of Global South countries, Latin America, Africa and Asia (India)); time-limited climate waiver and "peace clause" on climate-related goods and service for developing countries; reinstating the WTO's Appellate Body to ensure the integrity and fairness of the global trade dispute system; and establishing a Trade and Environment Fund.

Table 4 presents how different stakeholders will be impacted by the reform of the global governance and trade, finance and climate change. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 4. Socio-economic implication for reforming the global governance and trade, finance and climate change

INTERVENTION	ENTRY POINT	KEY STAKEHOLDERS	BENEFIT	COST	RISK	OVERALL LEVEL OF RISK AND IMPACT
Recognition of equity principles – CBDR-RC and S&DT (Differentiated treatment – more time and flexibility, differentiated carbon pricing)	United Nations Climate Change Conferences (COPs), and the Committee on Tade and Environment and WTO agreements	Global South alliance (BRICS+ countries and Africa) WTO Task Force on Climate Action, Carbon Pricing, and Policy Spillovers (including IMF, Organisation for Economic Co-operation and Development (OECD), United Nations Conference on Trade and Development	Global acceptance of climate and trade measures should recognise the principle of differentiated responsibilities, allowing Global South countries the policy space necessary for sustainable development.	Global North countries must contribute to the costs of climate mitigation and adaptation, both within their own regions and in the Global South.	Amid growing geopolitical tensions and the retreat from climate commitments, Global North countries may resist differen-tiated treatment for Global South countries.	A balance between Global South and Global North countries could be achieved by recognising principles of equity, particularly if conditions such as reciprocity are considered. The risk of this not materialising appears low, while the potential impact could serve the greater global good.

INTERVENTION	ENTRY POINT	KEY STAKEHOLDERS	BENEFIT	COST	RISK	OVERALL LEVEL OF RISK AND IMPACT
		(UNCTAD), and the World Bank)				
Inclusive and multilateral negotiations of the Environmental Goods and Services agreement (inclusion of Global South countries, Latin America, Africa Asia (India)	Environ-mental Goods and Services agreement	African Group at the WTO, OACPS, Mercosur and India	The inclusion of most Global South countries in the EGSA would help prevent fragmentation on climate and trade issues within the WTO, while enhancing the legitimacy and acceptability of these measures. Countries such as India and South Africa may be more open to engaging on environmental issues if meaningfully included in these discussions.	N/A	However, some countries already party to the agreement may resist its expansion, potentially leading to further fragmenta-tion.	The inclusion of all WTO members in environmental discussions would help reduce fragmentation and enhance the legitimacy and acceptability of related measures. The likelihood of this not occurring appears low, while the potential impact would serve the broader global good.
Time-limited climate waiver and "peace clause" on climate-related goods and service for developing countries	Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement	African Group at the WTO, OACPS, Mercosur and India	Promotion of a rules-based trading system that is inclusive, fair, just, and geared towards development.	Global North countries may need to share in the benefits demonstra ted by emerging economies, including through the transfer of technologi es related to green products.	Engagement on TRIPS could generate significant friction, particularly as Global North countries seek to maintain their competitive edge amid the growing capabilities of emerging economies.	The risk of non-support for differentiated treatment rules for developing countries at the WTO is considered moderate, as relevant discussions have already been initiated. Nonetheless, such differentiated treatment for the Global South is expected to yield significant positive socio-economic impacts.
Reinstate Appellate Body to ensure the integrity and fairness of the global trade dispute system	Dispute settlement system	WTO	This will accelerate problem-solving at the WTO, elevating climate and trade issues on its agenda.	N/A	The new Trump Adminis-tration (2.0) has once again withdrawn	The fragmentation caused by the US within the WTO poses significant risks and is likely to

INTERVENTION	ENTRY POINT	KEY STAKEHOLDERS	BENEFIT	COST	RISK	OVERALL LEVEL OF RISK AND IMPACT
					from the Paris Agreement under the UNFCCC and further contributed to the decline of the multilateral trading system by vetoing appoint-ments to the WTO's Appellate Body and imposing unilateral trade measures on numerous countries, including Canada, Mexico, the EU, and China.	have a profoundly negative impact on the dispute settlement system.
Establishment of a Trade and Environment Fund	Committee on Trade and Environment	WTO committee members	WTO and other multilateral institutions could establish a Trade and Environment Fund to provide additional financing for developing countries to access critical green technologies and develop climate-smart trade infrastructure. This initiative would also help foster greater acceptance of climate and trade policies.	Funding for the Environme nt Fund will need to come primarily from Global North countries.	WTO members, particularly those from the Global North, may be reluctant to support establishing a Trade and Environment Fund for developing economies.	As global competition to enhance economic competitive-ness intensifies, Global North countries may be reluctant to extend support to other regions, making the risk of non-support for establishing a Trade and Environment Fund very high.

Developed countries should recognise the principles of S&DT and CBDR-RC, as agreed in various WTO agreements and UNFCCC conferences. Building on these principles, all multilateral trade and climate agreements should provide adequate policy and fiscal space for developing countries to design integrated trade-environment-development strategies. The broader benefit of this intervention is

global acceptance of climate and trade measures, with Global South countries acknowledged as having differentiated responsibilities toward climate change, thereby allowing them policy space for sustainable development.

The cost includes Global North countries having to finance climate mitigation and adaptation efforts in both the Global South and Global North. This might lead to resistance against differentiated treatment for Global South countries amid growing geopolitical tensions and a withdrawal from climate commitments. However, a balance between Global South and Global North countries may still be achievable by recognising equity principles, especially if conditions such as reciprocity are taken into account. The risk of this not occurring is low, and the potential impact could serve the greater global good.

EGSA, currently under negotiation at the WTO, should be inclusive and multilateral rather than plurilateral and exclusive. Including most Global South countries in the EGSA will help prevent fragmentation on climate and trade issues at the WTO and promote broader acceptability. Countries such as India and South Africa may be more willing to engage on environmental issues if they are meaningfully included in these discussions.

While no major costs are foreseen for this intervention, some current parties to the agreement might resist its expansion, potentially causing further fragmentation. Broad inclusion of all WTO members on environmental issues will reduce fragmentation and promote acceptability. The risk of this not happening is low, and the positive impact would again serve the greater global good.

The WTO could follow the example of the Doha Ministerial Declaration on TRIPS and Public Health by expanding TRIPS flexibilities for developing countries in relation to climate-related goods and services. This would grant developing countries additional policy space to advance their climate and environmental development initiatives. The WTO might also agree on a time-limited climate waiver combined with a "peace clause" to prevent disputes over such measures. This approach would promote a rules-based trading system that is inclusive, fair, just, and development-oriented.

However, Global North countries may need to share the benefits demonstrated by emerging economies, such as technology transfers related to green products. Engagement on TRIPS could also generate tensions, as Global North countries are focused on maintaining competitiveness relative to emerging economies. The risk of non-support for differentiated treatment rules for developing countries at the WTO is considered medium, mainly because related discussions have already taken place. Yet, differentiated treatment for the Global South is expected to have significant positive socio-economic impacts.

All WTO and G20 members should agree to immediately reinstate the WTO Appellate Body, which has been instrumental in maintaining a rules-based trading system for over 70 years since GATT's inception in 1947. The key benefit of this intervention would be accelerated problem-solving at the WTO, bringing climate and trade issues to the forefront of the WTO agenda.

However, the new Trump Administration (2.0) has demonstrated volatility by withdrawing again from the Paris Agreement under the UNFCCC and exacerbating dysfunction within the multilateral trading system through its veto of Appellate Body appointments and resorting to unilateral trade measures against many countries, including Canada, Mexico, the EU, and China. The fragmentation caused by the US within the WTO poses significant risks and threatens the integrity of dispute settlement.

A Trade and Environment Fund could be established by the WTO and other multilateral institutions to provide additional financing for developing countries to access critical green technologies and build climate-smart trade infrastructure. The fund would help promote acceptance of climate and trade policies, especially among Global South countries.

The cost would primarily fall on Global North countries to finance the fund. The biggest risk is that WTO members, particularly those from the Global North, may be reluctant to support its establishment. As global competition to enhance economic competitiveness intensifies, Global North countries might be unwilling to extend support to other regions, making the risk of non-support for the Trade and Environment Fund very high.

Overall, the risk of non-cooperation among WTO members and other global fora in reforming global governance in trade, finance, and climate change systems appears to be low to medium. However, urgent cooperation between the Global South and Global North is essential as global fragmentation persists. The Global South's voice is growing stronger, and differentiated treatment is gaining increasing attention. Nonetheless, the pace of acceptance for reform remains uncertain.

ADAPT – ADAPTING TO CLIMATE AND TRADE POLICIES TO SUSTAIN MARKET ACCESS

BCAs, such as the EU and UK CBAMs, are expected to impose significant financial and compliance burdens on both South African exporters and the government. Exporting firms will be required to account for, report, and verify the embedded emissions in their products and buy CBAM certificates. Notably, the EU and UK CBAMs mandate third-party verifiable carbon audits, which can be prohibitively expensive, even for large firms.

In response to these challenges, this section outlines eight levels of policy recommendations to support South Africa's strategic adaptation to evolving global climate and trade regulations:

a) Upgrading national systems.

b) Implementing firm-level solutions.

c) Utilising EU default values where GHG accounting systems are not yet in place.

d) Reforming the domestic carbon tax.

e) Supporting the development of a global carbon price.

f) Supporting differentiated carbon pricing for South Africa.

g) Advocating for the use of EU default carbon pricing for South Africa.

h) Evaluating the possibility of a South African CBAM.

The following subsections provide a detailed socio-economic analysis of each of these policy recommendations, with a view to enhancing South Africa's resilience and competitiveness in a carbon-constrained global economy.

1) System upgrades

As the capacity for tracking and reporting carbon content differ by industry, a domestic carbon reporting system upgrade, which could be led by the DFFE, could ease the administrative burden of South African firms. South Africa already has a Greenhouse Gas Emissions Reporting System in place called SAGERS. This system can be leveraged and further upgraded to align to the proposed EU and UK CBAMs and identify possible entry points to be leveraged to help both firms and the government in reprieving the compliance cost. The system could prioritise the most impacted industries, like iron and steel (including iron ore) and aluminium in the short term. This could also include chemical products, as the EU CBAM is envisioned to expand to include the industry in the near future.

A domestic MRV system upgrade that allows exporting firms to report at a product and company level could facilitate the design and adoption of standardised carbon accounting methodologies and standardise the reporting of GHG emissions for the country. These standardised carbon accounting methodologies could potentially have benefits for enabling climate policies to be deployed more effectively. Given the mismatch in pace between the decarbonisation of the energy system in South

Africa and the pace of development of BCAs, if firms procure their own renewable energy technologies, and can prove that their emissions are lower than the rest of the country (through their MRV system), they could significantly reduce their exposure to BCAs.

Affected firms along with government and research institutions should create a centralised domestic BCA-compatible MRV system, through the upgrade of the current MRV systems. With BCAs gaining an increased footing in trade policy, many jurisdictions are forming responses to these mechanisms. Countries, such as the UK, Norway, Australia and the US, are introducing similar BCAs to offsets envisioned costs, and other jurisdictions are adapting their infrastructure to align them with the EU reporting methodologies of GHG emissions for carbon-intensive goods.

Table 5 presents how different stakeholders will be impacted by a GHG emission system upgrade. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 5. Socio-economic implications of a GHG emission system upgrade (Upgrading SAGERS)

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
Department of Forestry, Fisheries and the Environment (DFFE)	Upgrade SAGERS to ensure interoperability with BCAs by establishing a legislative framework that mandates firms in selected industries to account for, report, and verify GHG emissions at the product level. The DFFE could also invest in building national capacity for robust GHG emissions verification.	Ensure continued access to export markets, such as the UK and EU, which require MRV of GHG emissions at the product level. By enhancing MRV systems, the South African government will gain a detailed understanding of emissions across products, creating greater policy flexibility. To support industry compliance and reduce costs, the government could offer centralised auditing and verification services	The DFFE will need to invest in both human capital and technological infrastructure to support these developments.	Delays in policy implementation could result in the loss of access to key export markets.	As this is a longer-term intervention, and the risk of policy delays remains uncertain, postponing the upgrade of systems may jeopardise market access, particularly to jurisdictions implementing BCAs.
Selected affected Industries (iron and steel, aluminium and chemicals)	Selected industries will need to support the system upgrade by aligning their GHG accounting and reporting practices with the requirements of the DFFE under SAGERS.	Enhance industry awareness of product-level GHG emissions to demonstrate progress to importing jurisdictions such as the EU and UK. This transparency may support the case for	Investments will be required in new technologies and system upgrades to enable product-level GHG emissions accounting. These efforts will also involve	Entities within affected industries will experience varying levels of impact; applying a blanket approach could impose unnecessary costs on firms	A tailored approach will be necessary to mitigate spillover costs to entities not directly affected by the requirements. If unmanaged, these spillovers could impose

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
		concessions or preferential treatment for South African exporters.	adjustment costs, including the reskilling of existing workers and training of new personnel.	that are not directly affected.	financial burdens on non-exporting firms, potentially reducing profitability and leading to job losses.
South African Bureau of Standards (SABS)	Establish standards for reporting, accounting, and monitoring GHG emissions at the product level. In addition, actively participate in the development of international standards to ensure alignment and interoperability.	Achieve global alignment in the standards for reporting, monitoring, and verifying GHG emissions.	Project management costs associated with establishing globally aligned standards for GHG emissions reporting, monitoring, and verification.	Delays in policy support leading to prolonged and unresolved policy discussions.	The risk of policy support lacking is minimal, as the global push for harmonisation aimed at protecting vulnerable economies is likely to drive strong policy backing and prioritisation for this intervention.
CSIR and relevant agencies	As the implementing agency for industry GHG accounting in South Africa, the CSIR will need to develop systems and technologies that support the objectives of the DFFE's SAGERS upgrade.	A comprehensive understanding of emissions at the product level, facilitating technology and product development to support low-carbon economies.	Project management costs associated with the SAGERS upgrade.	Delays in policy support leading to prolonged discussions, which in turn affect the timely funding of the SAGERS upgrade project.	The risk of insufficient policy support is very low, as the global momentum toward harmonisation, aimed at protecting vulnerable economies, will drive strong policy backing and prioritisation for this intervention.
EU and UK	Provide technical and capacity building support.	Recognition of the EU and UK climate actions by developing economies, alongside acknowledgment of their historical responsibility to support these economies in climate mitigation efforts.	Funding technical assistance and capacity-building initiatives.	The EU and UK may limit capacity building and technical assistance support to entities based within their own jurisdictions.	The EU is already considering providing technical and capacity-building support to LDCs, which could be extended to developing countries like South Africa. As a result, the risk of receiving no

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
					support is low to medium. Overall, such support would create financial relief for businesses, helping affected companies preserve jobs.
Labour (employees at affected industries)	Reduced resistance to change and increased support for new technologies.	Job creation and preservation initiatives that improve livelihoods across affected industries.	New skills requirements may lead to job losses.	Job losses occurring without the creation of corresponding new employment opportunities.	The risk of one-to-one job replacements not occurring is low to medium, given the skills already developed by industries with experience in reporting GHG emissions.

The DFFE should lead the upgrade of SAGERS to ensure interoperability with BCAs by establishing a legislative framework requiring selected industries to account for, report, and verify GHG emissions at the product level. This process should include capacity building for GHG emissions verification, such as training third-party verifiers and auditors to learn from international entities experienced in auditing GHG emission reporting. Key benefits include continued access to markets requiring MRV of GHG emissions at the product level (such as the UK and EU); enhanced government understanding of emissions across product levels; enabling expanded policy space; and reduced verification costs for businesses through the provision of auditing services.

The DFFE will incur costs related to human resource development and technological upgrades. Although the risk of policy delays remains uncertain, any postponement in system upgrades could result in loss of market access, particularly to jurisdictions implementing BCAs.

Selected industries must actively support the upgrade by adjusting their GHG accounting and reporting in line with DFFE's SAGERS framework. This intervention will broaden industry understanding of product-level GHG emissions, demonstrating progress to importing entities in the EU and UK and potentially enabling concessions for South African exporters.

Investment costs will include new technologies and technological upgrades for product-level emissions accounting, as well as costs associated with workforce adjustments such as reskilling and upskilling employees. Since entities within affected industries will experience varying levels of impact, a tailored approach is necessary to mitigate spillover costs to unaffected entities. Failure to manage these spillovers could negatively affect the profitability of non-exporting firms, leading to job losses.

SABS should initiate the development of a national integrated accounting methodology to supplement SAGERS. This should be informed by a benchmarking study comparing emission methodologies in the EU and other jurisdictions. Stakeholders from workshops held in November 2023 highlighted this as an immediate action to ensure BCA compliance.

This methodology will build on international standards such as ISO 14067 and global GHG reporting protocols, as well as the existing DFFE methodologies. It will streamline reporting for BCAs like the

EU CBAM and serve all South African industries required to report GHG emissions at the product level. The integrated system will facilitate compliance with global climate policies focused on product- and production-level emissions.

Before finalising the methodology, it is crucial to fully understand BCA requirements (e.g., EU CBAM). Key stakeholders, including DFFE, SABS, and CSIR, should collaborate in this process. Once established, industries will need capacity building and training to implement the new standards.

As the implementing agent for industry GHG accounting, the CSIR should be responsible for developing systems and technologies aligned with the upgraded SAGERS objectives. This will enhance understanding of emissions across product levels and promote technology and product development supportive of a low-carbon economy. In the longer term, there is potential to integrate the CSIR GHG Observatory (discussed below) with SAGERS. The fact that the GHG Observatory uses blockchain as a trust mechanism is significant, particularly in light of future direct CBAM data uploads to EU and UK servers. Furthermore, due to data sovereignty considerations, it is essential that this data remains within South Africa and is safeguarded as a national asset, meaning it should not be stored on international cloud platforms such as Amazon Web Services, Google, or Azure. South Africa also has substantial potential to leverage the collected data for emissions insights, using advanced tools such as big data analytics, AI and machine learning, and data modelling.

Costs will include project management for the SAGERS upgrade. The primary risk remains policy delays, which could stall funding and progress. However, the risk of policy support lacking is low due to the global drive for harmonisation aimed at protecting vulnerable economies, which will likely ensure prioritisation of this intervention. Capacity building and technical assistance are essential components of the response to BCAs. Developed countries, including the EU and UK, should provide direct support to developing countries at both national and company levels. Grant funding for MRV system development should be prioritised by the EU and UK through Just Energy Transition Partnerships and included in diplomatic packages.

This support should encompass extensive capacity-building programmes during and after the transition period. Benefits include increased acceptance of EU and UK climate actions by developing economies, and fulfilment of historical responsibilities by supporting vulnerable countries. Costs will primarily relate to funding technical assistance and capacity building.

A potential risk is that capacity building and technical assistance may be limited to EU-based entities; however, the EU is considering extending support to LDCs, which could include South Africa. This reduces the risk of no support to low-to-medium. Overall, technical assistance will provide financial relief to businesses, helping affected companies save jobs.

Labour needs to be less resistance to change and support for new technologies. Benefits include job creation and protection, enhancing livelihoods across affected industries. Costs may arise from new skills requirements, which could lead to job losses without corresponding replacements. do not occur correspondingly. The risk of one-to-one job replacement failure is low to medium, based on existing skills in industries already reporting GHG emissions.

While the intervention is long term and risks are uncertain, delaying the SAGERS upgrade risks losing market access to jurisdictions with BCAs. DFFE, along with key stakeholders such as SABS and CSIR, should initiate system upgrades to ensure interoperability with international GHG accounting systems.

2) Firm-level implementation

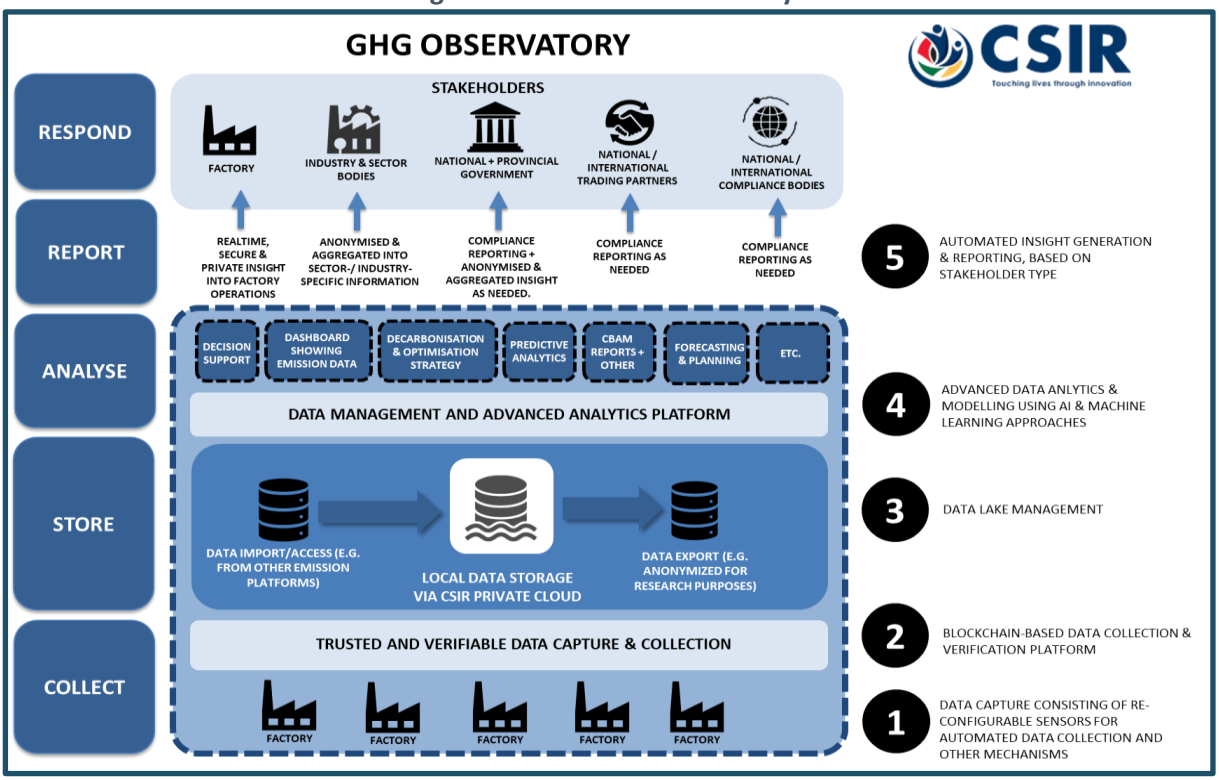
As BCAs are introduced, it is clear that firm-level MRV systems in South Africa remain in the early stages of development. Currently, two notable initiatives are emerging.

The first is Hulamin's MRV system, which, while not yet perfect, is at an advanced stage. Originally developed to manage energy at Hulamin's production plants, this system shows potential alignment with BCA requirements. Industry stakeholders have suggested that Hulamin could share its technical insights to support broader MRV development without compromising its competitive advantage. In fact, several key affected entities are already engaging with Hulamin to learn from its approach.

The second initiative is being led by the CSIR Centre for Robotics and Future Production, which is developing a GHG Observatory. Still in its pilot phase, the platform integrates hardware such as energy meters and Raspberry Pi devices to collect real-time data on energy consumption throughout the production process. This data is used to calculate product-level GHG emissions and is recorded using blockchain technology. The system produces dashboards and emissions reports that can support compliance with international emissions reporting requirements, including those mandated by the EU CBAM. As a digital, blockchain-based solution, the platform aims to deliver accurate, verifiable, and product-specific GHG data for exporters operating under increasingly stringent carbon accountability frameworks (CSIR Centre for Robotics and Future Production, 2024). These two solutions only monitor and report GHG emissions; verification is not taken into account. However, the CSIR platform also aims to provide a powerful, wide-angled view of emissions patterns across South Africa's industrial landscape. In particular, the Observatory is aimed at small companies which lack the funds, technology and expertise to undertake emissions monitoring themselves.

While companies benefit from real-time insights into their own operations, the true strength of the Observatory lies in its ability to aggregate, analyse, and visualise emissions data across entire sectors, value chains, and even the national economy. This allows policymakers, industry bodies, and researchers to identify systemic inefficiencies, benchmark performance, and design more targeted interventions. The aim is for the Observatory to become a critical decision-support platform, enabling climate-smart industrial planning, supporting carbon budgeting, informing green incentives, and unlocking credible participation in mechanisms such as carbon markets or trade-related compliance frameworks like CBAM. (See Figure 2)

Figure 9. CSIR GHG Observatory



Source: CSIR Centre for Robotics and Future Production, 2024

Table 6 presents how different stakeholders will be impacted by firm-level solutions such as the CSIR and Hulamin solutions. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 6. Socio-economic implications of implementing firm-level solutions

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
CSIR	Scaling the MRV solution from pilot to commercial deployment across entities.	Enhancing understanding of GHG emissions intensity and its implications for CSIR's financial sustainability.	Costs associated with project management for the design and implementation of the Observatory.	The Observatory does not account for verification, a process required under both the EU and UK CBAMs, which would impose significant additional compliance costs on entities.	This solution is already in the pilot phase, and while integrating verification solutions may pose challenges, it remains feasible. However, this is only a short-term measure, as the CSIR lacks the regulatory authority to sustain long-term dominance. While the approach will offer temporary financial relief, a more durable, long-term solution will ultimately be required.
Affected entities such as Hulamin, Columbus Stainless, and AMSA that have implemented GHG accounting systems	Provide support to other entities impacted by the BCAs.	Knowledge sharing could drive improvements in current systems used by affected firms.	Affected entities that have a GHG accounting system could lose competitive edge by sharing proprietary technology.	Affected entities that have a GHG accounting system may choose not to disclose all details of their GHG emissions accounting system development, which could delay the adoption of MRV systems by other exporting entities.	Affected entities that have a GHG accounting system may face compatibility challenges with other industrial plants, including steel and primary aluminium facilities. Although knowledge sharing could accelerate system development,

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
					significant adoption delays remain a likely risk.
Affected industries (industry associations and entities)	Facilitate knowledge exchange on MRV system development to accelerate industry-wide adoption.	Leverage insights from existing processes and systems to enhance MRV solution development.	Investing in MRV solutions	The CSIR solution presents financial viability concerns and appears misaligned with BCA reporting requirements, while still imposing compliance costs. Its lack of verification features would additionally increase regulatory expenses for entities.	While the CSIR solution is currently in pilot phase – where cost adjustments and verification requirements could still be feasibly incorporated – it should be noted that this approach only represents a short-term fix.
Labour (employees at affected industries)	Workforce development through training and reskilling programmes for existing sustainability reporting staff. Strategic hiring of specialised roles including sustainability managers and carbon auditors.	Creating new employment opportunities that strengthen livelihoods across South Africa.	N/A	This initiative presents no apparent risks, as it will generate new employment opportunities.	N/A
European Commission	Establish a robust data governance framework to safeguard information provided by firms reporting directly to the CBAM registrar.	Acceptability of the mechanism.	The implementation of the mechanism delayed due to non-compliance by certain industries.	While the European Commission has proposed measures to support a data governance mechanism, such as permitting third parties to upload GHG emissions reports, data security risks persist.	Data security risks remain high, as companies are reluctant to share their information with the European Commission.

Scaling the CSIR MRV solution from pilot to commercial deployment across entities would enhance understanding of GHG emissions intensity and its implications for CSIR's financial sustainability. The costs involved include project management expenses related to the design and implementation of the Observatory. The primary risk is that the Observatory does not currently incorporate verification, a process required under both the EU and UK CBAMs, which would impose significant additional compliance costs on entities. Although the solution is already in the pilot phase, integrating verification features may pose challenges but remains feasible. However, this approach is only a short-term measure, as the CSIR lacks the regulatory authority to maintain long-term dominance. While it may provide temporary financial relief (by providing automation and real-time reporting to firms), a more durable, long-term solution will ultimately be necessary.

The second intervention involves affected industries that have instituted MRV systems in place, such as Hulamin, AMSA, and Columbus Stainless, with these entities providing support to other entities affected by BCAs that do not have MRV systems in place. The main benefit of this intervention is knowledge sharing, which could improve existing MRV systems for those entities that already have such systems in place. However, the cost includes the potential loss of competitive advantage by sharing proprietary technology. A key risk is the reluctance to disclose all the details of a GHG emissions accounting system, potentially delaying the wide adoption of MRV systems by other exporters. Furthermore, other systems may face compatibility issues with other industrial plants, including steel and primary aluminium facilities. While knowledge sharing could accelerate system development, significant adoption delays remain a likely risk.

The third intervention focuses on facilitating knowledge exchange on MRV system development to accelerate industry-wide adoption. This would leverage insights from existing processes to enhance MRV solutions. However, investment costs for MRV solutions remain a challenge. The CSIR solution, while financially viable in the short term, appears misaligned with BCA reporting requirements and lacks verification features, which would increase regulatory expenses for entities. Currently in the pilot phase, cost adjustments and verification integration remain feasible, but this is still only a short-term solution.

Workforce development through training and reskilling programmes for existing sustainability reporting staff, as well as strategic hiring of specialised roles such as sustainability managers and carbon auditors (might also be an opportunity for small, medium and micro enterprises (SMMEs)), is essential. The main benefit is the creation of new employment opportunities that strengthen livelihoods across South Africa. This initiative carries minimal risk, as it primarily generates jobs and builds capacity.

Other challenges related to the MRV infrastructure include ensuring the secure storage and transfer of emissions data to prevent manipulation. These concerns may be addressed through the recent EU CBAM proposals, which, if approved by the European Parliament and European Council, would allow EU importers, South African exporters, or their authorised agents to upload and share data directly via a digital EU CBAM registry. As highlighted in stakeholder workshops, such issues are expected to become more prominent as South African firms begin adapting to the legislation.

A central priority remains the establishment of a robust data governance framework to protect information submitted by firms reporting directly to the CBAM registrar. Such a framework is essential for ensuring industry acceptance of the mechanism. However, implementation may be delayed due to non-compliance from certain sectors. While the European Commission has proposed supportive measures, such as enabling third parties to upload GHG emissions reports, significant data security risks persist. Companies continue to express reluctance in sharing sensitive information with the European Commission, underscoring the need for stronger data protection assurances.

Overall, the risk assessment for these interventions is low. Industry collaboration is already underway, but the current solutions lack integrated verification and regulatory authority. This intervention is suitable as short-term adaptations to BCAs, but for long-term success, clear policy mandates around standards, data security and GHG emissions reporting are still required.

3) Use of EU default values

Most firms operating in South Africa are still in the early stages of developing GHG accounting systems or lack such systems entirely. While these systems are being established, companies must rely on predetermined default emissions values set by the EU, as was the case during the EU CBAM transition period. The EU CBAM explicitly allows the use of default values, making this a common approach for many low- and middle-income countries.

Although default values are primarily intended for use during the transition phase of the EU CBAM, they will continue to apply during the full implementation period if measurement and verification systems are not yet in place. These default values will be based on the average emission intensity of each exporting country, adjusted by a proportionate mark-up. The specific default values will be formalised through an EU implementing Act, expected to be adopted in 2025.

Table 7 presents how different stakeholders will be impacted by the use of the EU default values. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 7. Socio-economic implications of using EU default values to report GHG emissions.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
Affected Industries (iron and steel, aluminium and chemicals)	Utilise the EU's default emissions values.	Facilitated compliance by using predetermined emissions intensity values.	South African firms will have no control over the assigned emissions intensity values, which will be based on country averages. Given that South Africa is an outlier with relatively high carbon intensity, this approach is likely to result in elevated CBAM charges for its exports.	Delays in decommissioning coal-fired power stations, along with the addition of new ones, could contribute to the high carbon intensity of South African exports.	The implementation of just energy transition initiatives in South Africa is progressing slowly, even as the global shift toward low-carbon economies – particularly the EU's climate agenda – continues to accelerate. This growing mismatch increases the likelihood that South African exporters will rely on default values for reporting GHG emissions. While this may simplify compliance in the short term, it poses greater challenges over time, especially if

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
					South Africa fails to decarbonise its energy system promptly. Consequently, firms face heightened risks of market loss due to high carbon intensity, making the reliance on default values a short-sighted strategy with both immediate and long-term implications.
Labour (employees at affected industries)	Strengthen support for the timely implementation of just energy transition measures.	Foster job creation alongside targeted skills development for emerging industries.	Employment displacement in sectors reliant on coal.	South Africa's high carbon intensity, driven by its reliance on coal-based energy, may lead to job losses in coal-dependent sectors as BCAs become more stringent.	Although South Africa's high carbon-intensive economy has sustained some job creation, continued dependence on coal-based energy and production systems will likely result in job losses as export markets for carbon-intensive products become increasingly restricted.

Affected firms have already relied on the EU's default emissions values, and this intervention supports the continued use of those predetermined values published by the European Commission. The key benefit of this approach is simplified compliance, as it facilitates reporting through predetermined emissions intensity values. However, South African firms will have no control over these assigned values, which are based on country averages. As South Africa is an outlier with relatively high carbon intensity, this method is likely to result in increased CBAM charges on its exports.

A significant underlying risk remains delays in decommissioning coal-fired power stations, and coupled with the construction of new ones, could further elevate the carbon intensity of South African exports. Meanwhile, implementing just energy transition initiatives in South Africa is progressing slowly, even as the global shift toward low-carbon economies, particularly the EU's climate agenda, accelerates. This growing mismatch increases the likelihood that South African exporters will continue to rely on default emissions values for GHG reporting.

While this reliance may simplify compliance in the short term, it poses greater challenges in the long term, especially if South Africa fails to decarbonise its energy system promptly. As a result, firms face

heightened risks of losing market access due to high-carbon intensity, making the use of default values a short-sighted strategy with both immediate and future consequences.

In terms of labour implications, it is essential to strengthen support for the timely implementation of just energy transition measures. This will foster job creation alongside targeted skills development for emerging industries. However, this transition comes with costs: employment displacement is likely in coal-dependent sectors. South Africa's high carbon intensity, driven by coal reliance, may lead to job losses as BCAs become increasingly stringent.

Although South Africa's current carbon-intensive economy has sustained some job creation, ongoing dependence on coal-based energy and production systems will likely result in further job losses as export markets for carbon-intensive products shrink.

Overall, the risk associated with this intervention remains high. Affected firms have no control over the EU's default emissions values, and the slow pace of energy decarbonisation in South Africa exacerbates these challenges.

4) Domestic carbon tax reform

The first fiscal policy option is for the South African National Treasury to initiate reforms of the domestic carbon tax to align with global carbon pricing trends, while introducing revenue recycling mechanisms. This would involve gradually increasing the carbon tax to fall within the global carbon price corridor of US$50–US$100 per ton of CO_2e by 2030.

Raising the carbon tax would serve multiple strategic objectives. It would incentivise high emitters to transform their business models and invest in low-carbon technologies. It would reduce the risk of exposure to external carbon pricing mechanisms such as the EU and UK CBAMs. Although the domestic carbon tax would impose similar costs on firms as CBAMs, it would allow South Africa to retain the carbon revenue, rather than losing it to foreign jurisdictions.

Crucially, the revenue collected domestically could be recycled into a dedicated decarbonisation fund, supporting the transition of highly exposed sectors such as iron and steel and aluminium. This fiscal recycling would help cushion the economic impact on local producers and maintain competitiveness.

For this system to function effectively, South Africa must also phase out free allowances at a pace comparable to the EU ETS (Emission Trading System). This alignment would ensure fairness and compatibility in international carbon pricing.

Ultimately, a harmonised approach, aligning with the global carbon price corridor and introducing strong recycling mechanisms, would position South Africa to: ensure its carbon-intensive exports reflect a minimum carbon price equivalent to the EU benchmark; prevent local production, especially in key sectors like iron and steel, from being adversely affected by abrupt cost increases; and establish a more predictable, equitable, and strategically-aligned carbon pricing framework.

Table 8 presents how different stakeholders will be impacted by a domestic carbon tax reform. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 8. Socio-economic implications of a domestic carbon tax reform

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
National Treasury	Align the domestic carbon tax with the global carbon price corridor (US$50–US$100/ton CO_2) for selected high-	Prevent revenue leakage to the EU by retaining carbon pricing proceeds domestically,	The National Treasury will need to invest in upgrading its systems to ensure	South Africa's current CO_2 tax is relatively low; raising it to US$50–US$100/ton	There is a high risk that this intervention could be rejected if not clearly and

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
	emission sectors, such as the iron, steel, and aluminium value chains, while introducing revenue recycling mechanisms through a dedicated decarbonisation fund.	thereby increasing South Africa's fiscal revenue through an enhanced carbon tax.	compatibility with internationally recognised MRV standards.	could have significant socio-economic implications if accompanied by no recycling mechanisms to support decarbonisation. A key risk is that National Treasury may resist introducing such mechanisms, limiting the potential for industrial support and just transition.	strategically presented. However, establishing a dedicated decarbonisation fund could ease resistance by recycling carbon tax revenues back into the affected industries, making the policy more equitable and politically acceptable.
The dtic	Emphasise the trade-related risks stemming from South Africa's low domestic carbon tax, which undermines the competitiveness of local industries in carbon-constrained export markets.	Raising awareness of the trade implications of carbon pricing will enable the dtic to better manage the risks and exposure associated with the introduction of BCAs.	Loss of export markets may force South Africa to pursue alternative, potentially less favourable, trade destinations.	Institutional fragmentation and lack of policy coordination may leave South African exports to the EU and UK exposed to higher carbon prices under CBAM, undermining their competitiveness.	The lack of coordination within government significantly increases the risk of heightened exposure and policy failure.
Business (such as iron, steel, aluminium, chemicals)	Advocate for a recycling mechanism, such as a decarbonisation fund, to support the transition efforts of affected industries.	Decarbonisation efforts, supported by fiscal backing from the South African government, will enhance the long-term competitiveness of South African exports.	Paying higher carbon taxes may reduce operating profitability in the short term. For instance, a TIPS study on the future of petrochemicals and basic chemicals (Crompton, Young & Hahn, 2024) indicates that Sasol would be unable to absorb any increase in the carbon tax.	Businesses may oppose the reform due to rising operating costs, while the government might also resist implementing recycling mechanisms to support affected industries.	The discussion around recycling mechanisms and increasing the carbon tax for selected industries has received limited attention, yet clear differences exist between government and business perspectives. While this is a long-term intervention, it is crucial that both stakeholders engage in this dialogue without delay.
Labour	Support reform of the domestic	Protect jobs while increasing	Potential short-term job losses	National Treasury may not perceive	National Treasury

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
	carbon tax, emphasising the importance of protecting job security and livelihoods.	carbon taxes to mitigate the impact of high carbon costs imposed by the EU and other jurisdictions implementing BCAs.	as companies face increased costs from carbon embedded in their exports.	reforming the domestic carbon tax as a priority response to BCAs.	currently does not view climate and trade policies like BCAs as immediate risks. This lack of awareness could lead to severe consequences for local jobs if the domestic carbon tax is not reformed accordingly.

National Treasury, as the lead stakeholder, would need to align South Africa's domestic carbon tax with the global carbon price corridor (US$50–US$100/ton CO_2) for selected sectors, particularly the iron and steel and aluminium value chains. This alignment should be supported by recycling mechanisms such as a dedicated decarbonisation fund, which channels tax revenues back into affected industries to support their decarbonisation.

Benefits of this intervention will include preventing revenue leakage to the EU under the EU CBAM; increasing government revenue through a higher carbon tax; improving fiscal space; and supporting industry competitiveness by reinvesting in low-carbon technologies.

National Treasury will need to invest in upgrading MRV systems to meet international standards and to track carbon pricing.

Current carbon tax levels are too low. Raising them to US$50–US$100/ton CO_2 without supportive measures could have significant socio-economic implications. There is a high risk of rejection if the recycling mechanism is not introduced or well-communicated. A major internal risk is that National Treasury may resist recycling mechanisms due to budgetary concerns or lack of alignment with its policy priorities. However, a dedicated decarbonisation fund could mitigate these risks by making the reform more acceptable to industry, recycling revenues back to the sectors most impacted.

The dtic has a vested interest in ensuring trade competitiveness. In intergovernmental forums, the dtic should first highlight the trade risks associated with low domestic carbon pricing, especially under CBAMs. Second, the cost includes the cost of losing export markets due to carbon misalignment, which could require costly market diversification strategies. Third, the dtic should highlight the importance of interdepartmental coordination to protect exports from EU and UK CBAMs. The lack of coordination between departments could lead to higher carbon costs being imposed externally, making South African exports less competitive.

Affected industries, particularly energy-intensive exporters, could lobby for a recycling mechanism to be institutionalised through a decarbonisation fund. While higher carbon taxes may reduce short-term profitability, long-term gains include increased competitiveness through low-carbon transition, and improved access to climate-aligned export markets. However, firms like Sasol may resist, as studies (e.g., by TIPS) show they cannot absorb any carbon tax increases without significant financial strain.

Organised labour should support the reform if it secures jobs and livelihoods in the long term. While short-term job losses may occur as firms adapt to higher carbon pricing, the reform could ultimately

protect employment by keeping exports viable under CBAM regimes and prevent industry decline due to loss of competitiveness in key export markets.

Reforming the domestic carbon tax, with price alignment and recycling mechanisms, demands urgent attention. The lack of coordination between government departments, especially National Treasury and the dtic, poses a major internal risk. However, this can be addressed by establishing a governance structure, as assumed in policy recommendations.

Although external risks (e.g., CBAMs) are relatively fixed, internal risks are solvable. Implementing a balanced, well-governed carbon tax reform with a dedicated decarbonisation fund could position South Africa more competitively in the global green economy and avoid severe consequences for trade, industry, and employment.

5) Global carbon pricing

The WTO has created a taskforce for creating a global carbon pricing system that reflects the distribution impact of a global carbon pricing. The task force calls for tailor-made carbon pricing to include the development status of developing countries to reflect a fair carbon pricing for the Global South. Also, the IMF in 2021 prepared notes for what it calls a "proposal for an International Carbon Price Floor (ICPF) among large emitters". This note is important because it considers the development status and the commitments made by each party in the Paris Agreement. The note highlights that the introduction of an ICPF should allow a small number of countries to introduce carbon pricing suitable for them, instead of a general carbon pricing that will have detrimental impact on other countries such as the Global South or developing countries.

The ICPF would involve negotiations among a limited group of major emitting countries, with the primary focus on determining the minimum carbon price each must apply to their CO2 emissions. The note emphasises flexibility around emerging countries, with allowances for emerging countries to meet their developmental objectives, like industrialising with incumbent fossil-based systems at a lower carbon price floor compared to Global North countries or developed countries.

The Global South countries have contributed less to historical global GHG emissions, and their responsibility to climate change should be tailored, based on the development status of these countries. The ICPF would also circumvent pressure from unilateral mechanisms such as the EU CBAM for developing countries; enhance competitiveness across developing countries; and, as noted by the IMF, complement the objectives of the existing Paris Agreement. Key to the note is that differentiation in carbon pricing should be an instrument promoting international equity for climate mitigation action. This differentiated carbon price floor should consider the level of development of countries, and where countries need support, financial and technical transfers should be promoted.

Table 9 presents how different stakeholders will be impacted by a global carbon pricing. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 9. Socio-economic implications of a global carbon pricing

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
WTO taskforce (inclusive of IMF, OECD, United Nations Conference on Trade and Development (UNCTAD), and the World Bank	Development of a WTO-compatible carbon pricing framework, which allows international equity to prevail.	International principles such as S&DT will prevail, allowing emerging economies to industrialise. This in turn	Some Global South countries will have to pay carbon pricing for their traded goods, adding cost of doing	The WTO taskforce is still at the early stage, and international cooperation in the development of the global	International cooperation has its lows and highs; while carbon pricing is gaining momentum globally, Global South countries

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
		will create livelihoods for economies in the Global South.	business in the developing world.	carbon pricing framework might have delays, allowing introduced BCAs to negatively impact developing economies, impacting the socio-economic setup of these economies.	still sees these policies as protectionist policies for the Global North. The current fragmentation at the WTO raises the risk of the introduced framework to not have immediate impact. This is a longer-term solution, but international cooperation – with the Global South countries supporting this initiative at the WTO – will provide some relieve to Global South economies, amid the rise of fragmented carbon pricing globally.
Global South countries (BRICS+, Africa and others) – inclusive of business, labour and government	Support the development of the global carbon pricing framework.	Enough fiscal space for the Global South countries to industrialise. Also, the use of S&DT for international equity will provide some relieve for the Global South countries.	The Global South economies will have to incur CBAM costs in the short term, impacting business profitability and, as a result. impacting job creation.	Fragmented voices from the Global South, risks Global South cooperation that could help support the development of the framework.	If the Global South does not cooperate on the development of the global carbon price framework, there is a risk of not supporting this initiative. Therefore, an inclusive process in the development of this framework should be advocated.

The WTO taskforce, which includes the IMF, OECD, UNCTAD, and the World Bank, is developing a WTO-compatible global carbon pricing framework designed to uphold principles of international equity. The primary benefit of this initiative is that it would embed international principles such as S&DT, allowing emerging economies the necessary space to industrialise. This, in turn, would support job creation and livelihoods across the Global South.

However, some Global South countries will still face carbon pricing costs on traded goods, increasing their cost of doing business. While the WTO taskforce is still in the early stages and international cooperation on the framework may face delays, these delays risk allowing existing BCAs to negatively affect developing economies, with serious socio-economic consequences.

International cooperation faces challenges: despite global momentum on carbon pricing, many Global South countries view these policies as protectionist measures favouring the Global North. Current fragmentation within the WTO also raises the risk that any introduced framework may have limited immediate impact.

Although this is a long-term solution, active international cooperation, particularly with strong support from Global South countries, could provide relief amid the growing fragmentation of carbon pricing systems globally.

Global South countries (including BRICS+, African nations, and others), along with business, labour, and government sectors, must support the development of this global carbon pricing framework. The key benefits include creating sufficient fiscal space for industrialisation, leveraging S&DT to ensure fair treatment and relief for developing economies.

In the short term, Global South economies will bear CBAM-related costs, impacting business profitability and job creation. Fragmented voices within the Global South risk weakening their collective influence in shaping the framework.

If Global South countries fail to cooperate, they risk missing the benefits of an equitable global carbon pricing system. Therefore, advocating for an inclusive and participatory development process for this framework is critical.

If adopted by the WTO, an International Carbon Pricing Floor, though a longer-term prospect, could set a global minimum carbon price, for example, US$25/tCO$_2$e by 2030 for South Africa. This aligns with projections from both the IMF and South African National Treasury.

According to IMF estimates, such a carbon price floor would enable South Africa to meet its Nationally Determined Contributions (NDCs) under the Paris Agreement. However, with BCAs already in place (like the EU CBAM) and others under development, revenue leakage remains a pressing concern for South African authorities and industries.

The risk profile of this intervention remains uncertain due to the complexity of international negotiations and fragmented positions. Nevertheless, if effective cooperation is secured in the short term, the longer-term socio-economic benefits for Global South countries could be substantial. A global carbon pricing framework would help stabilise and support the development trajectories of many emerging economies facing climate and trade challenges.

6) Differentiated carbon pricing

Another strategy to reduce the burden of BCA charges is for South Africa to advocate for the enforcement of the principles of CBDR-RC and S&DT at multilateral platforms such as the WTO and UNFCCC. Upholding these principles could compel the EU to apply differentiated carbon pricing that takes into account the developmental status and capacity of trading partners.

While the EU CBAM legislation does already allow firms to receive a reduced CBAM charge if they can demonstrate that a domestic carbon tax has been paid, critical gaps remain. These include insufficient consideration of Purchasing Power Parity (PPP) and exchange rate differentials, which can significantly affect the effective burden of carbon pricing on developing economies.

According to available estimates[8], if PPP adjustments are factored in, free allowances under South Africa's carbon tax are phased out, and the domestic carbon tax is increased by 20% from 2035, South African exporters could face an effective EU CBAM charge nearly 50% lower than what would otherwise be applied. This highlights the importance of pursuing equity-based adjustments in global carbon pricing frameworks to reduce the disproportionate impact on developing economies.

Table 10 presents how different stakeholders will be impacted by a differentiated carbon pricing. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 10. Socio-economic implications of a differentiated carbon price

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Advocate for differentiated treatment under WTO and UNFCCC processes and actively engage the EU to ensure carbon pricing reflects developmental differences.	This would enable South African firms to benefit from differentiated carbon pricing, reflecting their developmental and economic context.	Responsible for covering the costs of think tanks that will support the dtic at these forums.	This is a long-term intervention and advocating for it may conflict with existing WTO principles, increasing the risk of rejection within both the UNFCCC and WTO processes.	Advocating for a South Africa-specific differentiated carbon pricing framework is unlikely to gain traction at the WTO, and the risk of rejection is high. However, if implemented, such differentiation would offer significant relief to South African firms facing rising carbon costs.
South African National Treasury	Revise projections to account for the gradual phase-out of free allowances and increase the nominal carbon price by at least 20% from 2030. This adjustment is currently absent from the discussion paper on Phase Two of the South African carbon tax (National Treasury, 2024). Without it, South African firms risk facing significantly higher CBAM charges.	Higher carbon tax revenues can expand fiscal space, enabling greater public investment in green industrialisation.	The National Treasury will need to upgrade its systems to ensure alignment with differentiated carbon pricing principles and international equity frameworks.	The National Treasury is currently progressing with Phase Two of South Africa's carbon tax. Although proposals to adjust the tax are on the table, the introduction of BCAs may partially offset the intended impact of these adjustments. Given that the Phase Two process is already	The National Treasury has initiated Phase Two of the carbon tax, and while various stakeholders have submitted comments, concerns related to Border Carbon Adjustments may not be adequately addressed, resulting in a heightened risk profile.

[8] Based on the National Treasury's discussion paper (National Treasury 2024), which outlines projections for the country's carbon tax trajectory with allowances from 2026; Bloomberg's forecasts of EU ETS carbon prices; and IMF estimates of PPP.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
				underway, Treasury may be reluctant to revisit or revise it, potentially viewing this intervention as redundant or unnecessary.	
Business (such as iron, steel, aluminium, chemicals)	Support the dtic and National Treasury's efforts to establish differentiated carbon pricing for South African sectors affected by BCAs.	Paying a discounted CBAM charge.	Still subject to a CBAM charge, albeit at a discounted rate.	A differentiated carbon price may face opposition from the EU, WTO, UNFCCC, and the National Treasury.	Stakeholder cooperation appears uncertain and limited.
EU	Support differentiated carbon pricing for South Africa, taking into account PPP and the phased removal of free allowances.	Support the implementation of the CBAM to foster international cooperation on climate and trade, contributing to the EU's ambition to achieve net zero by 2050.	Impact on the EU's fiscal space due to reduced revenue projections from CBAM.	The EU may oppose this initiative on the grounds that it could violate WTO principles.	There is a high risk that the EU will not support this initiative.
WTO and UNFCCC	Support the incorporation of PPP in developing the global carbon pricing framework.	Support for a low-carbon global economy through the reduction of GHG emissions.	Growing fragmentation due to varied levels of differentiated support.	Lack of support for differentiated treatment of specific countries.	The WTO may not support this, as it could violate certain WTO principles.

The dtic should actively advocate for differentiated treatment under WTO and UNFCCC processes and engage the EU to ensure carbon pricing reflects developmental differences. This approach would enable South African firms to benefit from carbon pricing tailored to their developmental and economic context. The dtic will be responsible for covering the costs of think tanks that support its participation at these forums.

However, this is a long-term intervention that may conflict with existing WTO principles, increasing the risk of rejection by both the UNFCCC and WTO. Specifically, advocating for a South Africa-specific differentiated carbon pricing framework is unlikely to gain traction at the WTO, and the risk of rejection is high. Nevertheless, if implemented, such differentiation would provide significant relief to South African firms facing rising carbon costs.

National Treasury should revise its projections to incorporate the gradual phase-out of free allowances and increase the nominal carbon price by at least 20% from 2030. This adjustment is currently missing from the discussion paper on Phase Two of South Africa's carbon tax. Without these changes, South African firms risk incurring significantly higher CBAM charges.

Increasing carbon tax revenues would expand fiscal space, enabling greater public investment in green industrialisation. To support this transition, the National Treasury will need to upgrade its systems to align with differentiated carbon pricing principles and international equity frameworks.

Currently, Phase Two of South Africa's carbon tax is underway. While proposals to adjust the tax exist, the introduction of BCAs may partially offset their intended effects. Given the advanced stage of Phase Two, the Treasury may be reluctant to revisit the process, potentially viewing this intervention as redundant. Moreover, stakeholder comments suggest that concerns related to BCAs may not be fully addressed, raising the risk profile.

Business sectors, including iron, steel, aluminium, and chemicals, should support the dtic and National Treasury's efforts to establish differentiated carbon pricing for sectors affected by BCAs. Differentiated carbon pricing may face opposition from the EU, WTO, UNFCCC, and even the National Treasury. Cooperation among stakeholders appears uncertain and limited, posing a significant barrier to progress.

The EU should support differentiated carbon pricing that considers PPP and the phased removal of free allowances. The implementation of CBAM aims to foster international cooperation on climate and trade, supporting the EU's goal of net zero emissions by 2050. However, the EU's fiscal space could be impacted by reduced revenue projections from CBAM if discounts are applied. The EU may oppose initiatives perceived to violate WTO principles, which increases the likelihood of rejection.

The WTO and UNFCCC should support incorporating PPP into the development of a global carbon pricing framework to promote a low-carbon global economy through GHG emissions. However, growing fragmentation, due to varied levels of differentiated support and lack of consensus on differentiated treatment of specific countries, presents major challenges. The WTO may not support differentiated pricing frameworks if they are seen as inconsistent with its trade rules.

The overall risk profile of advocating for differentiated carbon pricing is very high, and will probably face significant restrictions from the WTO, the EU, and the South African National Treasury. Given these challenges, this intervention is unlikely to be viable in either the short or long term.

7) Use of EU default carbon pricing

In early 2025, the European Commission published an Omnibus package proposing revisions to key EU laws on sustainability reporting, due diligence, and trade. Among the targeted laws was the EU CBAM, with the proposed changes aimed at reducing administrative burdens and simplifying compliance for businesses and citizens. One notable proposal was the introduction of default carbon pricing values for LDCs. While still under consideration, this proposal may be extended to developing countries more broadly. If adopted, the use of default values could offer much-needed clarity and administrative relief, as it would establish a standard carbon price per tonne applicable to imports from these countries. This intervention proposes relying on the EU's default carbon pricing mechanism as a pragmatic approach for developing countries engaging with the CBAM.

Table 11 presents how different stakeholders will be impacted by the use of EU default carbon pricing. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 11. Socio-economic implications of use of EU default carbon pricing

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Flag the potential extension of default carbon pricing values to developing economies, should	This will reduce the administrative burden on businesses by	No cost envisioned.	The EU may be unwilling to engage meaningfully with the South	As default carbon pricing is currently not extended to developing

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
	the proposed changes be adopted by the European Commission.	providing greater predictability and simplifying the tracking of CBAM-related charges.		African delegation on these issues.	countries, efforts to include them, despite their rising GHG emissions, are unlikely to gain traction with the EU. This elevates the intervention's risk profile to moderate.
Business (such as iron, steel, aluminium, chemicals)	Support the application of fair default carbon prices, should the mechanism be extended to developing countries.	The introduction of a default carbon price would enhance stability and predictability, providing greater policy certainty for businesses.	Businesses may face higher carbon costs due to the use of default emission intensity values. South Africa, as a coal-intensive economy, is likely to be an outlier in this system. Although the methodology for calculating these default values has not yet been disclosed, there is a significant risk that South African firms will be penalised with higher charges for the carbon embedded in their exports.	No support from business on the use of default carbon price.	The lack of support for this measure is significant, indicating a moderate to high risk. However, if implemented, it could offer policy certainty for businesses, enabling more effective planning.
EU	Consider including developing economies in the pursuit of establishing default carbon prices.	Enhancing compliance with and acceptance of the EU CBAM.	Investing in new systems and human capital to develop and implement default carbon pricing.	The EU may be reluctant to engage in discussions extending default carbon pricing to developing economies, as it views them as significant contributors to global GHG emissions.	There is a high likelihood that the EU will not engage, rendering this intervention ineffective in the short term. However, it leaves open the possibility for future dialogue as global solutions for reducing GHG emissions evolve.

The dtic could flag the potential extension of default carbon pricing values to developing economies, including South Africa, should the proposed changes by the European Commission in early 2025 be

adopted. This would reduce the administrative burden on businesses by providing greater predictability and simplifying the tracking of CBAM-related charges. No direct costs are anticipated for the dtic.

However, there is a risk that the EU may be unwilling to engage meaningfully with the South African delegation on these matters. Since default carbon pricing is currently not extended to developing countries, efforts to include them, despite their rising GHG emissions, are unlikely to gain traction with the EU, elevating the intervention's risk profile to moderate.

Affected industries, such as iron, steel, aluminium, and chemicals, should support the application of fair default carbon prices if the mechanism is extended to developing countries. The introduction of a default carbon price would enhance stability and predictability, providing greater policy certainty for businesses.

Nevertheless, businesses may face higher carbon costs due to the use of default emission intensity values. As a coal-intensive economy, South Africa is likely to be an outlier in this system. Although the methodology for calculating these default values remains undisclosed, there is a significant risk that South African firms will be penalised with higher charges for the carbon embedded in their exports.

A key risk remains the lack of business support for the use of default carbon pricing. This opposition is significant and contributes to a moderate-to-high overall risk level. However, if implemented, the measure could nonetheless offer policy certainty, enabling more effective business planning.

The EU CBAM governance framework should consider including developing economies in efforts to establish default carbon prices. This inclusion would likely enhance compliance with, and acceptance of, the EU CBAM. The associated costs would involve investments in new systems and human capital to develop and implement default carbon pricing.

While the EU may be reluctant to engage in discussions about extending default carbon pricing to developing economies, viewing them as significant contributors to global GHG emissions, there is a high likelihood that it will not engage meaningfully in the short term. However, this leaves open the possibility for future dialogue as global solutions for reducing GHG emissions evolve.

Overall, the risk that the EU will not support extending default carbon pricing to developing countries is moderate, given concerns about rising emissions in these economies. While this intervention offers limited short-term benefits or relief, it may present a valuable window of opportunity in the future should other alternatives fail.

8) South African CBAM

The rising introduction of BCAs globally has presented an opportunity for other economies to start adopting their own BCAs. While South Africa has a carbon pricing system in place through the carbon tax, and doing GHG emission inventory through SAGERs, moving towards a nuanced approach of account GHG emissions embedded in products might be another longer-term project that South African wishes to purse amid the rising cost of introduced BCAs.

In the name of avoiding carbon leakage, the South African government and key stakeholders could start thinking of introducing a South African CBAM (SA CBAM). The design should be centred around putting a price on carbon-intensive products coming through the South African shores. This, the same as other BCAs, acts as both a climate and trade policy.

Table 12 presents how different stakeholders will be impacted by the of a SA CBAM. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 12. Socio-economic implications of introducing a South African CBAM

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic and its agencies (such as ITAC)	Support the introduction of the mechanism and actively participate in defining the scope of products to be included.	Limit carbon-intensive and low-cost imports to protect South African industries and livelihoods, while preventing carbon leakage.	There is a trade-off between short-term costs and long-term benefits. As BCAs are introduced, it becomes clear that their development and implementation require significant time. In addition, the dtic would need to fund think tanks to provide expert guidance on defining the product scope.	A delayed introduction of the SA CBAM risks South African firms incurring higher BCA charges.	Since BCAs require significant time to develop and implement, the risk of South Africa not introducing its own BCA is very high.
DFFE	Introduce mechanisms to calculate the GHG emissions embedded in products and support the implementation of the overall mechanism.	Develop a broader understanding of GHG emissions in South Africa and ensure accurate accounting for NDCs and other international commitments.	Administrative (system design) and staffing cost.	There is a lack of local expertise in designing product-level GHG emissions accounting systems.	Under the EU CBAM, South African firms rely heavily on costly international consultants. The shortage of local expertise may discourage the adoption of this mechanism.
National Treasury and the South African Revenue Service (SARS)	Support the mechanism and actively engage in determining the carbon border price applied to imports.	Increased revenue generated from levies and taxes on carbon embedded in products.	Investment in systems to determine the carbon price per tonne, along with associated staffing costs.	National Treasury is not currently engaged in BCAs; therefore, raising awareness within the department about the need to introduce a South African version is essential.	Raising awareness on climate and trade issues reduces the risk profile, with National Treasury (South Africa's key tax authority) positioned to lead the development of the SA CBAM.
The Presidency	Establish governance mechanisms for the development and design of the SA CBAM.	Ensure accurate accounting of South Africa's climate commitments and related initiatives.	Project management cost.	A longer timeframe will be required to establish an effective institutional framework.	The Presidency is already coordinating South Africa's just transition agenda and could play a similar

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
					coordinating role on climate and trade matters.
Business (such as iron, steel, aluminium, chemicals)	Support the design process by contributing inputs and comments on the envisioned structure of the SA CBAM.	Ensure influence in the design and development of the SA CBAM to safeguard domestic interests and reduce exposure to international BCAs.	Investment in system upgrade and staffing.	The SA CBAM charge may be set below global benchmarks, yet it would still impose costs on domestic firms.	South Africa's current effective carbon tax is low by global standards, largely due to vulnerability considerations and generous free allowances. This suggests that a future SA CBAM could follow a similar trajectory. However, if the SA CBAM falls short of international expectations, businesses may face additional costs, both domestically and at the border, resulting in a compounded financial burden.
Labour	Support the design and development of the SA CBAM in a way that safeguards existing jobs and promotes the creation of new employment opportunities.	Protect existing jobs while enabling the creation of new employment opportunities.	No envisioned costs.	Labour stakeholders currently have limited awareness of climate and trade policies, which poses a risk of limited support for initiatives like the SA CBAM.	Raising awareness on climate and trade issues reduces the risk profile, as labour support is crucial given the initiative's potential for job creation.

The dtic and its agencies, such as ITAC, should support the introduction of the SA CBAM mechanism and actively participate in defining the scope of products to be included. The primary benefit would be limiting carbon-intensive and low-cost imports to protect South African industries and livelihoods while preventing carbon leakage. However, there is a trade-off between short-term costs and long-term benefits. The development and implementation of BCAs require significant time. In addition, the dtic will need to fund think tanks to provide expert guidance on defining the product scope.

A delayed introduction of the South African CBAM risks South African firms incurring higher BCA charges. Given the complexity and time needed to develop BCAs, the risk of South Africa not introducing its own BCA is very high.

The DFFE could introduce mechanisms to calculate the GHG emissions embedded in products and support the implementation of the overall mechanism. This would broaden South Africa's understanding of its GHG emissions and ensure accurate accounting for NDCs and other international commitments. Costs would include administrative expenses (system design) and staffing. There is currently a lack of local expertise in designing product-level GHG emissions accounting systems. Under the EU CBAM, South African firms rely heavily on costly international consultants, and this shortage of local expertise may discourage adoption of the mechanism.

National Treasury and SARS should support the mechanism and actively engage in determining the carbon border price applied to imports. Benefits include increased revenue generated from levies and taxes on carbon embedded in products. Costs will primarily involve investments in systems to determine the carbon price per tonne and associated staffing. Currently, National Treasury is not engaged in BCAs, so raising awareness within the department about the need to introduce a South African version is essential. Increasing awareness of climate and trade issues reduces the risk profile, with National Treasury, South Africa's key tax authority, well positioned to lead the development of the SA CBAM.

The Presidency should establish governance mechanisms for the development and design of the SA CBAM. This will help ensure accurate accounting of South Africa's climate commitments and related initiatives. Costs include project management, and a longer timeframe will be needed to establish an effective institutional framework. The Presidency, already coordinating South Africa's just transition agenda, could play a similar coordinating role on climate and trade matters.

Business should support the design process by providing inputs and comments on the envisioned SA CBAM structure. This will ensure influence over the mechanism's design and development to safeguard domestic interests and reduce exposure to international BCAs. Envisioned costs include investments in system upgrades and staffing. While the South African CBAM charge may be set below global benchmarks, it would still impose costs on domestic firms. South Africa's current effective carbon tax is low by global standards due to vulnerability considerations and generous free allowances, suggesting the SA CBAM could follow a similar trajectory. However, if the SA CBAM falls short of international expectations, businesses may face additional costs both domestically and at the border, compounding their financial burden.

Labour should support the design and development of the SA CBAM in a way that safeguards existing jobs and promotes new employment opportunities. The main benefit is protecting current jobs while enabling job creation, with no anticipated direct costs. Currently, labour stakeholders have limited awareness of climate and trade policies, posing a risk of limited support for initiatives like the SA CBAM. Raising awareness among labour groups reduces this risk, as their support is crucial given the initiative's job creation potential.

While introducing BCAs takes time, as demonstrated by the EU CBAM, developing a South African CBAM requires long-term planning. The intervention poses a relatively low risk if the policy successfully passes through legislative processes, but its benefits will primarily materialise in the future.

DECARBONISE – DECARBONISE TO RETAIN COMPETITIVENESS OF SOUTH AFRICAN GOODS

To maintain the competitiveness of South African goods, decarbonisation must be central to the response to BCAs. The South African government has taken significant steps to support a just green energy transition through initiatives such as the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), the Integrated Resource Plan, the Just Energy Transition Investment Plan (JET-IP), Eskom's decarbonisation strategy and, more recently, the South African

Renewable Energy Masterplan. These initiatives collectively support the country's goal of energy decarbonisation.

This section presents five levels of policy recommendations to support South Africa's decarbonisation efforts in line with evolving global climate and trade regulations:

a) Sectoral support through innovation, product development, and market creation and protection.

b) Promotion of energy-efficient technologies.

c) Expansion of Independent Power Producers.

d) Decarbonisation of the national grid.

e) Strengthening Public-Private Partnerships.

The following subsections provides a detailed socio-economic analysis of these five key levels of policy recommendations for South Africa to strategically decarbonise.

1) Sectoral support

Innovation and product development

Innovation and product development have been largely driven by Global North countries aiming to maintain their leadership in technological advancement. To remain competitive in the future green economy, South Africa must actively encourage green innovation and product development. This can be achieved through government incentives that increase investment in research and development, support product commercialisation, and foster the development of green skills. The focus should be on advancing key green technologies such as green iron, green steel, and green chemicals (including green ammonia, green hydrogen, bioplastics, and green cement).

Table 18 presents how different stakeholders will be impacted by sectorial support through green innovation and green product development interventions. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 13. Socio-economic implications of sectorial support through green innovation and green product development

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic and its agencies	Promote green innovation and product development by providing targeted green subsidies to support research, development, and commercialisation of sustainable technologies and products.	Advance the transition to a low-carbon economy by implementing measures to decarbonise key sectors of the South African economy, including energy and industry.	Provide substantial financial support for green initiatives through well-targeted subsidies that accelerate the adoption of low-carbon technologies and sustainable practices.	Support for high-risk, early-stage green innovation with uncertain returns by creating dedicated funding mechanisms for experimental ventures that have the potential to drive breakthrough sustainability solutions despite high failure rates.	Green subsidies will not be prioritised in the immediate term, given South Africa's limited fiscal capacity. A longer-term approach is needed, focusing first on proven, cost-effective interventions while building the foundation for future support of unproven green innovations.
DSTI	Increase investment in research and development, with	Foster a more competitive and inclusive	Investment in new technologies.	Investments carry moderate risk,	While this intervention is already being

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
	a focus on green technologies. Establish derisking platforms to support the commercialisation of innovations, leveraging institutions like the CSIR and existing innovation hubs.	economy that drives job creation and supports sustainable livelihoods, particularly in emerging and green industries.		involve high costs, and offer potentially low returns, as they target emerging areas with uncertain outcomes and limited track records.	implemented by the CSIR, the commercialisation aspect, particularly its link to job creation and market uptake, remains a critical gap.
Department of Mineral and Petroleum Resources (DMPR)	Provide targeted support to Mintek to advance green product innovation and research in mineral processing, with a focus on environmentally sustainable technologies and value addition.	The development of green minerals, such as green iron ore, could unlock new opportunities for job creation and establishing competitive, sustainable industries.	Invest in the transformation of minerals into green products and green minerals, promoting sustainable value addition and supporting the transition to a low-carbon economy.	Green products carry a high level of risk due to the significant possibility of market failure or limited adoption.	High risk, due to uncertain chance of success.
Department of Higher Education and Training (DHET)	Align Technical Vocational Education and Training (TVET) programmes with emerging industry needs, such as green hydrogen (GH_2) technicians and EV mechanics, and strengthen Sector Education and Training Authorities (SETAs) to support skills development and workforce readiness.	Facilitate effective skills matching to ensure graduates from higher education can seamlessly transition into the workforce and meet industry demands.	Increase funding for TVET institutions and SETAs, while aligning National Student Financial Aid Scheme (NSFAS) resources to prioritise critical skills development that addresses current and future labour market needs.	Students in South Africa tend to prefer non-technical and non-critical skills, which risks a shortage of essential technical expertise needed for the green economy, thereby hindering green skills development.	The risk profile of this intervention is moderate, given that just transition initiatives have already incorporated these considerations.

The dtic and its agencies can promote green innovation and product development by providing targeted green subsidies to support the research, development, and commercialisation of sustainable technologies and products. This approach would advance the transition to a low-carbon economy by driving decarbonisation in key sectors such as energy and industry. The primary cost involves substantial financial support for green initiatives, through well-targeted subsidies that accelerate the adoption of low-carbon technologies and sustainable practices.

Support should also extend to high-risk, early-stage green innovations with uncertain returns by creating dedicated funding mechanisms for experimental ventures that have the potential to deliver breakthrough sustainability solutions despite high failure rates. However, given South Africa's current limited fiscal capacity, green subsidies might not be prioritised in the immediate term. Instead, a longer-term strategy is required, focusing initially on proven, cost-effective interventions while laying the groundwork for future support of unproven green innovations.

The DSTI could increase investment in research and development, specifically targeting green technologies. To facilitate commercialisation, derisking platforms should be established, leveraging institutions like the CSIR and existing innovation hubs. This intervention aims to foster a more competitive and inclusive economy that stimulates job creation and sustains livelihoods, particularly in emerging green industries. The cost involves investment in new technologies, while the risk includes moderate uncertainty, high costs, and potentially low returns due to the emerging nature of the technologies and limited track records. Although the CSIR is already implementing related initiatives, the link between commercialisation, job creation, and market uptake remains a critical gap.

The DMPR should provide targeted support to Mintek to advance green product innovation and research in mineral processing, with an emphasis on environmentally sustainable technologies and value addition. The development of green minerals, such as green iron ore, presents opportunities for job creation and the emergence of competitive, sustainable industries. Investing in the transformation of minerals into green products promotes sustainable value addition and supports the transition to a low-carbon economy. Nonetheless, green products carry a high risk due to the significant possibility of market failure or limited adoption.

DHET should align TVET programmes with emerging industry needs, such as green hydrogen technicians and EV mechanics, and strengthen the SETAs to support skills development and workforce readiness. This will facilitate effective skills matching, enabling graduates to transition seamlessly into the workforce and meet industry demands. The associated costs include increased funding for TVET institutions and SETAs, as well as aligning NSFAS resources to prioritise critical skills development that addresses both current and future labour market needs. A key challenge is that South African students tend to prefer non-technical and non-critical skills, risking a shortage of essential technical expertise vital for the green economy and thereby hindering green skills development. The risk profile of this intervention is moderate, as just transition initiatives have already integrated these considerations.

Market creation and protection

Once green products are developed, establishing and protecting the industries around them should become a priority for South Africa's economy. Market creation and protection must be designed to enhance competitiveness. Key policy levers to support this intervention include green public procurement, the gradual phase-out of fossil fuel subsidies, and ring-fencing climate levies.

Green public procurement involves implementing policies that mandate local content and sustainability criteria for government purchases, for example electric buses, solar infrastructure, and new construction projects. The gradual phase-out of fossil fuel subsidies should redirect funds toward green industrial incentives such as low-interest loans for renewable energy projects or tax rebates for greentech manufacturing. Ring-fencing climate levies entails allocating revenues from carbon taxes and plastic levies specifically to finance green industrial initiatives.

Table 14 presents how different stakeholders will be impacted by sectorial support through green market creation and protection. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 14. Socio-economic implications of sectorial support through green market creation and protection

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Implement green public procurement requirements alongside a gradual phase-out of fossil fuel subsidies	Promote a low-carbon economy that generates sustainable jobs and future-proofs	Make substantial investments in public projects that incorporate	The fossil fuel lobby remains powerful, having been established since the early days of	The green lobby is currently weaker than the fossil fuel lobby. While green procurement

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
	to promote sustainable government spending and accelerate the transition to a low-carbon economy.	South Africa's economic growth.	mandatory green economy criteria to drive sustainable development.	South African industrialisation. As a result, the phase-out of fossil fuel subsidies is unlikely to happen in the near term.	initiatives may gain approval and strong support, phasing out fossil fuel subsidies would fundamentally disrupt South Africa's economy, which remains deeply embedded in fossil fuel-based industries.
National Treasury	Ring-fencing climate levies.	Support the decarbonisation of the South African economy in ways that enhance and sustain its global competitiveness.	There is a trade-off between allocating funds for climate finance and essential non-climate sectors such as education and health, raising significant budgetary concerns.	Revenues collected from climate levies could impact the allocation of funds for essential budget items such as health, social services, and education, raising potential budgetary challenges.	The proposal to introduce ring-fencing has received mixed reactions from National Treasury, with rejection posing a significant risk to its implementation.
Business (such as iron, steel, aluminium, chemicals)	Develop innovative business models that support and scale green production methods.	Business models that lead in their frontier will gain a first-mover advantage, securing greater market share and higher profitability.	Investments in new products that have yet to undergo derisking.	High investment costs combined with uncertain returns, as pioneering new innovations may result in no financial gain.	The risk of new business models failing to gain traction is high; however, progressive investment and support in this area can help reduce risk over time.
Labour	Promote the development and safeguarding of emerging industries.	Generate employment opportunities in emerging sectors and industries.	Balance the trade-off between job creation in emerging sectors and potential job losses in traditional industries.	Emerging skills requirements may pose challenges to existing jobs, potentially leading to workforce displacement.	This intervention carries a low risk, as just transition frameworks already prioritise job security.

The dtic should implement green public procurement requirements alongside a gradual phase-out of fossil fuel subsidies to promote sustainable government spending and accelerate the transition to a low-carbon economy. This will foster a low-carbon economy that generates sustainable jobs and

future-proofs South Africa's economic growth. However, substantial investments in public projects incorporating mandatory green economy criteria will be necessary to drive sustainable development.

The fossil fuel lobby remains powerful, having been entrenched since the early days of South African industrialisation. Consequently, the phase-out of fossil fuel subsidies is unlikely in the near term. In contrast, the green lobby is currently weaker. While green procurement initiatives may gain approval and strong support, phasing out fossil fuel subsidies would fundamentally disrupt South Africa's economy, which is deeply embedded in fossil fuel-based industries.

National Treasury could consider introducing ring-fencing of climate levies to allocate revenues specifically for green industrial projects. This would support the decarbonisation of the South African economy in ways that enhance and sustain its global competitiveness. However, there is a trade-off between allocating funds for climate finance and essential non-climate sectors such as education and health, raising significant budgetary concerns. Revenues collected from climate levies could impact allocations to critical budget items like health, social services, and education, presenting potential fiscal challenges. The proposal to introduce ring-fencing has received mixed reactions from National Treasury, with rejection posing a significant risk to its implementation.

The private sector should also develop innovative business models that support and scale green production methods. Businesses that lead in their sector will gain a first-mover advantage, securing greater market share and higher profitability. However, investments in new products that have yet to undergo derisking are required. These investments involve high costs and uncertain returns, as pioneering innovations may result in no financial gain. Although the risk of new business models failing to gain traction is high, progressive investment and sustained support can help mitigate these risks over time.

Labour should promote the development and safeguarding of emerging industries. This will generate employment opportunities in new sectors but comes with the cost of balancing the trade-off between job creation in emerging industries and potential job losses in traditional ones. Emerging skills requirements may challenge existing jobs, potentially leading to workforce displacement. Nonetheless, this intervention carries a low risk, as just transition frameworks already prioritise job security.

Overall, this intervention presents a high risk due to potential perceptions of protectionism, which may raise international concerns. However, if implemented effectively, it can deliver substantial long-term benefits to the South African economy by supporting job security and creating sustainable livelihoods.

2) Promote energy efficiency technologies

The first policy option to support energy decarbonisation is to promote the widespread adoption of energy-efficient technologies, particularly in energy-intensive sectors. This includes leveraging advanced technologies such as Artificial Intelligence (AI) to optimise energy use. According to Lee et al. (2022), AI applications in energy-intensive industries can reduce energy consumption by an estimated 10.35% to 18.89%, thereby lowering operational costs and significantly reducing GHG emissions.

This policy would involve scaling up existing support mechanisms, such as expanding tax incentives (e.g., Section 12I Tax Incentive), and strengthening standards and certification programmes, such as ISO 50001 energy management systems. These measures would be particularly beneficial for high-emission sectors such as mining, steel, aluminium, and cement, where reducing energy intensity is critical for competitiveness and sustainability.

Table 15 presents how different stakeholders will be impacted by promoting energy efficiency within affected industries. Subsequent to the table is a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 15. Socio-economic implications of promoting energy efficiency technologies

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Expansion of tax incentives (Increasing Section 12I) and strengthening standards and certification programmes.	Enhancing the competitiveness of South African industries, reducing energy consumption, and creating sustainable livelihoods.	Scaling up subsidies for green projects that promote energy efficiency.	Greater risk of tax increases.	Given South Africa's limited fiscal space, increasing taxes to fund green investments in energy-efficient technologies poses a significant risk.
CSIR and National Cleaner Production Centre (NCPC)	Financial support for energy efficient technology development and providing incubation for new energy efficient products.	Fostering innovation in energy management and offering accessible solutions for businesses.	Project management and administration costs.	Due to budget austerity measures introduced in response to South Africa's struggling economy, funding for energy-efficient technologies may not be prioritised.	Budget cuts may impact the development of energy-efficient technologies; however, this risk is considered moderate.
Business (such as iron, steel, aluminium, chemicals)	Cheaper energy efficient technologies.	Lowering operational costs for businesses and enhancing the competitiveness of their products.	Investment in energy-efficient technologies may disrupt operating profits in the short term.	Investment in energy management systems may fail to reduce energy costs, potentially increasing operating expenses for businesses.	Derisking new technologies has been central to every industry. While energy management systems may reduce operating costs in the long term, the risk of no short-term return on investment remains moderate.
Labour	Job creation in emerging industries, such as energy efficiency specialists.	Creation of new jobs within emerging industries.	Trade-off between job displacement and creation.	Energy-efficient technologies may not generate significant jobs, as innovations like blockchain and AI are predominantly machine-driven	The potential lack of job creation increases the risk of insufficient job replacement.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
				rather than labour-intensive.	

The dtic should expand tax incentives, particularly by enhancing Section 12I, and strengthening standards and certification programmes to support the adoption and development of energy-efficient technologies. This would increase the competitiveness of South African industries, reduce national energy consumption, and contribute to job creation. However, expanding such subsidies might come with fiscal implications. Given South Africa's constrained fiscal space, the risk of increased taxation to fund green investments remains high.

Institutions such as the CSIR and the NCPC would require dedicated financial support to drive research and development in energy-efficient technologies. They would also play a key role in incubating and scaling up new energy-efficient products. The primary benefit would be increased innovation in energy management and the provision of practical, accessible solutions for businesses. However, project management and administrative costs must be factored in. Amid budget austerity measures, funding for energy-efficiency initiatives may not be prioritised, posing a moderate risk to innovation and programme continuity.

Businesses, particularly in energy-intensive sectors such as aluminium, would benefit from access to affordable energy-efficient technologies. These can reduce operational costs and improve the global competitiveness of their products. However, initial investments may disrupt short-term profitability. There is also a risk that new technologies may not deliver expected energy savings in the short term, although longer-term benefits are likely. Derisking these technologies remains essential.

The labour market must also be considered. Job creation in new areas such as energy-efficiency services, audits, and technology development offers significant potential. However, the transition may result in the displacement of existing jobs. Moreover, some energy-efficiency technologies, such as those driven by AI and blockchain, are less labour-intensive, raising the risk of limited job creation and no direct job replacement.

Overall, this is a medium-term intervention with a moderate to high risk profile. Nevertheless, energy-efficiency technologies have a proven track record of reducing both energy consumption and carbon emissions. Strategic investment in this area could significantly enhance the competitiveness of South African products in global markets.

3) Expand Independent Power Producers

The REIPPPP[9], launched in 2011, has been central to South Africa's renewable energy strategy. The REIPPPP aims to attract private investment through competitive bidding, facilitating the construction of wind, solar, and hydroelectric projects. This programme has contributed to reducing carbon emissions, generating employment and stimulating economic growth. Its success has largely been due to its transparent bidding process, which has drawn substantial investment from both domestic and international sources.

To date, a total of 20 340 MW capacity has been earmarked for procurement from solar and wind IPPs for the period between 2022 and 2030. By September 2024, projects that secured financial closure had drawn in R239 billion in investments, with 104 IPPs finalising deals. These initiatives have added

[9] Additional programmes include the Battery Energy Storage IPP Procurement Programme (BESIPPPP), the Gas Independent Power Producers Procurement Programme (GASIPPPP) and the Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP)

a total of 7825 MW of electricity capacity, with 6180 MW already supplied to the grid by active IPPs and have created 82 539 jobs during both construction and operational phases. In addition, the electricity produced by these projects is reported to offset 118.7 million tonnes of CO2 emissions (IPP Office, 2024). For renewable energy to take off, and for the reduction of coal-generated electricity to accelerate in South Africa, scaling up IPPs for renewable energy remains critical.

Table 16 presents how different stakeholders will be impacted by the expansion of Independent Power Producers. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 16. Socio-economic implications of expanding Independent Power Producers (IPPs)

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
Eskom	Implement mechanisms to integrate renewable energy into the national grid.	Reducing South Africa's carbon intensity while promoting greener and more competitive products.	Investment in new systems that enable IPPs to supply electricity to the grid.	Eskom may lose key anchor customers, such as Hillside, which could negatively impact its financial stability.	The risk of Eskom failing to retain anchor customers remains high, as these clients serve markets that are transitioning to low-carbon products more rapidly than Eskom's current decarbonisation trajectory.
Business (such as iron, steel, aluminium, chemicals)	Source renewable energy from IPPs at rates equal to or lower than those offered by Eskom.	Lowering the carbon intensity of their products.	The current scale of IPPs is limited, while most businesses require high energy consumption for industrial operations. Scaling up IPPs may not meet this industrial-scale demand, potentially increasing operational costs.	Businesses risk investing in potentially unreliable energy systems provided by IPPs, which could disrupt their operations.	South Africa's renewable energy sector currently lacks a reliable baseload, with coal remaining the primary source of consistent power for most industrial sites. Addressing the challenge of renewable energy baseload is critical, which increases the risk profile of this intervention.
IPPs	Supply renewable energy to affected businesses at an affordable and reliable cost.	Creation of future-proof and sustainable businesses.	Significant investments required for the construction and operation of IPPs.	If IPPs do not deliver tangible benefits to local communities, political opposition to them is likely to persist.	South Africa's fragile political landscape increases the risk that the expansion of IPPs may be delayed or halted.
Labour	Local job creation through construction and operation of IPPs.	Job creation in new industries such as battery storage.	Trade-off between job displacement and creation.	No direct one-to-one replacement of jobs.	The potential lack of job creation increases the risk of insufficient job replacement.

Eskom would need to introduce mechanisms to enable IPPs to feed renewable energy into the national grid. The primary benefit of this is a reduction in South Africa's carbon intensity, promoting greener and more competitive products. However, this requires significant investment in new systems to facilitate grid integration. A major risk is that Eskom could lose key anchor customers, such as Hillside, negatively impacting its financial position. This risk remains high because Eskom's anchor customers supply markets that are rapidly shifting towards greener products, outpacing Eskom's decarbonisation progress.

Businesses will require access to renewable energy from IPPs at rates comparable to or cheaper than Eskom's tariffs. This transition would lower the carbon intensity of their products, enhancing market access. However, the current scale of IPPs is limited, while many industrial businesses demand high and stable energy supply. Scaling up IPPs may not meet industrial-scale demand, potentially increasing operational costs. In addition, reliance on renewable energy systems, which can be intermittent, poses risks to business operations. South Africa's renewable energy sector currently lacks a consistent baseload, with coal still providing the essential baseload power for most industrial sites. Addressing renewable energy baseload challenges is critical, increasing the overall risk profile of this intervention.

For IPPs to effectively support affected businesses, they must offer renewable energy that is both affordable and reliable. Achieving this will help future-proof industries and promote sustainable business growth. However, heavy investments in the construction and operation of IPPs are required. If the benefits of IPPs do not reach local communities, political resistance may arise. Given South Africa's fragile political landscape, there is a significant risk that IPP expansion may face opposition.

The expansion of IPPs could create local jobs, particularly through construction and operations, including emerging sectors like battery storage. This presents opportunities for job creation in new industries. However, there is a trade-off between job displacement in traditional sectors and new job creation.

Overall, this is a medium-term intervention with a heightened risk profile, primarily due to potential political instability in South Africa and Eskom's financial risks and baseload constraints that could disrupt progress in expanding renewable energy capacity.

4) Decarbonise the national grid

Eskom's Just Energy Transition strategy aims to achieve net-zero carbon emissions by 2050 while fostering sustainable job creation. Part of Eskom's decarbonisation strategy is to diversify its energy mix by integrating, nuclear, renewables (solar and wind), and energy storage systems (batteries and pumped hydro). Eskom's decarbonisation strategy aims to reduce coal reliance gradually while maintaining grid stability. While this is a longer-term intervention, reducing carbon-intensity at Eskom grid would provide a huge relieve for South African exporting firms.

Table 17 presents how different stakeholders will be impacted by decarbonising the South African grid. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 17. Socio-economic implications of decarbonising the South African grid

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
Eskom	Accelerate decarbonisation by expanding grid capacity to accommodate increased renewable energy integration.	Support a low-carbon economy that exports green and competitive products.	Investment in decarbonisation initiatives.	Eskom is balancing grid stability with decarbonisation efforts; when grid stability is compromised,	As loadshedding is gradually phased out, decarbonisation may take priority; however, the possibility of

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
				the risk of stalled decarbonisation increases. Also, Eskom is selling attributes which are increasing the emission factors of Eskom, impacting negatively on decarbonising the South African grid.	loadshedding returning continues to influence business risk assessments.
Affected Business	Access to green grid.	More affordable and cleaner production processes enabled by a clean energy grid.	Industrial firms will need to manage the balance between baseload and intermittent electricity supply.	The lack of reliable baseload power impacts energy-intensive industrial sites.	The absence of reliable baseload power, coupled with the need for grid stability, poses a high risk for both Eskom and businesses.
Labour	The transition to a greener South African grid should prioritise the creation of new jobs.	New jobs created.	Trade-off between job creation and job displacement.	No one-to-one job replacement.	Renewable energy tends to create fewer sustainable jobs, with many temporary positions during construction and fewer permanent roles in operations.

Eskom should accelerate its decarbonisation efforts by opening the grid to increased renewable energy intake. The primary benefit of this shift is support for a lower-carbon economy that exports greener, more competitive products. However, this transition requires significant investment in decarbonisation infrastructure.

Eskom faces a delicate balance between maintaining grid stability and advancing decarbonisation. If grid stability falters, the risk of decarbonisation efforts stalling increases. While loadshedding is gradually being phased out, potentially allowing decarbonisation to take priority, the risk of its return continues to affect business risk profiles.

Once the green grid is developed, affected businesses should have access to it. This would enable cheaper, cleaner production processes powered by renewable energy. However, industrial firms will need to manage the balance between baseload and non-baseload electricity supply. The current lack of reliable baseload power presents a high risk for both Eskom and energy-intensive industries, threatening grid stability.

Greening South Africa's grid is expected to create new jobs, particularly in emerging green sectors. However, there will be a trade-off between new job creation and the displacement of existing jobs, with no direct one-to-one replacement. Many renewable energy jobs, especially in construction, tend to be temporary, while fewer long-term positions are created during operations.

Although loadshedding has been reduced, grid instability remains a risk that could deprioritise decarbonisation efforts. This is a long-term intervention requiring substantial investment and careful management to protect grid stability. If successfully implemented, it promises significant positive socio-economic benefits for South Africa.

5) Foster Public-Private Partnerships (PPPs)

Eskom should collaborate with key industrial players, such as aluminium and iron and steel producers, to develop dedicated renewable energy and storage capacity through revised Power Purchase Agreements (PPAs). A partnership between Eskom and the primary aluminium producer, Hillside, could position South Africa's aluminium industry as both green and globally competitive. Leveraging their long-standing commercial relationship, Hillside could renegotiate or enter into a new Pricing Agreement with Eskom. One potential implementation pathway is the Tubatse hydro-battery project, which would help ensure a stable, low-carbon power supply.

Table 18 present how different stakeholders will be impacted by fostering PPPs. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 18. Socio-economic implications of fostering Public Private Partnerships (PPPs)

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
National Treasury	Facilitate the development of public-private partnerships between industrial players significantly affected by BCAs, such as Hillside, and Eskom.	PPPs could help expand South Africa's fiscal space by leveraging private sector investment.	Project management and administrative cost.	The National Treasury has focused on ensuring Eskom's financial sustainability. However, efforts to create an enabling environment for businesses to produce greener and more competitive products may conflict with this objective, potentially undermining the Treasury's fiscal strategy for the utility.	Given the National Treasury's cautious and fiscally conservative approach, there is limited likelihood that it will actively facilitate the development of PPPs for renewable energy, making the outlook for such initiatives uncertain.
Eskom	Enter into PPAs that enable industries to produce cleaner, more competitive products.	Secure long-term anchor customers to enhance Eskom's financial stability and sustainability.	Incur project management costs throughout the implementation and post-implementation phases of the PPP.	PPPs require time to establish, and delays in adopting them for renewable energy in critical sectors increase these sectors' vulnerability to carbon-related risks.	PPAs typically involve lower negotiated electricity tariffs, which could affect Eskom's financial sustainability. This raises the risk of Eskom choosing not to engage in such agreements, despite the growing need for grid stability.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
Affected Business	Establish partnerships with Eskom to access cleaner sources of electricity.	Consumption of green energy, resulting in greener products.	Investment in cleaner, renewable energy sources.	Affected businesses lack access to decarbonisation funds, making it challenging for these industries to achieve meaningful decarbonisation.	The lack of decarbonisation funds increases the risk that businesses will not participate in PPPs.
Labour	Job security and creation.	Job creation through PPPs.	Creation of temporary jobs, resulting in fewer permanent employment opportunities.	Labour might reject PPPs.	Labour has historically been vocal on development issues and often views the private sector as opposed to development goals. Consequently, the risk of resistance to fostering PPPs is moderate due to these concerns.

National Treasury should play a key role in facilitating PPPs between industrial players heavily impacted by BCAs, such as Hillside, and Eskom. These partnerships could help expand South Africa's fiscal space by leveraging shared investments. The costs involved would primarily include project management and administrative expenses.

While the National Treasury has invested significantly in safeguarding Eskom's financial sustainability, balancing this objective with creating an enabling environment for greener, more competitive industries may prove challenging. Given the Treasury's strong focus on fiscal prudence, it may be resistant to initiatives that risk destabilising Eskom's finances, making facilitation of PPPs for renewable energy a complex and uncertain prospect. Eskom should enter into PPAs that enable industries to produce cleaner and more competitive products. Securing anchor customers through these agreements would promote Eskom's financial stability and sustainability over the longer term. However, Eskom will incur ongoing project management costs during and after PPP implementation. In addition, the lengthy process of establishing PPPs may delay critical renewable energy adoption, increasing exposure risks for key industrial sectors.

PPAs typically involve negotiated, lower electricity tariffs, which could further challenge Eskom's financial sustainability and raise the risk associated with Eskom's engagement, particularly given the need to maintain grid stability. Affected businesses should also partner with Eskom to access cleaner electricity. The benefits include increased green energy consumption and the production of greener products. However, these businesses face significant costs associated with investing in cleaner energy solutions. Moreover, limited access to decarbonisation funds makes it difficult for many affected industries to participate effectively in PPPs, raising the risk of low engagement.

Labour stakeholders will prioritise job security and creation. While PPPs may generate temporary employment opportunities, permanent job creation is likely to be limited. Labour unions, historically

sceptical of the private sector's role in development, may resist PPP initiatives. This opposition contributes to a moderate risk level in pursuing PPPs.

The risk associated with fostering PPPs is uncertain but significant. The intervention requires substantial investment in project and programme management. If well-executed, it could yield moderate positive socio-economic impacts over the long term. However, Eskom's financial risks and baseload constraints will make this intervention unlikely to happen.

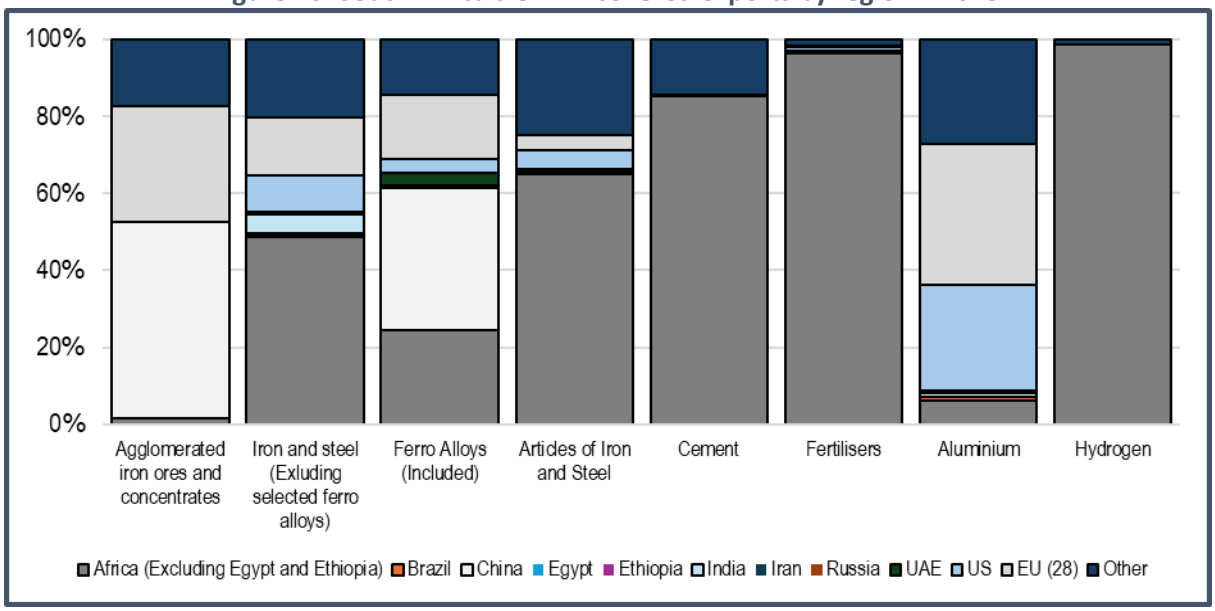
ADJUST – ADJUSTMENT TO SHIFTING GLOBAL TRADE POLICIES

The EU has been a historical and key trade partner for South Africa; the EU constitutes almost a quarter of South Africa's trade. However, the current volatility in global trade as a result of US President Donald Trump's 2025 tariff policy provides some insight into the potential responses by countries to lost competitiveness in key markets, that is, seeking to diversify exports by exporting to other countries (i.e., Africa, BRICS+ and the US for aluminium). Seeking alternative markets for South African BCA-affected exports is seen as a last resort option. Rerouting volumes to other markets is costly and time-consuming. This option, however, may be unavoidable should South African exports become too expensive and uncompetitive to enter the EU market, South Africa's biggest trading partner.

An alternative market strategy could include increased domestic supply (boosting domestic demand), African markets, BRICS+ markets and the US market (especially for aluminium products). The top three markets include Africa, EU and China, sending a combined US$68 billion worth of goods to the African continent, the EU and China. The EU is South Africa's second biggest market after the African continent (representing 23% of all South African exports in 2023), with South Africa sending US$26 billion worth of goods to the EU (including the UK). Of the exports covered under CBAM, about 10% of the South African exports going to the EU are vulnerable, meaning they are covered under both the EU and UK CBAM. These goods are worth US$2.5 billion. If the EU market access is no longer viable, South African CBAM covered goods worth at least US$2.5 billion will need a new market.

Figure 10 present gaps where South Africa can identify alternative markets, which are then expanded in the subsections below through a socio-economic impact assessment.

Figure 10. South Africa's CBAM covered exports by region – 2023



Source: Authors based on Trade Map (2025). Bilateral trade between South Africa and Africa, BRICS+ countries, US and European Union (EU 28).

Figure 10 shows markets for South African exports by region, highlighting key export destinations for CBAM-impacted goods. In terms of agglomerated iron ore, China and the EU account for the lion's share, with a combined demand for 80% of the agglomerated iron ore export market for South Africa. China alone takes 50% of all South African exported agglomerated iron ore. The EU market consumes 30% of the agglomerated iron ore and, should the EU market become more expensive to export to, alternative markets in the BRICS+, including China could be explored.

For iron and steel, under the EU and UK CBAM, Africa is the biggest consumer of South African iron and steel, followed by the EU and the US. Almost 50% of South African iron and steel goes to the African continent. Considering the volatility of the US market under the Trump administration, looking inwards on the continent might be an option. Ferro alloys are included under both the EU and UK CBAM, and China, Africa and the EU are the biggest markets. China alone consumes one third of all South African ferro alloys covered under the EU and UK CBAMs. This is followed by Africa (24%), which also consumes almost the same amount, with a less substantial amount going to the EU (16%). For articles of iron and steel, Africa is the dominant market for the CBAM covered goods. Africa consumes about 65% of all South African articles of iron and steel exports covered under the EU and UK CBAMs. The US and the EU are the next biggest consumers, consuming around 10% of all South African articles of iron and steel exports.

For cement and fertilisers, South African exports primarily go to the African continent. South Africa's volumes are lower compared to the EU and the UK. Over 85% of all South African cement exports goes to the African continent, while over 96% of all South African fertilisers exports goes to the continent. Most of the grey hydrogen produced in South Africa is integrated into Sasol's production processes, with small volumes being exported. Most of these exports are retained on the continent. Africa, in these sectors, remains a key market for South African exports.

The top two biggest markets for South African aluminium exports are the EU and the US. Both the EU and the US import over 64% of all South African aluminium exports. Finding an alternative market for South African aluminium exports might be difficult, considering the evolving landscape of trade policy under the Trump administration, and the EU sustainability policies. BRICS+ and African markets could be explored and assessed, in terms of demand of aluminium. The general picture painted with the above data is that BRICS+ and African markets, and to some extent, the US market (despite the current SA-US relation issues) remain key markets to be explored for BCA covered goods.

The following subsections present the socio-economic impact assessment of alternative markets.

1) Deepen market integration within Africa

Regional integration in Africa remains at an early stage. The introduction of BCAs in South Africa presents an opportunity to advance climate-resilient developmental regionalism under the AfCFTA framework. Professor Faizel Ismail (2022) defines this approach as the integration of climate resilience across four pillars of developmental regionalism: adopting the principle of special and differential treatment (as outlined in the diplomatic response options); building regional industrial value chains; promoting cross-border infrastructure development cooperation; and upholding democratic governance.

The implementation of BCAs offers a chance to align environmental policies within the AfCFTA, thereby deepening market integration.

While South Africa already exports much of its chemicals (fertilisers and hydrogen) and cements to Africa, Africa remains an island of opportunities in consumption and production of iron and steel and aluminium regionally. Due to the lack of industrialisation on the continent, opportunities for aluminium and iron and steel remain in the production and supply side, rather than on the demand and consumption side. However, the introduction of BCAs such as the EU CBAM present an

opportunity to look to the African continent for steel, aluminium, chemicals and cements, both for consumption and production.

Table 19 presents how different stakeholders will be impacted by deepening market integration within the continent of Africa by South Africa. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 19. Socio-economic implications of deepening market integration within Africa

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Promote regional integration by accelerating the implementation of the AfCFTA, with priority given to negotiations in key sectors such as iron and steel, aluminium, and chemicals.	Secure and expand markets for South African iron and steel, aluminium, and chemical products to sustain jobs and livelihoods.	The EU has been the primary market for BCA-affected products; losing access to this market and shifting focus toward deeper continental integration may not offer equivalent value for these exports.	Export losses in value terms, as the African market currently offers limited returns compared to traditional export destinations.	The risk of export value loss is high, given that many African markets offer lower returns due to weaker currency values and limited purchasing power.
AfCFTA Secretariat and the AU	Support and lead regional integration efforts through a climate-resilient developmental approach.	Advance the objectives of the AU and AfCFTA by increasing intra-African trade in key sectors, particularly manufactured goods, with an emphasis on green manufacturing.	Invest in trade and economic infrastructure to enhance connectivity, competitiveness, and regional integration.	Delays in tariff negotiations will hinder the timely adoption of regional integration measures.	Tariff negotiations are ongoing, with a moderate risk of delays in the adoption of regional integration commitments.
Business (such as iron, steel, aluminium, chemicals)	Promote and facilitate trade by exploring new markets for expansion.	Expanding business opportunities and securing markets across Africa.	Bearing costs associated with logistics and trade facilitation.	Regional entities may be reluctant to trade affected goods under the AfCFTA due to the local currency values not matching those of the EU or US markets.	Weak local currency may prompt firms to seek markets with stronger currencies for better returns.
Labour	Maintain safeguarding measures to protect employment, including facilitating the free and easy movement of workers across the region.	Promote regional trade to drive job creation across the region.	Employment is declining in South African sectors that depend on low-cost, high emission imported products.	Labour is likely to support increased export output, which will create jobs and help mitigate	Given South Africa's high unemployment rate, the labour force is open to new opportunities. Deepening market

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
				negative impacts.	integration within the continent offers more benefits for local South Africans than the associated costs.

This intervention will require the dtic as a key stakeholder to actively promote regional integration with the goal of accelerating the implementation of the AfCFTA, prioritising negotiations in critical sectors such as iron and steel, aluminium, and chemicals. This approach aims to secure and expand markets for South African iron and steel, aluminium, and chemical products, thereby sustaining jobs and livelihoods.

While the EU has historically been the primary market for South African BCA-affected products, losing access to this market and shifting focus towards deeper continental integration may not yield equivalent value for these exports. The risk of export value losses remains high, as many African markets currently offer limited returns compared to traditional export destinations, due to weaker currencies and lower purchasing power.

The AfCFTA Secretariat and the AU are also key stakeholders, tasked with supporting and leading regional integration efforts through a climate-resilient developmental approach. The primary objective is to advance the AU and AfCFTA's goals by increasing intra-African trade in key sectors, specially manufactured goods, with a particular emphasis on green manufacturing. Achieving this will require substantial investment in trade and economic infrastructure to enhance connectivity, competitiveness, and regional integration.

However, delays in tariff negotiations could impede the timely adoption of regional integration measures. While tariff negotiations are ongoing, a moderate risk of delay in implementing regional commitments remains.

Businesses, particularly those in iron, steel, aluminium, and chemicals are essential stakeholders expected to promote and facilitate trade by exploring new markets for expansion. The core benefit lies in expanding business opportunities and securing markets across Africa. Businesses will, however, incur costs associated with logistics and trade facilitation. In addition, regional entities may be reluctant to trade affected goods under the AfCFTA due to disparities in currency values compared to EU or US markets. Weak local currencies may drive firms to seek markets with stronger currencies to secure better returns.

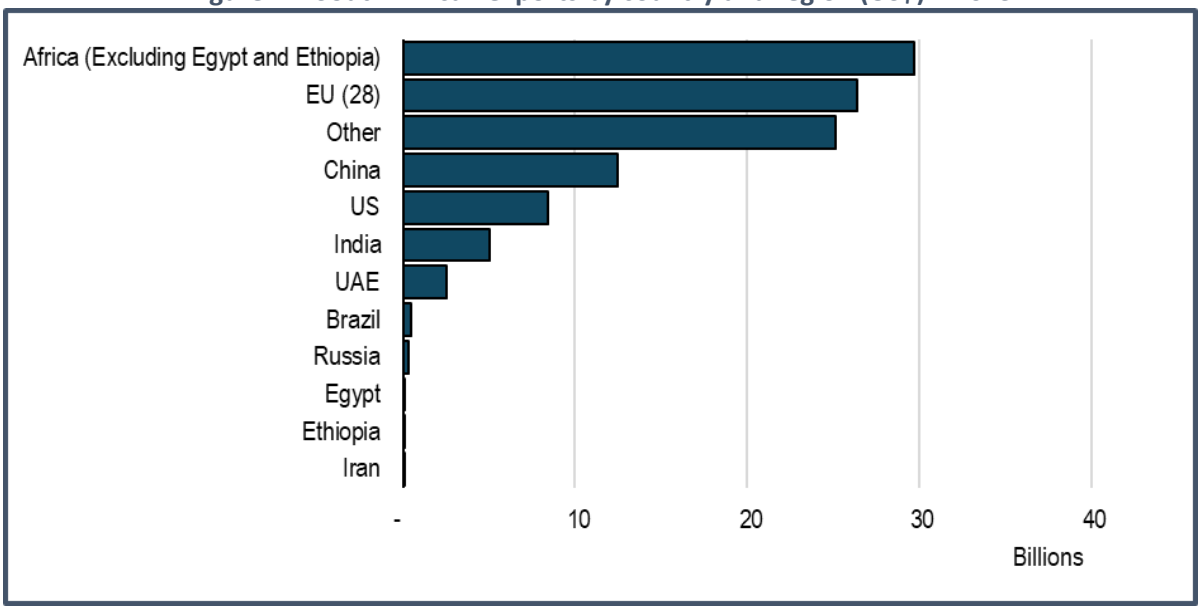
Labour stakeholders require safeguarding measures to protect employment, including facilitating the free and unhindered movement of workers across the region. This would support regional trade and drive job creation. Nevertheless, employment is declining in South African sectors reliant on low-cost, high emission imported products. Labour is expected to support increased export output, which will create jobs and mitigate adverse effects. Given South Africa's high unemployment rate, the labour force is open to new opportunities. Overall, deepening market integration within the continent offers more benefits to local South Africans than the associated costs.

In summary, this intervention is a medium- to long-term solution that necessitates an institutional framework supporting regional integration for effective implementation. The relative risk is moderate, presenting a significant opportunity for Africa to connect its markets and benefit from economies of scale.

2) Strengthen trade ties with BRICS+ countries

South Africa trades more with Africa and the EU, than most of the BRICS+ countries. As reflected in Figure 11, South Africa trades more with Africa, and the EU including the UK. However, with the EU (27) and UK introducing BCAs, the exports to these countries are becoming exposed. The other alternative is to strengthen trade ties with the BRICS+ countries as the relationship strengthen.

Figure 11. South African exports by country and region (US$) – 2023



Source: Authors based on Trade Map (2025). Bilateral trade between South Africa and Africa, BRICS+ countries, US and European Union (EU 28)

Table 20 presents how different stakeholders will be impacted by strengthening trade ties with BRICS+ countries. The table is following by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 20. Socio-economic implications of strengthening trade ties with BRICS+ countries

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	The dtic should facilitate and deepen trade between South Africa and BRICS+ countries, with the primary objective of safeguarding vulnerable exports such as iron ore, steel, and aluminium.	Ensuring that South Africa's BCA-affected goods are not displaced, thereby securing markets and contributing to the protection of livelihoods.	An influx of cheaper imports will undermine local industries, leaving South African firms less competitive in international markets.	The rise in cheaper imports will lead to the shutdown of local firms.	The surge in cheaper imports from China, particularly in the iron and steel industry, is already a major concern. The risk of further disruption is high, and the dtic must proactively present measures to mitigate these impacts.
BRICS+ countries	Introduce reciprocal trade measures to leverage South Africa's critical minerals and BCA-affected exports.	Duty-free or reduced-duty trade, based on reciprocity, can stimulate economic activity	Free trade agreements can carry significant costs, particularly	South Africa faces the risk of unbalanced trade deals, with other	South Africa has entered several unbalanced trade agreements, which risk resulting in

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
		and create jobs for both trading partners.	when involving large economies like China.	BRICS+ countries reaping greater benefits.	significant losses as imports tend to surge following their implementation.
Business (such as iron, steel, aluminium, chemicals)	Aim to secure duty-free export status for BCA-affected goods.	Lower export prices to increase the competitiveness and preference for South African goods within the BRICS+ market.	Address the challenge of cheaper imports from countries like China through reciprocal trade measures.	An influx of cheaper imports in BCA-affected goods.	China is already leading in increasing its low-cost exports to South Africa.
Labour	Maintain safeguarding measures to protect employment, including facilitating the free and smooth movement of workers across BRICS+ countries.	Promote South-South trade to stimulate job creation among partner countries.	Employment is declining in South African sectors reliant on low-cost, high emission imported products.	Labour is likely to support increased export output, fostering job creation and mitigating adverse impacts.	Given South Africa's high unemployment rate, the labour force is receptive to new opportunities. Deepening continental market integration promises greater benefits for local South Africans than the associated costs.

The dtic should actively facilitate and deepen trade between South Africa and BRICS+ countries, with the primary aim of safeguarding vulnerable exports such as iron ore, steel, and aluminium. A key benefit of this approach is ensuring that South African BCA-affected goods maintain secure markets, thereby supporting livelihoods.

However, a major cost risk arises from the influx of cheaper imports, which threatens local industries and undermines the competitiveness of South African firms internationally. This surge in low-cost imports, particularly from China, is already a significant concern in sectors like iron and steel, with a high risk of further disruption. The dtic must present a robust case to mitigate these impacts.

Governments of BRICS+ countries should introduce reciprocal trade measures to leverage critical minerals and BCA-affected exports. Duty-free or reduced-duty trade based on reciprocity can stimulate economic activity and create jobs for both trading partners. Yet, free trade agreements sometimes entail costs, especially when dealing with large economies like China. South Africa faces the risk of unbalanced trade deals with BRICS+ partners, where others may gain disproportionately, leading to surges in imports that threaten local industries.

Affected businesses should strive to secure duty-free export status for BCA-affected goods. This would enable more competitive export pricing and increase the preference for South African products within BRICS+ markets. Trade policies should also address the challenge of cheaper imports from countries such as China through reciprocal measures. The growing influx of low-cost imports across BCA-affected goods, led by China, remains a critical concern.

Labour stakeholders require safeguarding measures to protect employment, including facilitating the free and smooth movement of workers across BRICS+ countries. This cooperation will benefit both South Africa and its BRICS+ partners by promoting South-South trade and driving job creation. While employment is declining in South African sectors reliant on low-cost, high emission imported products, labour is likely to support increased export output, which will create jobs and help mitigate negative impacts. Given South Africa's high unemployment rate, the labour force is open to new opportunities. Deepening market integration within the continent offers greater benefits to local South Africans than the associated costs.

Overall, this intervention is viable in the short to medium term; however, the risk of unbalanced trade agreements remains, which could lead to a surge in cheaper imports from BRICS+ countries and limited gains for South African exports.

3) Expand access to the US market

The two largest markets for South African aluminium exports are the EU and the US, together accounting for over 64% of total exports. With the EU set to introduce a CBAM charge on aluminium imports, South African exports to the EU will become more expensive. Alternative markets primarily exist in jurisdictions that have not yet implemented BCAs. The US remains a key alternative market, despite political uncertainties under President Donald Trump. This intervention proposes that South Africa increase its share of aluminium exports to the EU, complemented by expanded exports of critical minerals.

Table 21 presents how different stakeholders will be impacted by expanding access to the US aluminium market. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 21. Socio-economic implications of expanding access to the US market

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Strengthen trade relations with the US to grow South Africa's aluminium and critical mineral export portfolio.	Maintain access to the US market and enhance South Africa's overall trade performance.	Delays in trade engagement with the US could result in the displacement of South African aluminium exports once the EU fully implements its CBAM.	The volatile political landscape in the US may lead to the rollback of benefits associated with reciprocal trade agreements on critical minerals and aluminium products.	Given the unpredictability of the US political landscape, the risk associated with this intervention remains uncertain.
US government	Establish reciprocal trade agreements covering aluminium and critical mineral exports.	Facilitate reliable access to critical inputs, such as minerals and aluminium for the US economy.	Security concerns may deter the US from engaging with South Africa, limiting trade relations and potentially resulting in the loss of critical mineral export opportunities.	The US has raised concerns about security and racial discrimination, which could lead to reduced engagement or delays in engaging with the South African trade delegation.	Perceived security threats in the US contribute to the unpredictability of the political landscape, making risk assessment uncertain.
Business (such as iron, steel,	Support trade engagements with	Sustained access to	Investment to expand capacity	US firms may hesitate to	The risk for this stakeholder is

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
aluminium, chemicals)	the US by supplying detailed information on the quantity and quality of critical minerals and aluminium products available for export.	the US market, ensuring ongoing profitability for South African firms.	for aluminium exports.	engage with South African companies due to security concerns in South Africa.	uncertain, as it largely depends on decisions made by the US government.
Labour	Back policy initiatives and trade agreements involving the US.	Job creation driven by the expansion of aluminium and critical mineral exports.	The US may impose higher tariffs on South African aluminium products, restricting current export volumes and causing job insecurity within South Africa's aluminium industry.	Higher tariffs could result in job losses and displacement of South African aluminium exports.	The risk of increased tariffs on aluminium remains uncertain amid ongoing US tariff disputes with China.

The dtic could pursue targeted trade engagements with the US to expand South Africa's aluminium and critical mineral exports. This would help sustain market access to the US while enhancing South Africa's trade balance. However, delays in initiating such engagements may result in the displacement of South African aluminium exports, especially once the EU fully implements its CBAM.

While the US presents a viable alternative market, the political landscape remains volatile, particularly under the leadership of President Donald Trump. This unpredictability poses a significant challenge to long-term trade planning, making the risk assessment for this intervention uncertain. Moreover, the US has previously raised concerns around security and governance in South Africa, which could affect the willingness of the US government to pursue reciprocal trade agreements.

A key requirement for this intervention's success is the establishment of reciprocal trade agreements between the US and South Africa, specifically covering aluminium and critical minerals. The benefit for the US lies in securing access to essential inputs for its manufacturing sectors. However, if geopolitical or security-related concerns persist, the US may hesitate to formalise such agreements, limiting South Africa's ability to diversify export markets for these strategic products.

BCA-affected businesses would need to actively support trade negotiations by providing detailed information on export potential, including the quantity and quality of aluminium and critical mineral products. The main benefit would be sustained profitability and expanded capacity in response to reliable market access. However, US firms may still choose not to engage with South African counterparts, citing security or governance concerns. As engagement depends heavily on US government policy, the associated risk remains uncertain.

Labour support for trade agreements with the US is crucial. Expanded exports would likely generate employment in aluminium and mining sectors. However, there is a risk that the US could impose higher tariffs on South African aluminium, especially in the context of ongoing global tariff disputes, including with China. Such tariffs could reduce export volumes, heighten job insecurity, and disrupt local livelihoods.

Overall, this intervention presents a potentially valuable opportunity to sustain and grow South African exports of aluminium and critical minerals. However, its success hinges on the stability of US political commitments and the willingness to enter reciprocal trade agreements. The associated risks, rooted in political volatility, perceived security concerns, and tariff unpredictability, render the overall outlook uncertain. Nevertheless, a more stable and cooperative US policy environment could significantly enhance export performance and safeguard jobs in South Africa.

4) Stimulate domestic demand

Another alternative trade intervention is to stimulate domestic demand through localisation mechanisms in sectors affected by BCAs. Initiatives such as the new build programme present an opportunity to drive demand for locally produced steel, cement, chemicals, and aluminium. To maximise their impact, these programmes should include robust localisation requirements, particularly in strained sectors like steel, to ensure that increased demand translates into tangible support for domestic industries.

Table 22 presents how different stakeholders will be impacted by stimulating South African domestic demand, through localisation requirements. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 22. Socio-economic implications of stimulating South African domestic demand

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Enforce localisation measures, including designation and selective tariffs, to stimulate domestic production and demand.	Boost local demand by creating jobs and fostering a more competitive industrial landscape, while simultaneously expanding capacity in BCA-affected sectors.	Carefully balance the trade-offs between implementing protectionist policies and meeting existing local demand.	The rise in cheaper imports risks undermining efforts to boost local production and stimulate domestic demand.	Programmes such as new-build initiatives carry a high risk of undermining their own objectives if businesses opt for cheaper imports to reduce costs.
Localisation Support Fund (LSF)	Support efforts to strengthen local demand in industries affected by the BCAs.	Help fulfil the LSF's mandate.	Allocate funding to support localisation initiatives aimed at boosting domestic demand.	The LSF may face funding constraints that limit its ability to effectively boost local demand in BCA-affected industries.	As a donor-dependent organisation, the LSF may struggle to secure additional support for localisation initiatives beyond funding from the dtic.
Business (such as iron, steel, aluminium, chemicals)	Predictable and stable policy environment ensured by the South African government.	Supporting ongoing business operations and the recovery of sustained demand.	Costs of adjustment coupled with delays in achieving policy certainty.	Rising influx of inexpensive imports due to improper localisation implementation.	Cheaper imports erode profitability, and this risk is heightened given South Africa's existing heavy reliance on

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
					low-cost imports.
Downstream industries (construction)	Policy certainty from the South African government.	Locally sourced, affordable, and readily available input materials.	Incurred adjustment costs alongside prolonged waiting periods for inputs.	Extended delays in policy change led to increased reliance on cheaper, readily available imported inputs.	Cheaper imports undermine profitability, and this risk is particularly high given South Africa's existing dependence on low-cost imports.
Labour	Support for policy change.	Job creation through localisation	An increase in imports driven by stimulated local demand may lead to job losses in sectors that are difficult to restructure.	Growing import volumes due to ineffective localisation requirements.	Boosting local demand carries a high risk of increasing cheaper imports, which could limit job creation in the affected industries.

The dtic should implement localisation requirements, such as product designation and targeted tariffs, to stimulate local demand, promote job creation, and enhance competitiveness in sectors affected by the BCAs. Done well, this could increase domestic industrial capacity in these sectors.

However, the associated costs and risks are significant. A key trade-off lies in managing protectionist measures alongside existing local demand. Without careful implementation, these measures could be undermined by an influx of cheaper imports, especially as businesses seek to cut costs. This risk is particularly acute in initiatives like the new-build programme, which may unintentionally favour imports over local procurement, thereby weakening the localisation agenda.

The LSF could also play a critical role in supporting demand in BCA-affected industries. Benefits include fulfilling its mandate to drive localisation. However, as a donor-dependent entity, the LSF may face financial constraints, limiting its ability to provide sustained support. Without broader fiscal backing, its impact may remain limited to dtic-funded initiatives.

Affected businesses (such as iron, steel, aluminium, chemicals), will require strong policy certainty from the South African government to enable investment and long-term planning. The benefits include business continuity and renewed demand. Yet, businesses will face adjustment costs and may experience delays while awaiting clear policy frameworks. If localisation is poorly implemented, increased exposure to cheap imports could erode profitability, an especially critical risk in South Africa's already import-heavy market.

Downstream players also need predictable policy environments. If localisation supports the availability of competitively priced, locally sourced inputs, the benefits could be significant. However, during the transition, firms may face higher input costs and potential supply disruptions. This could push them toward cheaper imports, further undermining local value chains.

Workers and unions are likely to support policies that promise job creation. Properly structured localisation could deliver employment growth, especially in manufacturing. Still, if increased demand

merely results in higher imports due to gaps in local capacity, job losses may occur, particularly in sectors where structural change is slow or unfeasible.

While boosting local demand through localisation measures is a sound policy objective, poor design and implementation risk undermining the intended outcomes. South Africa's high exposure to cheap imports amplifies these risks. To ensure high-impact and inclusive industrial outcomes, localisation efforts must be carefully calibrated, well-funded, and accompanied by clear, consistent policy signals.

5) Near-shore carbon-intensive manufacturing

While about 600 million Africans still lack electricity access, several African countries have a substantial share of renewable energy in their generation mix, largely from hydro power. These include Ethiopia (100%), Uganda (98%), Burundi (95%), Zambia (92%), Kenya (88% split between geothermal and hydro), Democratic Republic of Congo (96%), Malawi (87%), Mozambique (85%), Tanzania (70%) and Rwanda (60%) (Armstrong, 2022). African countries are also increasing their investments in clean energy and reducing their investments in the fossil fuel energy. It is estimated that Africa's renewable energy investments increased from under US$500 million in 2010 to US$5 billion dollars in 2020 (UN Climate Summit, 2023).

While the introduction of BCAs is increasingly becoming a normal, other African countries have important markets and opportunities for nearshoring – moving businesses to nearby countries for strategic reasons.

The Brazilians introduced a concept called powershoring. Powershoring refers to the decentralisation of production to countries that offer clean, safe, cheap and abundant energy and are close to consumption centres. South Africa is carbon-intensive and the introduction of measures such as BCAs, will limit the exportation of the BCA covered goods. The cheaper yet socially expensive alternative could be moving carbon intensive manufacturing facilities such as steel, fertilisers, cements and aluminium to nearby countries with cleaner energy sources. This should be done in a way that does not violate trade rules under the WTO.

Table 23 presents how different stakeholders will be impacted by moving carbon-intensive production facilities to nearby countries that have abundant renewable energy sources such as Zimbabwe, Mozambique, Malawi. The table is a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 23. Socio-economic implications of near-shoring (powershoring) carbon-intensive manufacturing

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
The dtic	Enhance regional integration by relocating carbon-intensive production facilities within the region.	Leverage the advantages of regional agreements, such as the SACU, to promote the integration of Member States into the global economy through increased trade and investment.	Regional integration strategies that involve relocating iron and steel, aluminium, chemicals, and cement industries to neighbouring countries could lead to a decline in South Africa's economic vitality.	While regional integration is often seen as a panacea in Africa, the relocation of key industries from South Africa to neighbouring countries may prove challenging to achieve.	The implementation of the AfCFTA has already faced significant challenges, and the likelihood of successfully relocating carbon-intensive production processes to neighbouring

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
					countries remains low.
Regional bodies and countries (such as SACU, Zimbabwe, Mozambique, Malawi)	Accelerate regional integration efforts by prioritising climate and trade issues on regional agendas.	Accelerate regional integration by prioritising climate and trade issues on regional agendas, supported by additional funds raised through customs, excise, and other duties levied by Member States.	There is a trade-off in economic vitality between countries, some may experience long-term gains, while others could face losses.	Most regional countries currently lack the industrial capacity to produce carbon-intensive goods covered by BCAs.	Regional countries currently lack the industrial capacity, and the establishment of new industries faces a high risk of not taking off.
Business (such as iron, steel, aluminium, chemicals)	Amid export restrictions on BCA-covered goods, affected firms will need to seek alternative production centres, which will require an improved ease of doing business in neighbouring countries.	Affected businesses will safeguard their operations by relocating to regions that employ cleaner production processes.	Businesses will incur relocation costs as well as higher expenses associated with operating in new countries.	Regional countries with higher ease of doing business rankings generally lack abundant clean energy resources that could support this intervention. According to the World Bank's Doing Business 2020 data, only Mauritius (13) and Rwanda (38) rank within the top 50 among Sub-Saharan African economies. Other major economies in the region include Kenya (56), South Africa (84), Ghana (118), Nigeria (131), and the Democratic Republic of Congo (183).	The challenging business environments in countries like Zimbabwe (ranking 140), Malawi (109), and Mozambique (138) pose significant obstacles to relocating carbon-intensive production processes to these locations.
Downstream industries	Require clean products or components for their manufacturing as clean production methods gain momentum,	The domestic iron and steel industry is struggling to adapt to structural challenges, which has significant impacts on local downstream sectors like	Downstream industries will face adjustment costs, as new firms still need to be established. In the short term,	As businesses relocate, downstream industries will experience an adjustment period marked by	Imports of carbon-intensive products have already begun to rise, elevating the associated risk.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
	preferably sourced regionally.	automotive. Promoting regional integration by relocating carbon-intensive industries to cleaner production facilities will enable timely access to cleaner input materials and components.	these industries may have to switch suppliers, potentially incurring higher expenses compared to sourcing from local manufacturers.	increased imports. Consequently, firms that previously sourced inputs from local carbon-intensive production processes will need to import these materials from other countries.	For further details on the limitations of carbon-intensive imports, see the section on limiting the importation of carbon intensive imports.
Labour	Maintain safeguarding measures to protect employment, which could include facilitating the ease and freedom of movement for workers across the region.	Promote regional trade and job creation within the region.	Employment is declining in South African sectors reliant on low-cost, high emission imported products.	Labour is unlikely to support the relocation of industries to neighbouring countries while South Africa continues to face structural employment challenges.	South Africa's current high unemployment rate makes relocating jobs to other countries untenable, maintaining a very high risk that carbon-intensive production facilities cannot be moved to neighbouring countries.

The proposal to relocate carbon-intensive production facilities to neighbouring countries will require the dtic to strengthen regional integration through powershoring. This involves moving such facilities to countries like Zimbabwe, Malawi, and Mozambique. The intervention aims to leverage the benefits of regional agreements, such as SACU, which promote Member States' integration into the global economy by enhancing trade and investment.

However, regional integration strategies that involve shifting industries such as iron and steel, aluminium, chemicals, and cement to neighbouring countries risk undermining South Africa's economic vitality. Despite regional integration often being viewed as a panacea in Africa, relocating key industries from South Africa to nearby countries remains a challenging goal. The difficulties with implementing the AfCFTA further highlight this challenge. Consequently, the risk of failing to relocate carbon-intensive production processes to neighbouring countries remains high.

This intervention will also require regional countries to fast-track dialogues on integration, with an initial focus on incorporating climate and trade issues into their agendas. SACU would oversee these efforts, supported by additional revenue generated through customs, excise, and other duties levied by Member States. A critical trade-off exists in economic vitality among countries, South Africa is expected to incur significant losses, while other countries may realise long-term gains through industrialisation. Most regional countries currently lack the industrial capacity to produce the carbon-intensive goods covered by BCAs. Establishing new industries in these countries carries a high risk of failure due to limited infrastructure and capacity.

Affected firms facing export restrictions on BCA-covered goods will need to identify alternative production centres. This requires an improved ease of doing business in neighbouring countries to attract such firms. Businesses aiming to secure their operations may relocate to regions with cleaner production processes but will incur relocation costs and higher operational expenses in new countries.

The regional countries with higher ease of doing business rankings generally do not have abundant clean energy resources critical for this intervention. According to World Bank Doing Business 2020 data, only Mauritius (rank 13) and Rwanda (rank 38) are in the top 50 among Sub-Saharan African economies. Other large economies include Kenya (56), South Africa (84), Ghana (118), Nigeria (131), and the Democratic Republic of Congo (183). Countries such as Zimbabwe (140), Malawi (109), and Mozambique (138) rank lower, which would impede efforts to relocate carbon-intensive production to these locations.

While most affected firms are upstream producers, downstream industries will also be impacted. These industries will increasingly require clean products and components for manufacturing, as global momentum shifts toward cleaner production methods, preferably sourced regionally. South Africa's domestic iron and steel industry for example is struggling with structural challenges, heavily impacting downstream sectors such as automotive. Promoting regional integration by relocating "dirty" industries to cleaner production facilities would enable timely access to cleaner input materials and components.

However, downstream industries will face adjustment costs. New firms need to be established, and, in the short term, these industries may have to switch suppliers, often at higher costs than sourcing from local manufacturers. Increased imports in downstream sectors are expected during this adjustment period as firms transition from local carbon-intensive inputs to imports from other countries. In fact, imports of carbon-intensive products have already begun to rise, heightening associated costs.

Labour's primary concern is job security. Safeguarding employment will require measures such as facilitating the ease and freedom of movement for workers across the region, supporting regional job creation. Nevertheless, this intervention may lead to employment declining in sectors dependent on low-cost, high emission imported products in South Africa. Labour is unlikely to support the relocation of industries while the country faces structural employment challenges. Given South Africa's current high unemployment rate, moving jobs to other countries is not a viable option, which further elevates the risk that carbon-intensive production facilities cannot be relocated successfully.

This intervention carries high risks with minimal short-term benefits. The trade-offs between costs and gains reveal a substantial gap that must be addressed. Powershoring should therefore be viewed as a longer-term strategic regional initiative. For South Africa, in the near term, this intervention primarily presents risks and costs, with limited immediate benefits.

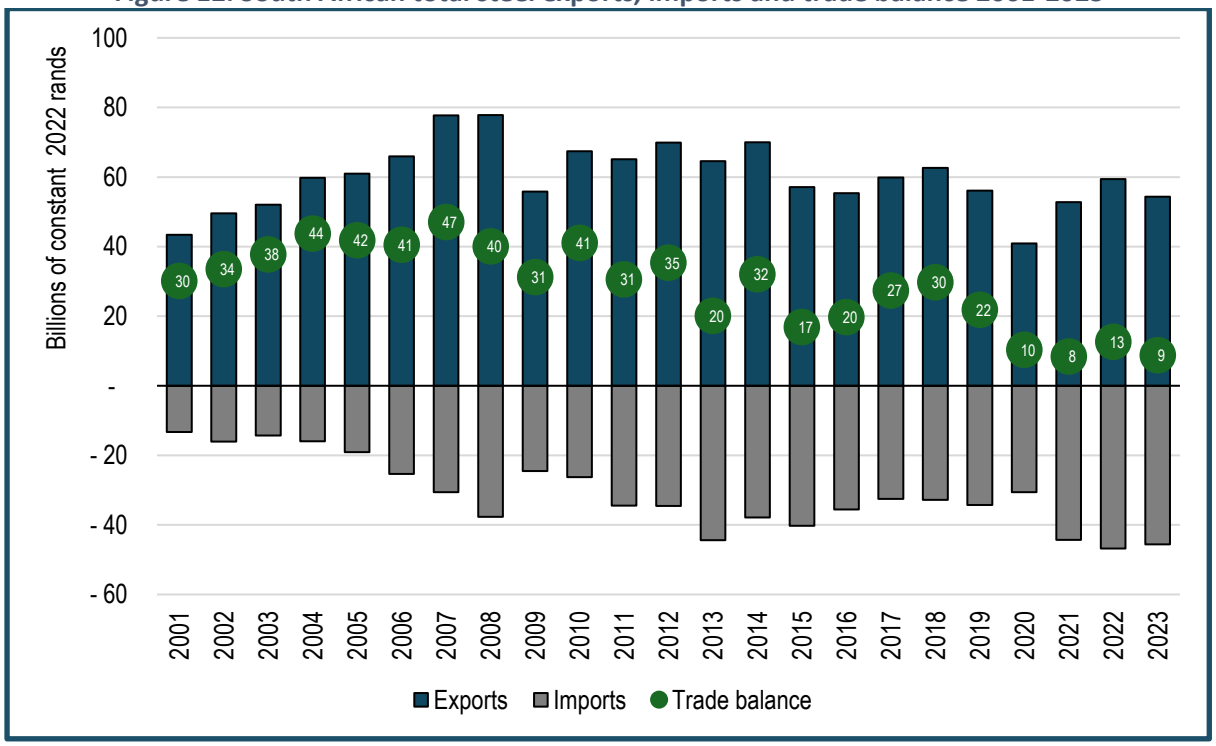
6) Limit importation of carbon-intensive products

Iron, steel, and aluminium products are expected to be the most affected by BCAs in South Africa. While aluminium is primarily an export-oriented sector with relatively low import levels, carbon leakage is becoming a growing concern in the iron and steel market. In recent years, South Africa has witnessed a notable increase in imports of carbon steel.

As shown in Figure 12, South Africa's steel trade performance has historically remained steady and positive, maintaining a trade surplus since 2001. However, this trade balance has gradually deteriorated over time, largely due to rising imports. The steel trade surplus declined from R30 billion in 2001 to R9 billion in 2023 (in constant 2022 prices), representing a 71% decrease. This trend was exacerbated in the post-COVID-19 period, during which steel imports surged (see Figure 13), placing significant pressure on domestic steel producers.

The increase in steel imports, primarily from China, prompted AMSA, in collaboration with SAISI, to request a temporary 9% ad valorem duty on imports of hot-rolled steel products. This provisional measure, effective from 5 July 2024 to January 2025, is in place while authorities assess whether a longer-term safeguard is warranted to address the surge in imports (ITAC, 2024).

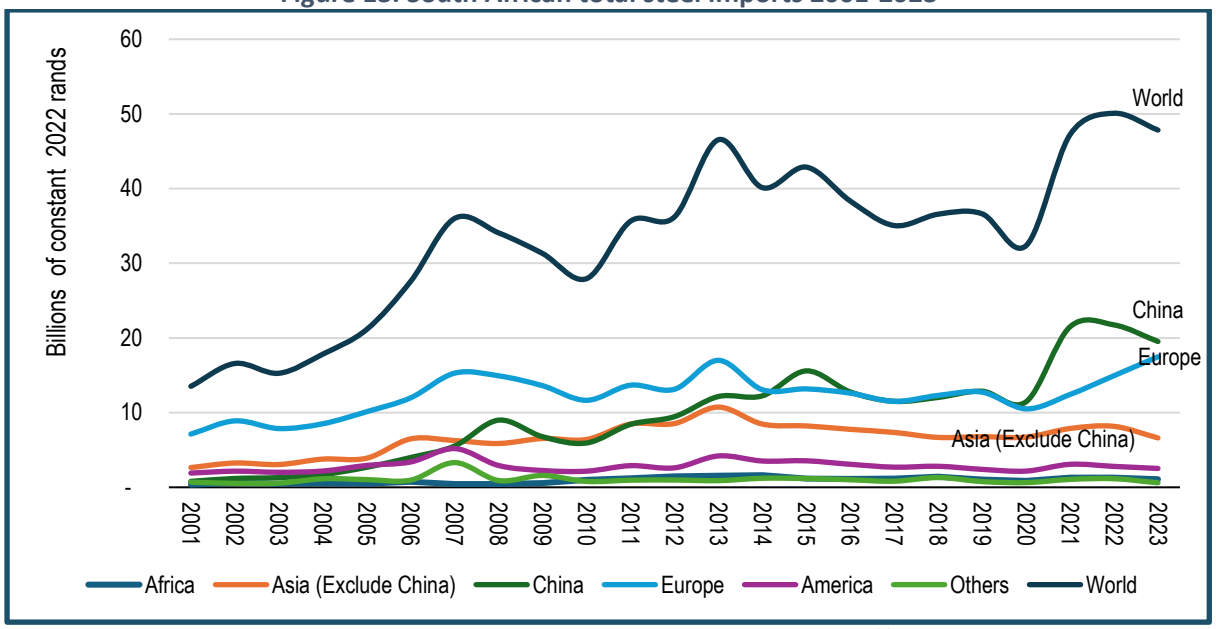
Figure 12. South African total steel exports, imports and trade balance 2001-2023



Source: Calculated from ITC Trade Map (2024). Data downloaded from https://www.trademap.org. Prices are rebased to 2022 using Stats SA's CPI data, 2001 to 2023. *Note*: Steel products include iron and steel (CN Code 72 and exclude ferro alloys – 7202) and articles of iron and steel (CN Code 73).

In 2023, South Africa imported R47 billion worth of steel products, in constant 2022 terms. There was a big jump from 2001 of R13 billion, reflecting around 254% increase in imports from 2001. (Figure 6) South Africa continues to import steel from China and Europe. While imports from Europe and China have been steady over time, the Chinese and European imports have increased post-COVID-19 at an all-time high since 2001. However, Chinese imports in 2023 slowed down, but are still higher than Europe's steel imports to South Africa. Chinese steel imports to South Africa almost doubled from 2019 to 2022, jumping from R13 billion in 2019 to R22 billion in 2022, in constant 2022 terms. European imports of steel continued to rise – in 2019 steel imports from Europe to South Africa were R13 billion, and in 2023 the steel imports amounted to R18 billion, in constant 2022 terms.

Figure 13. South African total steel imports 2001-2023



Source: Calculated from ITC Trade Map (2024). Data downloaded from https://www.trademap.org. Prices are rebased to 2022 using Stats SA's CPI data, 2001 to 2023. Note: Steel products include iron and steel (CN Code 72 and exclude ferro alloys – 7202) and articles of iron and steel (CN Code 73).

Amid the rising steel imports, Table 24 presents how different stakeholders will be impacted by the limitation of carbon-intensive imports. The table is followed by a detailed cost, benefit and risk analysis of this intervention by key stakeholders.

Table 24. Socio-economic implications of limiting importation of carbon-intensive imports

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
ITAC	Safeguard measures to protect the domestic iron and steel industry.	Protect jobs, safeguard the domestic iron, and steel industry from high-carbon ("dirty") steel imports, helping to prevent carbon leakage.	A trade-off will be necessary between protecting local industries and allowing the entry of cheaper, carbon-intensive steel products into South Africa.	Safeguard measures could negatively impact local industries that rely on cheaper, carbon-intensive imports, potentially leading to job losses and business closures.	ITAC is known for lengthy decision-making processes, for example, the safeguard measures took between 18 and 24 months to implement. Such delays in introducing protective measures for industries like iron and steel, especially amid the growing adoption of BCAs, could have detrimental effects on the South African economy.
The dtic	Strengthening support for ITAC's	Prevent South Africa from	Same as above.	Same as above.	The dtic currently

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
	safeguard actions should be accompanied by efforts to expedite its tariff review processes through increased institutional oversight and accountability.	becoming a destination for carbon leakage.			demonstrates limited awareness of the intersection between climate and trade. The department must be better informed about the costs and risks associated with emerging climate and trade policies, in order to take proactive action and exert greater pressure on its implementing agencies, such as ITAC.
Business (iron and steel entities and associations)	Advocate for stronger safeguard measures to prevent South Africa from becoming a site of carbon leakage.	Affected industries are protected from external climate and trade policies, helping to preserve jobs.	Businesses impacted by these changes must begin investing in cleaner production methods and adjust pricing strategies to benefit the local market.	Reducing prices and adopting cleaner production practices will take time and thus are not immediate remedies. Consequently, the risk of market disruption from safeguard measures remains high.	Technology readiness in South African industries remains largely aspirational. The risk of reducing costs and investing in cleaner technologies is high, as most firms, particularly in the iron and steel sector, are prioritising short-term survival over long-term investments.
Downstream industries	Cost-effective steel alternatives, ideally produced within the local industry.	Industries receiving protection must lower their costs to compete with sectors reliant on low-cost, high-emission products, simultaneously providing cleaner, cost-effective, and accessible solutions.	Curtailing imports of low-cost, high-emission products will lead to significant adjustment costs for firms reliant on them, including bearing higher prices initially, with the hope	Reducing prices within South African industries is a distant and long-term objective. The sector continues to face rising operational costs due to declining economic infrastructure,	The potential for cost reductions among local producers is constrained by the continued deterioration of economic infrastructure, despite some slow progress toward improvement.

STAKEHOLDERS	IMPLEMENTATION REQUIREMENTS	BENEFITS	COSTS	RISKS	OVERALL LEVEL OF RISK AND IMPACT
			of gradual reductions in the future.	making short-term cost reductions improbable.	
Labour	Safeguarding employment through raising awareness and pushing for limits on imports of low-cost, high-emission goods.	Maintaining employment levels in industries impacted by economic or policy changes.	Employment declines in sectors dependent on low-cost, High-emission imported products.	Failure to safeguard South African industries may result in the influx of low-cost, high-emission imports that threaten the viability of local enterprises and employment.	Ongoing imports of low-cost, high-emission products, coupled with slow policy responses, threaten employment in vulnerable sectors. Based on South Africa's track records in enacting safeguard measures, the risk of delayed action remains significant.

ITAC, the first key stakeholder, promptly introduce safeguard measures to protect the domestic iron and steel industry. The primary benefits of such measures include preserving jobs and shielding the local sector from high-carbon ("dirty") steel imports, thereby helping to prevent carbon leakage.

However, implementing these safeguards requires navigating a trade-off between protecting local industries and allowing the entry of cheaper, carbon-intensive steel products into South Africa. Safeguard measures may inadvertently harm downstream industries reliant on low-cost, high-emission imports, potentially causing job losses and business closures.

ITAC is known for its protracted decision-making process; for example, the safeguard measure detailed in Table 24 took between 18 and 24 months to implement. Such delays, particularly amid the increasing adoption of BCAs internationally, risk causing significant harm to the South African economy.

The dtic should therefore strengthen its support for ITAC's safeguard actions by expediting tariff review processes through enhanced institutional oversight and accountability. This approach aims to prevent South Africa from becoming a destination for carbon leakage.

Currently, the dtic demonstrates limited awareness of the complex intersection between climate policy and trade. The department must be better informed about the costs and risks associated with emerging climate and trade policies to act proactively and exert stronger pressure on its implementing agencies, such as ITAC.

Affected industries, especially iron and steel, should actively advocate for stronger safeguard measures to prevent South Africa from becoming a hotspot for carbon leakage. Such protection could help shield these industries from external climate and trade policies, thereby preserving employment.

However, businesses impacted by these changes must also begin investing in cleaner production methods and adjust pricing strategies to remain competitive in the local market. As reducing prices and adopting cleaner technologies requires significant time and investment, they are not immediate solutions. Consequently, the risk of market disruption due to safeguard measures remains high.

Technology readiness in South African industries remains largely aspirational. The challenge of lowering costs and investing in cleaner technologies is significant, as most firms, particularly in the iron and steel sector, are focused on short-term survival rather than long-term sustainability.

Businesses currently benefiting from imports of cheaper steel (downstream industries) will require cost-effective alternatives ideally produced within the local industry. Protected industries must lower their costs to compete with sectors reliant on low-cost, carbon-intensive products, while simultaneously offering cleaner, affordable, and accessible solutions.

Curtailing imports of low-cost, high-emission products will, however, impose significant adjustment costs on firms dependent on them. These businesses will face higher prices initially, with the expectation that costs will gradually decrease over time.

Reducing prices in South African industries remains a long-term objective. The sector continues to struggle with rising operational costs driven by declining economic infrastructure, making short-term cost reductions unlikely. Although there are signs of gradual infrastructure improvements, the overall risk to cost reduction efforts remains high.

Efforts to safeguard employment include raising awareness and advocating for limits on imports of low-cost, high-emission goods. This approach helps maintain employment levels in industries affected by economic and policy changes. Nevertheless, sectors dependent on cheap, carbon-intensive imports may face employment declines.

Failure to protect South African industries could lead to an influx of low-cost, high-emission imports that threaten the viability of local businesses and jobs. Given the slow pace of policy responses historically, the risk of delayed action remains substantial.

Overall, the risk of this policy option remains high, as it requires balancing the deteriorating economic infrastructure with the need to safeguard industries. Safeguard measures must carefully consider socio-economic implications. Although this may be viewed as a medium- to long-term intervention, it will have immediate ramifications, and these trade-offs must be thoughtfully managed.

ASSUMPTIONS

The above options assume that: (i) the necessary institutional arrangements are established to drive South Africa's response to BCAs and other adverse global climate and trade policies; and (ii) there is a drive towards increased awareness on issues of climate and trade.

1) Institutional arrangements established

From an institutional capacity perspective, a SPA should be established within a relevant government department to respond to BCAs, preferably within the dtic. This SPA will also coordinate actions within affected industries, across affected industries, and between industry and government. In addition to establishing the SPA, the institutional body must be empowered to act. This should increase coordination within industry and between industry, labour and government.

2) Targeted awareness drive

Industry, government, and other relevant stakeholders are becoming increasingly aware of climate and trade policies. A coordinated awareness campaign should be launched to enhance understanding of the risks, requirements, and implementation demands associated with these policies, particularly for key stakeholders such as government entities and affected industries.

Initiatives like technical workshops and media engagement through opinion pieces can support deeper knowledge sharing. Awareness-raising efforts should aim to foster clarity and policy coherence around BCAs and related climate-trade measures, especially in relation to major and emerging trade partners. This will require implementing agencies to develop a strong grasp of BCA requirements. Existing institutions, including research bodies, the Presidential Climate Commission (PCC), and industry associations, can be mobilised to support government departments in this effort.

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CLIMATE COMMISSION
TOWARDS A JUST TRANSITION

14a Jellico Avenue, NEDLAC House, Rosebank

PO Box 1775, Saxonwold, 2132

info@climatecommission.org.za

@ClimateCommission

@ClimateZA

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Www.climatecommission.org.za