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# THE EUROPEAN GREEN DEAL: CONTEXT, CHALLENGES AND OPPORTUNITIES FOR SOUTH AFRICAN SMEs OPERATING IN THE GREEN ECONOMY

## EU Post Covid-19 Trade Support

## Final Research Report

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## ABSTRACT

The European Green Deal (EGD) looks to set to accelerate the already rapid pace of change in the European economy. South African exporters to the European Union (EU) will need to adapt to this change, to assure their long-term competitiveness in a changing market. This study provides an initial look at the EGD and its potential implications for South African trade with the EU. The particular proposed headline initiative of the EGD in the form of a Carbon Border Adjustment Mechanism (CBAM) is unpacked more specifically in this study, while an analysis of potential opportunities to expand trade with the EU associated broader “environmental goods” products are also highlighted.

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## ABBREVIATIONS

| | |
|---|---|
| APDP | Automotive Production and Development Programme |
| BACI | Base pour l'Analyse du Commerce International (International Trade Database at the Product Level) |
| BELN | Botswana, Eswatini, Lesotho and Namibia |
| CAP | Common Agricultural Policy |
| CBAM | Carbon Border Adjustment Mechanism |
| CEAP | Circular Economy Action Plan |
| Cefic | European Chemical Industry Council |
| CEMBUREAU | European Cement Association |
| Cepi | Confederation of European Paper Industries |
| CEPII | Centre d'Études Prospectives et d'Informations Internationales |
| CLEG | Combined List of Environmental Goods (OECD) |
| CLEG-E | Combined List of Environmental Goods (OECD) Extended |
| CLP | Classification, Labelling and Packaging |
| COP | Conference of the Parties |
| CTLF | Clothing, textiles, footwear and leather |
| dtic (the) | Department of Trade, Industry and Competition |
| EC | European Commission |
| EGD | European Green Deal |
| EIB | European Investment Bank |
| EIP-AGRI | European Innovation Partnership for Agriculture |
| EPA | Economic Partnership Agreement |
| ETS | Emissions Trading System |
| EU | European Union |
| EUROFER | European Steel Association |
| EV | Electric Vehicles |
| FtF | Farm-to-Fork (Strategy) |
| GDP | Gross Domestic Product |
| GHG | Greenhouse Gas |
| GND | Green New Deal |
| GVCs | Global Value Chains |
| ICE | Internal Combustion Engines |
| ICT | Information and Communications Technology |
| IPAP | Industrial Policy Action Plan |
| ITC | International Trade Centre |
| MEA | Multilateral Environmental Agreements |
| MNCs | Multinational companies |

| | |
|---|---|
| MRL | Minimum Residual Levels |
| NDC | Nationally Determined Contribution |
| OECD | Organisation for Economic Co-operation and Development |
| OEM | Original Equipment Manufacturer |
| PGMs | Platinum Group Metals |
| PV | Photovoltaic |
| RCA | Revealed Comparative Advantage (index) |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals |
| REIPPPP | Renewable Energy Independent Power Producer Procurement Programme |
| RIS | Reimagined Industrial Strategy |
| RTA | Revealed Trade Advantage |
| SACU | Southern African Customs Union |
| SARS | South African Revenue Service |
| SDL | Skills Development Levy |
| SMEs | Small and Medium-sized Enterprises. |
| STEM | Science, Technology, Engineering and Mathematics (education) |
| TRADE-DSM | TRADE Decision Support Model |
| TFEU | Treaty on the Functioning of the European Union |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| WTO | World Trade Organization |

# EXECUTIVE SUMMARY

## What is the European Green Deal?

The European Green Deal (EGD) is a is a set of policy initiatives by the European Commission (EC) with the overarching aim of making Europe climate neutral by 2050. These policy initiatives aim to make all sectors of the European Union's (EU) economy fit to contribute to the EU reaching its climate targets by 2030 in a fair, cost-effective and competitive way. The EGD proposes several action plans and initiatives in priority areas, which include energy, land, biodiversity, clean air, sustainable foods and buildings, among others.

## Why the EGD?

The EGD is critical to the EU's green agenda, and the EU is committed to ensure that the EU is the global leader in mitigating climate change. It is envisaged that the EU policies on climate change and the envisaged new climate law will be the framework for other countries to emulate and follow beyond their Nationally Determined Contributions (NDCs) in line with the Paris Agreement. In 2020, countries updated their NDCs and the COP26 climate conference, in November 2021, will provide an opportunity to assess the aggregated effect of these updates. It will also provide an opportunity to assess how countries view the EGD.

## How will the EGD work and what is the Carbon Boarder Adjustment Mechanism (CBAM)?

The Carbon Boarder Adjustment Mechanism (CBAM) is one of the headline initiatives under the EGD. The CBAM aims to mitigate carbon leakage, whereby EU producers are at risk of losing market share to producers with less strict carbon regulations. The CBAM will mirror the EU Emissions Trading System (ETS) by applying an equivalent regime on imports. It will come into effect in January 2023 and will initially apply to direct emissions from the iron and steel, cement, fertiliser, aluminium and electricity generation sectors. The CBAM will have a transitional period, between 2023 and 2026, during which the burden on importers will be administrative rather than financial. Once the transitional period is over, importers will have to purchase CBAM certificates. One certificate represents a tonne of carbon dioxide emissions embedded in goods. The price of the certificates will be linked to the average price of carbon permits under the EU ETS. Once the CBAM becomes operational in 2026, the EU ETS will be revised, in particular the reduction of available free allowances in sectors covered by the CBAM. Although the European Parliament has adopted the resolution in support of the CBAM, it still requires the approval of the European Parliament and the European Council before it comes into effect.

## Why is the EGD important?

The EGD and its specific policies, regulations and measures will have an impact on the EU's trading relationship with third-country partners. The Southern African Development Community (SADC) EPA group is no exception and impact will vary according to country and specific products. The EU SADC-EU EPA is an important agreement that determines how the EU and SADC EPA countries (Botswana, Lesotho, Mozambique, Namibia, South Africa, and Eswatini ) trade. Given that South Africa is the largest trading partner with the EU, it will therefore be affected the most if there are any changes to the trading requirements or regulations. Agricultural products, motor vehicles, critical resource material inputs, carbon intense primary resources and packaging, among others,

will be impacted. The impact can either be positive or negative and it is therefore crucial for South Africa and the other SADC EPA countries to be prepared.

As part of the Farm-to-Fork (FtF) Strategy, the EU aims to become a leader in setting sustainable global food standards. Compliance with these standards as a condition for accessing the European market could constitute additional non-tariff barriers for African agriculture exports to the EU.

The EGD aims to scale commercial applications of breakthrough green technology innovations and create corresponding markets to secure advantage over competitors in the United States and China. African countries will struggle to adopt these emerging green technologies, some of which are still costly. However, competition between producers, especially the EU and China, could lead to early price decreases and could enable African countries proactively negotiate skills, knowledge and technology transfer, and the localisation of jobs around these new technologies.

The Circular Economy Action Plan (CEAP) aims to reduce material throughput by reusing and recycling materials. For some sectors in African countries, this could present new economic opportunities. Re-localising part of the circular economy value chain to African producers could strengthen manufacturing, allowing African businesses to engage in higher-value activities. It is important to align the EU's circular economy plan with existing African initiatives, such as the African Circular Economy Alliance founded by Nigeria, Rwanda, and South Africa. Europe's plans to use decarbonized gas as a transition fuel present some opportunities for African gas producers such as Mozambique. This forms part of the industrial development and transformation agenda for South Africa and other countries in southern Africa which are exporting to the EU under the SADC-EU Economic Partnership Agreement (SADC-EU EPA).

### What are the potential risks for South African exporters and more specifically small enterprises?

While the CBAM does not appear to pose serious short-term risks to small enterprises, the broader shift in market regulation and consumer expectations will include more challenging changes. Engaging with these risks is complicated by the scale and diversity of the changes expected, with the broad scope of the EGD meaning each individual sector may face dozens of changes of varying degrees of impact over an uncertain timeline. To manage this complexity, a risk evaluation is conducted on three core types of challenges, namely market risks, supply chain risks, and technology risks.

**Market risks** include a shifting regulatory environment and changing consumer preferences. Tightening control standards for chemicals and pesticides will require investments by chemicals and agricultural exporters, while weak domestic organic certification structures may limit market opportunities among more environmentally conscious consumers. Heavy industry will be impacted by changing end-use demand conditions for a range of mined goods, while restrictions on the export of metal scrap may worsen pre-existing shortages for steel producers. Both the leather and wine industry may be impacted by carbon-intensive aspects of their supply chain, with pressure on the wine industry concentrated on efforts to increase bulk shipments, eroding earnings for small producers. The automotive value chain remains at high-risk until a clear pathway is mapped out to transition to the manufacture of electric vehicles (EVs), with mid-sized auto component suppliers particularly at risk.

**Supply chain risks** includes impacts on competitiveness of small and medium-sized enterprises (SMEs). Green Businesses in South Africa will need to implement risk mitigation strategies to plan for net-zero supply chain impacts. While smaller firms may not be directly impacted by some of the largest policy interventions, such as the CBAM, the larger domestic firms that they supply may be more seriously impacted. While the scale of this impact varies, smaller firms will need to adapt to more onerous environmental monitoring requirements from client firms, and those supplying vulnerable sectors (such as petrochemicals or iron and steel) will need to plan for potential changes to the operations of these crucial clients.

**Technology risks** include instances of incompatibility between the green approaches adopted in the EU and South Africa, and more fundamental shifts in the structure of certain value chains. Lagging investments in green production techniques may pose risks for sectors such as steel and glass, with the latter also impacting beverage exporters. The lack of control and classifications systems for biowaste may impact upstream suppliers such as agriculture and downstream adopters in the chemicals sector, while the pulp and paper sector may need to adapt to the changing expectations of pulp mills acting as multi-output biorefineries. Electrotechnical firms will continue to be constrained by the stasis of South Africa's renewable energy procurement programme, while producers of traditional automotive components may face a secular decline in supply opportunities as the value chain contracts around primary production of electronics at the original equipment manufacturers (OEMs).

### What can be done to mitigate these risks?

While these risks are notable, they are mostly manageable, provided adequate support is offered to assist exporters in adapting to the new reality of trade under the EGD. A range of possible interventions are mapped out for these core risk categories. For market risks, this includes cross-cutting support to Transition Champions in export councils, and focused support to firms in the auto components, agricultural, wine and leather sectors. For supply chain risks, assessment is required to mitigate potential negative impacts on South Africa's green export trade to the EU. For technology risks, cross-cutting support is possible through an observatory of transition technologies, and concentrated support centred on building standards and categorisation practises for bioprocessing.

### Are opportunities under the EGD for more or new exports to the EU?

While, rightfully so, the initial perception is that the EGD and CBAM may pose constraints and potential threats to exports from South Africa to the EU market, this analysis also points to the fact that these underlying shifts also opens opportunities for products associated with the so-called OECD Combined List of Environmental Goods (CLEG). These specific products can be described as environmental goods that are used "to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems, [including] cleaner technologies … that reduce environmental risk and minimize pollution and resource use" (OECD/Eurostat, 1999). The classification was extended (referred to as CLEG-E) for purposes of this analysis to cover broader environmental as well as renewable energy products.

The analysis distinguishes between shorter-term export-ready products, medium-term export development, and longer-term export investment types of products.

Evaluated from the perspective of export maturity, in the short term there are 20 products that can be viewed as export ready, and some of these products are already exported to some of the EU markets. Hence such opportunities could potentially be unlocked in the shorter term with focused interventions. Note, however, that one of these (significant) opportunities related to automotive catalytic converters (Air pollution control CLEG-E group) and other parts and accessories (Noise and vibration abatement CLEG-E group). With these types of products, market supply decisions are typically made by large multinationals. South Africa may therefore not have as much potential as associated with this particular product group. For the medium-term group, 24 products exhibit potential, but may require some intervention to expand into the EU market, while many more products (95) exhibit potential and are linked to some degree with the 20 products associated with the short-term realistic opportunities.

This study demonstrates the existence of significant potential into EU markets for these products, and that the basket of potential products could also logically be expanded to supply an even more diverse set of products into the EU market.

### How can these opportunities be realised?

**Parallel processing:** The challenge is that the specific combinations (of individual products and markets) exhibit their own nuances and each combination needs to be analysed in more detail before a decision can be taken about which of these are worth prioritising for further analysis and potential policy, industry and company-level engagements. Through leveraging short-term opportunities while building long-term vision in parallel, South African exports to the EU can be expanded. Some major opportunities for "existing" products produced and already exported from South Africa. Focus should be placed on further understanding these opportunities and developing a strategy for realising the most feasible. In the current constrained (from a resources perspective) environment it is increasingly important to focus and allocate resources to those opportunities with the most potential return on investment.

**Adequate resourcing and focused application of trade and investment promotion agencies**: The degree of success in realising these opportunities will depend on relevant and focused export promotion and marketing, as well as realistic timelines. To this effect it should also be noted that the adequate resourcing of trade and investment promotion agencies is key.

**Unblocking critical infrastructure and logistics constraints:** Trade-enabling infrastructure is key to realising export-led growth for an economy. Bottlenecks and constraints must be identified, and action plans developed to remove such constraints

**Longer-term strategic considerations – investment and capacity building:** The longer-term opportunities require parallel focus but will require local private sector or foreign investment. In the longer term, a human capital development strategy that is aligned with the prioritised key sectors will be critical, as new developments require new and different skill sets. Mechanisms that may potentially contribute to focused and relevant skills development could include, for example, an alternative approach to the application of the Skills Development Levy (SDL) − by developing and applying a 'preferential' SDL focused on export-oriented sectors – as

opposed to ‘simply’ generalised training. Other mechanisms could include, for example, a ‘Young exporters programme” aimed at fast-tracking some of the ‘new’ unusual opportunities.

### Conclusion and policy recommendations

The EGD looks to set to accelerate the already rapid pace of change in the European economy. However, the EGD is still very much a work-in-progress. South African exporters to the European Union (EU) will need to adapt to this change, to assure their long-term competitiveness in a changing market. It is therefore important to monitor the policy and legislative processes in the EU carefully to assess the potential impact and implications for production and trade. Access to information is particularly important for SMEs, as the impact on them may well be through their participation in values that are driven by larger firms.

The EU-SADC EPA governs trade between the EU, and South Africa and the other SADC EPA countries. The Agreement recognises the right to introduce domestic regulations to protect human, plant and animal health and the environment, and includes standards applicable to food trade (sanitary and phytosanitary measures) and matters such as packaging and labelling (technical barriers to trade).

This Agreement is due for review at the end of 2021. This provides an opportunity for South Africa and the other SADC EPA countries to raise matters pertaining to the EGD and its impact on their agricultural and industrial development plans and exports to the EU. The SADC EPA also provides for development assistance. The review is an opportunity to discuss the possibility of support for green transition and transformation of production processes, linking this support to their productive capacity development strategies. The constructive link between trade and industrial development is key to green transition and sustainable development.

## INTRODUCTION

The European Green Deal is a set of policy initiatives by the European Commission with the overarching aim of making Europe climate neutral by 2050, resulting in Europe becoming the first climate-neutral continent in the world. These policy initiatives aim to make all sectors of the EU's economy fit to contribute to the EU reaching its climate targets by 2030 in a fair, cost-effective and competitive way. All 27 EU Member States pledged to reduce emissions by at least 55% by 2030, compared to 1990 levels.

Why does this matter? Countries are linked through international trade and the fear of loss in competitiveness and 'carbon leakage' and resulting policy reactions that can impact their trading partners, and ultimately individual business (whether directly or indirectly). While the activity of trade itself is a source of greenhouse gas (GHG) emissions (related to e.g. shipping, aviation and land transport), trade is also a mechanism for diffusion of technologies and products that can assist with a reduction in GHGs.

As with any substantial change in productive technologies and techniques, South African exporters will need to adapt the change requirements of operating in a European economy transformed by the EGD. The scale and pace of this change creates risks for existing exporters, and small firms in particular, as they will have to invest to meet the challenge of new compliance processes, changing production processes, and evolving consumer preferences. South African policymakers will need to assure that suitable measures are in place to assist firms that might otherwise struggle to complete this transition.

Both the European transition towards a green growth path and the transition of South African exporters to sustainable trading practices will create opportunities for producers of environmental goods. Managing risks for traditional exporters therefore needs to be balanced against the policy imperative of nurturing South Africa's nascent export of environmental goods, to help unlock the growth opportunities of the global revolution in sustainable production, as typified by the EGD.

This report aims to serve as an initial look at the evolving policy space of the European Green Deal and its implications for South African trade with the EU. It proceeds in five parts. Section 1 analyses what the EGD is, and how it sits alongside South Africa's existing trade and industrial policy. Section 2 analyses the headline initiative of the EGD, the Carbon Border Adjustment Mechanism (CBAM), and its impact on South African exporters. Section 3 looks beyond the CBAM, at the risks inherent in changing regulations, technologies and supply chain dynamics. Sections 4 and 5 assess the potential for the export of environmental goods to the EU, in the context of an expected boom in imports as a result of the EGD.

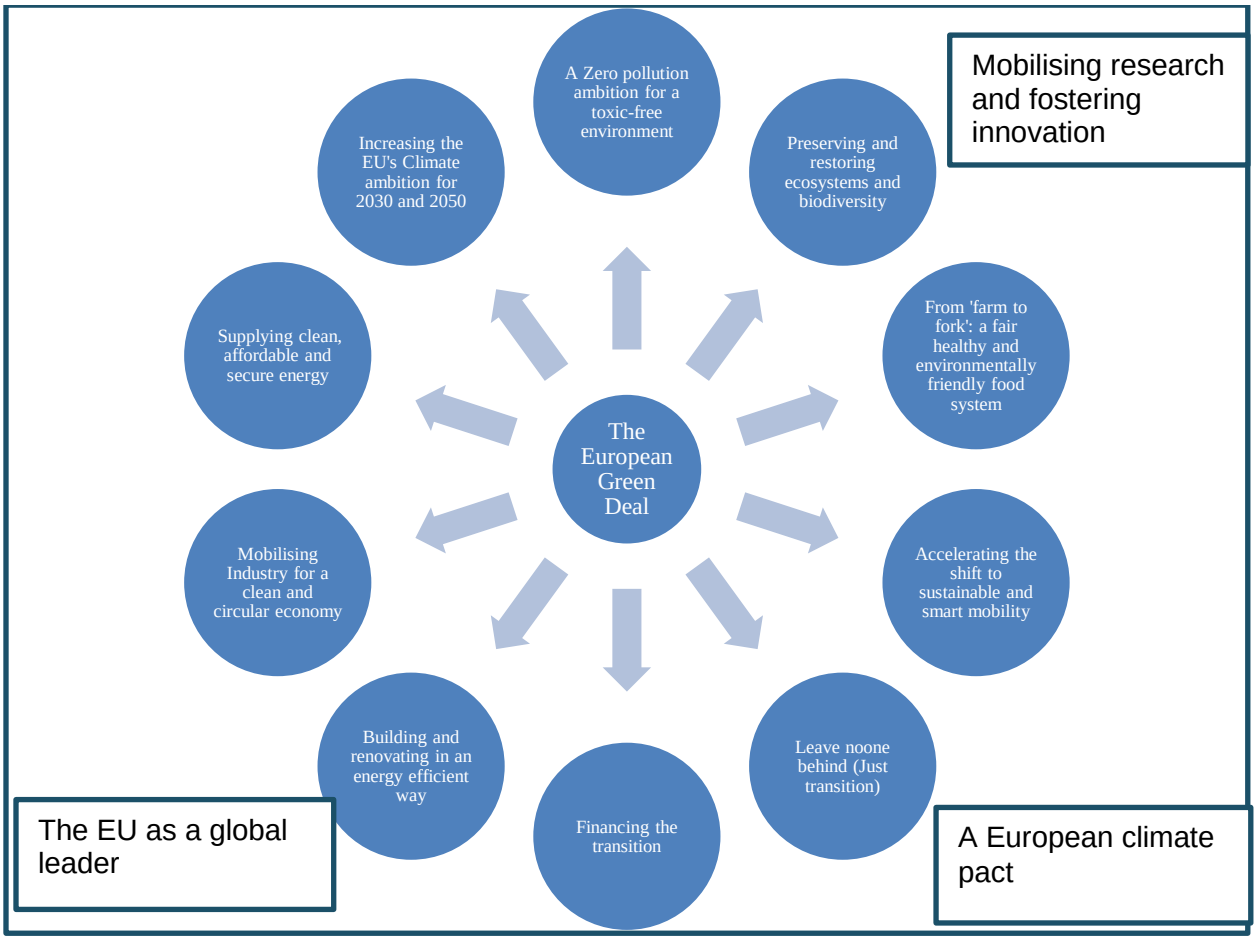
# SECTION 1: EUROPEAN GREEN DEAL AND SOUTH AFRICA'S INDUSTRIAL AND TRADE POLICY IMPLICATIONS

## Making the European Green Deal a reality

### Objectives

In December 2019, 27 members of the EU agreed on the EGD, which is the bloc's most ambitious attempt to date to counter climate change and environmental degradation. The deal is not a piece of legislation but a set of agreed objectives. Figure 1 is a summary of what the EGD entails.

**Figure 1: Summary of the objectives of the European Green Deal**




*Source: EC (n.d)*

To achieve its objectives, the EC has proposed several action plans and initiatives in priority areas, which include energy, land, biodiversity, clean air, sustainable foods and buildings, among others.

### Legal basis

The goal of achieving climate neutrality is at the core of the EU's climate agenda, in line with the objectives of the Paris Agreement. Article 191 of the Treaty on the Functioning of the European Union (TFEU) establishes climate action as one of the objectives of EU environment policy.

Article 11 TFEU requires the integration of environmental protection requirements into the definition and implementation of the EU's policies and activities.

It is important to note that the EU regulatory framework for targets up to 2030 were set during the eighth parliamentary term. As part of the EGD, many elements of the framework are scheduled for revision. A new European climate law has been proposed, which sets the objective for the EU to become climate-neutral by 2050 and establishes a framework for achieving that objective. Table 1 summarises the EU's current energy and climate targets and related legislation.

**Table 1: Summary of EU energy and climate targets and related legislation**

| | | GHG EMISSION REDUCTION | ENERGY EFFICIENCY | RENEWABLE ENERGY |
|---|---|---|---|---|
| ENERGY AND CLIMATE **TARGETS** | | Emission reduction compared to 1990 level | Reduction of energy consumption relative to projections | Share of renewables in energy consumption |
| | 2020 Targets | -20% | -20% | 20% |
| | 2030 Targets | -40%/ at least -55% | -32.5% / to be revised | 32%/ to be revised |
| | 2050 Targets | Net Zero | | |
| EU CLIMATE AND LEGISLATION | European Climate Law (proposal) | Binding targets for 2030 and 2050 | Energy efficiency contributes to emission cuts | Emission free energy supply |
| | ETS Directive | Cap on GHG emissions in specific sectors | ETS price drives efficiency improvements | ETS prices raises cost of fossil energy sources |
| | Effort Sharing regulations | Annual emission allocations | Efficiency contributes to emission cuts | Emission free energy supply |
| | Land use, land-use change, and forestry regulation | No-debt rule | | |
| | Energy Efficiency Directive | Efficiency contributes to emission cuts | EU-wide binding target | |
| | Renewable Energy Directive | Emission free energy supply enables emission cuts | | EU-wide binding target |
| | F-gas Regulation | | | |
| | Energy Performance of Buildings Directive | | | |
| | Energy efficiency labelling | | | |
| | Ecodesign Regulation | | | |
| | $CO_2$ standards for new cars and vans | | | |
| | $CO_2$ standards for heavy-duty vehicles | | | |
| | Energy Union and Climate Action Governance Regulation | | | |

*Source: Erbach (2021). Note: Green – direct contribution to targets; Yellow – indirect contribution.*

## Financing

EU finances, in their broader sense, contribute to climate-related objectives through three main categories of initiatives, variously interlinked (EC, 2020a):

1. Relevant projects and activities across a broad range of funding instruments in the EU budget.
2. Programmes for the demonstration of innovative technologies, funded by the EU's ETS.
3. Climate finance from the European Investment Bank (EIB).

Additional investment worth €260 billion annually is needed for the EU to meet its current target of reducing GHG emissions by 40% by 2030, compared to 1990 levels (EC, 2019a). The recently revised ambitions of reducing GHG emissions by 55% imply that EU financing will need to be further boosted in the context of initiatives still being negotiated or already agreed, such as the new EIB target.

Back the EGD, is the European Green Deal Investment Plan, which has three main objectives (D'Alfonso, 2020):

1. Mobilise about €1 trillion to support sustainable investments over the next 10 years through the EU budget and associated instruments, such as InvestEU;
2. Allow for private investors and the public sector to facilitate sustainable investments;
3. Provide support to public administrations and project promoters in identifying, structuring, and executing sustainable projects.

According to the guidelines, record amounts of public funds would be invested in advanced research and innovation, complemented by a strategy for green financing (Erbach, 2021)

## Transitioning to net-zero emissions

The transition to achieving net-zero emissions will not be easy because some activities, such as agriculture, are difficult to decarbonise completely. Furthermore, net-zero emissions will require negative emissions ($CO^2$ removal) to compensate for unavoidable GHG emissions. To achieve negative emissions, the following can be implemented, albeit with limitations (D'Alfonso, 2020):

- Promote natural solutions such as creating and conserving forests, grassland, and wetlands. Note that this will be limited by the availability of land and the diminishing ability of older forests to remove $CO^2$.
- Use of technologies for carbon dioxide removal that include enhanced weathering (dissolution of certain natural or artificially created minerals), ocean fertilisation, direct air capture with carbon storage, or bioenergy with carbon capture and storage, requires vast financial resources to implement

- Solar radiation management to reduce the amount of solar radiation that reaches the earth. Sulphur dioxide dispersion has been identified as the most promising approach. This disperses sulphur dioxide in the atmosphere. However, there is insufficient knowledge about the feasibility, effectiveness, cost and risks.

## Climate action outside the European Union

Under the rules of the Paris Agreement, each party is free to define its own plans and targets in its NDC. However, the current national commitments taken together are not sufficient to achieve the temperature targets of the Paris Agreement (UN, 2015). The UN emissions gap report estimates that full implementation of the NDCs submitted before 2020 would lead to 3.2°C of warming (UNEP, 2020).

### Table 2: Nationally Determined Contributions for select countries

| COUNTRY | GOAL |
|---|---|
| **China** | Aims for GHG emissions to peak by 2030 at the latest, a higher share of renewable energy, lower carbon intensity in the economy and a larger forest stock. |
| **India** | Sets a target of reducing its GHG emissions relative to gross domestic product (GDP) by 33% to 35 % by 2030, compared to 2005 levels and to achieve 40% of its electricity generation capacity from clean (non-fossil-fuel based) energy sources by 2030.<br>India's NDC is contingent on financial support, technology transfer and capacity building. Mitigation activities are expected to cost US$834 billion, and adaptation actions US$206 billion. |
| **United States** | The US has an intention to reduce GHG emissions by 26% to 28%, compared to 2005 levels.<br>President Joe Biden's climate action plan calls for an emission-neutral society by 2050, with considerable infrastructure investments and a comprehensive transition from fossil fuels.<br>President Biden aims to quickly reverse many of former President Donald Trump's environmental policies. Under the Trump administration, in June 2019, the US Environmental Protection Agency repealed the Clean Power Plan, a key regulation to implement the Paris Agreement. |
| **United Kingdom** | The 2008 UK Climate Change Act originally set a long-term target of reducing the United Kingdom's GHG emissions by 80% by 2050, but was amended in 2019 to raise that target to 100%, thus requiring net-zero emissions<br>On 4 December 2020, the UK – host of the COP26 climate change conference in Glasgow – announced its target to cut GHG emissions by at least 68% by 2030, compared to 1990 levels, together with a plan for a green industrial revolution, aiming to create up to 250 000 jobs and deliver more than £40 billion (around €44 billion) of private investment by 2030. |
| **South Africa** | South Africa's climate change response was approved by Cabinet on 24 March 2021 for release for public comment. It is South Africa's commitment in terms of the United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement to contribute to the global climate change effort.<br>The Paris Agreement 2030 target range (398-440 Mt $CO^2$-eq) is consistent with South Africa's NDC target.<br>The upper range of the proposed 2030 target range represents a 28% reduction in GHG emissions from the 2015 NDC targets.<br>South Africa will require support requirements as a developing country. This includes the costs of both mitigation and adaptation measures, and defining the country's goal for accessing international support. |

*Source: D'Alfonso (2020); DFFE (2021)*

The NDCs were to be updated in 2020, and the forthcoming COP26 climate conference, in November 2021, will provide an opportunity to assess the aggregated effect of the updated NDCs. In addition to national climate policies, many sub-national jurisdictions have their own climate policies. This section presents the NDCs of select major GHG emitters and of South Africa.

The EU is on a drive to find mitigation solutions to climate change. Therefore, the European Green Deal is critical for the EU's green agenda. The EGD is not a piece of legislation but a set of agreed objectives. The main objective is for the EU to eliminate or offset its greenhouse gas emissions

(i.e. achieve “net-zero emissions”) by 2050, in line with global efforts to limit global warming to 1.5-2°C above pre-industrial averages.

Underpinning this are a host of interconnected goals covering almost every element of society and the economy. These include decoupling economic growth and resource consumption by moving to a “circular” economy that increases recycling and reduces waste; preventing biodiversity loss and deforestation; overhauling agriculture; and electrifying transport.

Issues that are addressed by the EGD focus on the following:

1. Climate change
2. Air quality
3. Use of energy
4. Water quality and resources
5. Land use and soil quality
6. Waste and waste management
7. Biodiversity
8. Ecosystem services and protected areas

The EGD will impact how the Southern Africa Development Community (SADC) Economic Partnership Agreement (EPA) countries, commonly known as the SADC EPA states, will trade with the EU. The SADC EPA states, comprising South Africa, Mozambique and the BELN countries (Botswana, Eswatini, Lesotho, Namibia), have a free trade agreement in place with the EU. However, it is essential to note that, within this group, South Africa is the largest trading partner with the EU and will be affected the most if there are any changes to the trading requirements or regulations. It is therefore important to highlight South Africa’s industrial and trade policy and how that is affected by the EGD.

## South African trade and industrial policy

### South Africa’s industrial Master Plans

In 2007, South Africa adopted a formal industrial policy strategy which has been implemented through the Industrial Policy Action Plan (IPAP) (Kaplan, 2019). Successive versions of IPAP have been developed to support structural transformation of the economy and address key constraints to industrialization (Zalk, 2014). In 2019, the South African government relaunched its industrial policy – the Reimagined Industrial Strategy (RIS) to change the growth trajectory of the South African economy to achieve improved industrial performance, dynamism, and competitiveness.

Key to the RIS is the development of Master Plans that are anchored on a strong social compact between government, industry and organised labour, in which each social partner commits to implement concrete interventions to transform and build the economy (the dtic, 2021a). The aim of the Master Plan approach is to ensure that government, industry and labour establish a

common vision and direction for constructive engagement and implementation that is responsive to changing circumstances and evidence.

To date, Master Plans have been developed and are being implemented in the sugar, poultry automotive, and clothing, textile, footwear and leather sectors. Master Plans for the steel and furniture sectors are expected to be completed and implementation to commence in 2021 (the dtic, 2021a). These are important sectors for the South African economy and are connected through their value chains and to other parts of the economy (Levin, 2021). Other Master Plans are being developed for plastics, chemicals, renewable energy, tourism, and health, among others.

Each Industry Master Plan has targeted specific action points, that include (TIPS, 2019):

- Growing the domestic market and exports
- Addressing cost drivers to improve competitiveness
- Value chain localisation
- Technology and skills development, and
- Value chain transformation.

Despite the respective industry action points, there are common objectives including a change in ownership and production patterns within each sector. "This means, for example, transforming and assisting small-scale farmers in the poultry and sugar sectors, bringing more black-owned cut, make and trim plants in the textiles sector online and assisting new entrants into original equipment manufacturing in the automotive sector" (Mashimbye, 2021).

Given that export development growth and competitiveness are key elements of the Master Plans, the EGD can be expected to have implications (both negative and positive) for some of these priority sectors that South Africa still relies on the EU as a major export destination. These and other issues will be discussed in subsequent sections. First, a look at South Africa's trade policy and climate policymaking is necessary to contextualise how the EGD may affect not only South Africa, but also the other SADC EPA states.

## South Africa's trade policy and climate policymaking

The Department of Trade, Industry and Competition (the dtic) is the institutional anchor for the development of South Africa's trade policy. South Africa's latest trade policy formulation retains the clear connection between trade and industrial policy, noting that trade policy instruments such as import tariffs are used selectively to support industrialisation objectives. The Trade Policy Statement (the dti, 2021b), issued by the dtic in May 2021, articulates a firm commitment to multilateralism that is elaborated with respect to the relationship between trade and climate policymaking, noting specifically that border taxes that penalise already constrained economies may well make their economic transformation that much more difficult (the dtic, 2021c). Green technology transfer and finance to developing countries to support the green transition are recommended. Multilateral cooperation and dialogue on environmental sustainability are encouraged, given the public-good nature of this agenda.

South Africa is a member of the World Trade Organization (WTO) and part of the SADC-EU EPA. Regional integration remains an integral part of South Africa's trade strategy. South Africa is a member of the Southern Africa Customs Union (SACU) and is participating in the African Continental Free Trade Area (AfCFTA) negotiations. To date the African continent has become the largest regional market for South Africa's merchandise exports. In 2020, about 23% (or US$20 billion) of the entire export basket was destined to countries in Africa. The continent is also the largest regional destination for South Africa's manufactured exports, accounting for about 40% of the total (ITC Trade Map, n.d.).

## Climate change and sustainability issues: SADC-EU EPA Agreement

SADC Member States are parties to various Multilateral Environmental Agreements, and SADC plays an important role in supporting its Member States. The SADC website provides an overview of the Multilateral Environmental Agreements (MEAs) that have been adopted by its Member States. The WTO's Committee on Trade and the Environment has identified 20 MEAs that are directly related to trade, as evidenced by the inclusion of provisions to control trade to prevent damage to the environment. These trade related MEAs are listed in Table 3, along with information on whether the MEA is specifically mentioned in the SADC overview on their website.

**Table 3: List of trade related Multilateral Environmental Agreements**

| | CONVENTION | LISTED ON SADC WEBSITE |
|---|---|---|
| **Biodiversity** | Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973) | Yes |
| | Convention on the Conversation of Antarctic Marine Living Resources (CCAMLR) | No |
| | International Convention for the Conservation of Atlantic Tunas (ICCAT) | No |
| | United Nations Fish Stocks Agreement (UNFSA, 1995) | No |
| | Agreement on Port State Measures (PSMA, 2009) | No |
| | International Tropical Timber Agreement (ITTA, 1983/1994/2006) | No |
| | International Plant Protection Convention (IPPC) | No |
| | Convention on Biological Diversity (CBD, 1992) | Yes |
| | Nagoya Protocol to the CBD on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation (2010) | No |
| **Air Pollution** | Montreal Protocol and the Vienna Convention on Substances that Deplete the Ozone Layer | No |
| **Climate Change** | United Nations Framework Convention on Climate Change (UNFCCC, 1992) | Yes |
| | The Kyoto Protocol (1997) | No |
| | The Paris Agreement (2015) | No |
| **Waste and Chemicals** | Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989) | Yes |
| | Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998) | Yes |
| | Stockholm Convention on Persistent Organic Pollutants (2001) | Yes |
| | Minamata Convention on Mercury (2013) | No |

*Source: EC (2021)*

Looking at the SADC-EU EPA, Article 6-9 of the Agreement deal with trade, sustainable development, and MEAs. Table 4 highlights some of the important aspects of the Agreement.

**Table 4: Summary of aspects related to trade, sustainability and Multilateral Environmental Agreements in the SADC-EU EPA**

| ARTICLE NUMBER | IMPORTANT ASPECTS OF THE AGREEMENT |
|---|---|
| **Article 6 (Trade and sustainable development** | The Parties reaffirm their commitments to promote the development of international trade in such a way as to contribute to the objective of sustainable development, in its three pillars (economic development, social development, and environmental protection) for the welfare of present and future generations and will strive to ensure that this objective is integrated and reflected at every level of their trade relationship. |
| **Article 7 (Sustainable development)** | The Parties reaffirm that the objective of sustainable development is to be applied and integrated at every level of their economic partnership, in fulfilment of the overriding commitments set out in Articles 1, 2 and 9 of the Cotonou Agreement, and especially the general commitment to reducing and eventually eradicating poverty in a way that is consistent with the objectives of sustainable development. |
| **Article 8 (Multilateral environmental and labour standards and agreements)** | The Parties recognise the value of international environmental governance and agreements as a response of the international community to global or regional environmental problems as well as decent work for all as a key element of sustainable development for all countries and as a priority objective of international cooperation |
| **Article 9 (Right to regulate and levels of protection)** | The Parties recognise the right of each Party to establish its own levels of domestic environmental and labour protection, and to adopt or modify accordingly its relevant laws and policies, consistently with internationally recognised standards and agreements to which they are a party.<br>The Parties reaffirm the importance of protection as afforded in domestic labour and environmental laws. |
| **Article 10 (Trade and investment favouring sustainable development)** | The Parties reconfirm their commitment to enhance the contribution of trade and investment to the goal of sustainable development in its economic, social, and environmental dimensions.<br>A Party may request, through the Trade and Development Committee, consultations with the other Party regarding any matter arising under this Chapter. |
| **Article 11 (Working together on trade and sustainable development)** | The Parties may exchange information and share experience on their actions to promote coherence and mutual supportiveness between trade, social and environmental objectives, and shall strengthen dialogue and cooperation on sustainable development issues that may arise in the context of trade relations. |

*Source: SADC-EU EPA (EU, 2016)*

The SADC-EU EPA also stresses the importance of following internationally recognised standards with regards to any new or modified legislation on environmental practises. This implies that countries cannot weaken environmental protection to encourage trade or investment. To ensure that rules are respected, participating countries can have the possibility to request consultations on questions of sustainable development, involving representatives of civil society (EU, 2016). It is important however to highlight that nowhere in the agreement where specific products are mentioned on how to address sustainability issues. Therefore, the EGD which highlights specific sectors will impact how these products will be traded soon, thus affecting South African exported goods to the EU. Affected sectors will be discussed in the next section.

## Mainstream international sustainable production and trade developments

Achieving the EGD targets will require sweeping new rules. The objective of this section is to focus on three key issues that are addressed by the EGD and how these impact on South Africa's trade with the EU. The three issues which are reviewed include:

1) The Farm to Fork strategy;

2) The circular economy; and

3) The Carbon Border Adjustment Mechanism.

For each of the issues highlighted above, we highlight what the issue entails; how it will work, and the industries affected, with a special emphasis on implications for South Africa' small-medium enterprises (SMEs).

### From Farm to Fork Strategy

Food systems are responsible for around 21% to 37% of global greenhouse gas emissions and use up significant natural resources (Mbow *et al.*, 2019). The FtF strategy aims to address these environmental issues as well as fairness, sustainability of the food system, and the health of Europeans. The strategy will focus on reducing waste, and transforming the manufacturing, processing, retailing, packaging and transportation of food.

The strategy aims to accelerate the EU's transition to a sustainable food system that should:

- Have a neutral or positive environmental impact;
- Help to mitigate climate change and adapt to its impacts;
- Reverse the loss of biodiversity;
- Ensure food security, nutrition and public health, making sure that everyone has access to sufficient, safe, nutritious, sustainable food; and
- Preserve affordability of food while generating fairer economic returns, fostering competitiveness of the EU supply sector, and promoting fair trade.

The FtF strategy sets out both regulatory and non-regulatory initiatives, with the common agricultural and fisheries policies as key tools to support a just transition. A proposal for a legislative framework for sustainable food systems will be put forward to support implementation of the strategy and the development of a sustainable food policy before the end of 2023. This will promote policy coherence at EU and national level, mainstream sustainability in all food-related policies and strengthen the resilience of food systems (EC, 2020b). EU policies and legislation will also focus on trade policy to obtain commitments from third countries in areas such as animal welfare, the use of pesticides, and the fight against antimicrobial resistance.

The strategy foresees several initiatives and legislative proposals on:

- Use of chemical pesticides
- Reduction of excess nutrients;
- Research and innovation

- Organic farming;
- Front-of-pack nutrition labelling and sustainable food labelling; and
- Food waste reduction.

Table 5 is a summary of some of the initiatives and legislative proposals to attain the EC's 2030 and 2050 climate reduction targets. Note that the list is not exhaustive but provides some insight into what will happen in the coming years.

**Table 5: Examples of some initiatives by the EC to advance the farm to fork strategy**

| | INITIATIVES AND LEGISLATIVE PROPOSALS |
|---|---|
| **Use of chemical pesticides** | The Commission will take additional action to reduce the overall use and risk of chemical pesticides by 50%, and the use of more hazardous pesticides by 50% by 2030.<br>It will revise the Sustainable Use of Pesticides Directive, enhance provisions on integrated pest management, and promote greater use of safe alternatives for protecting harvests from pests and diseases.<br>The Commission will also facilitate the placing on the market of pesticides containing biological active substances and reinforce the environmental risk assessment of pesticides.<br>The Commission will also propose changes to the 2009 Regulation concerning statistics on pesticides to overcome data gaps and promote evidence-based policymaking. |
| **Excess nutrients (especially nitrogen and phosphorus) in the environment** | The Commission will act to reduce nutrient losses by at least 50%, while ensuring that there is no deterioration in soil fertility. This will reduce the use of fertilisers by at least 20% by 2030. This will be achieved by implementing and enforcing the relevant environmental and climate legislation in full, by identifying with Member States the nutrient load reductions needed to achieve these goals, applying balanced fertilisation and sustainable nutrient management, and by managing nitrogen and phosphorus better throughout their lifecycle. |
| **Research and innovation** | The Farm to Fork Strategy proposes to spend €10 billion on research and innovation on food, bioeconomy, natural resources, agriculture, fisheries, aquaculture, and the environment, as well as digital technologies and nature-based solutions for agri-food, funded by Horizon Europe, the EU's research, and innovation framework programme. |
| **Organic foods** | The EC's main goal is to boost organic production to reach 25% of the EU's agricultural land use by 2030. EU member states are encouraged to develop national organic farming plans. |
| **Food packaging** | The EC will revise the food contact materials legislation to improve food safety and public health (in reducing the use of hazardous chemicals), support the use of innovative and sustainable packaging solutions using environmentally friendly, reusable and recyclable materials, and contribute to food waste reduction. |
| **Methane reductions** | The EC has proposed a strategy to reduce methane emissions. Reducing methane emissions requires a cross-sector approach. In the EU, 53% of anthropogenic methane emissions come from agriculture, 26% from waste, and 19% from energy.<br>To help reduce the environmental and climate impact of animal production, avoid carbon leakage through imports, and support the ongoing transition towards more sustainable livestock farming, the EC will facilitate the placing on the market of sustainable and innovative feed additives. |

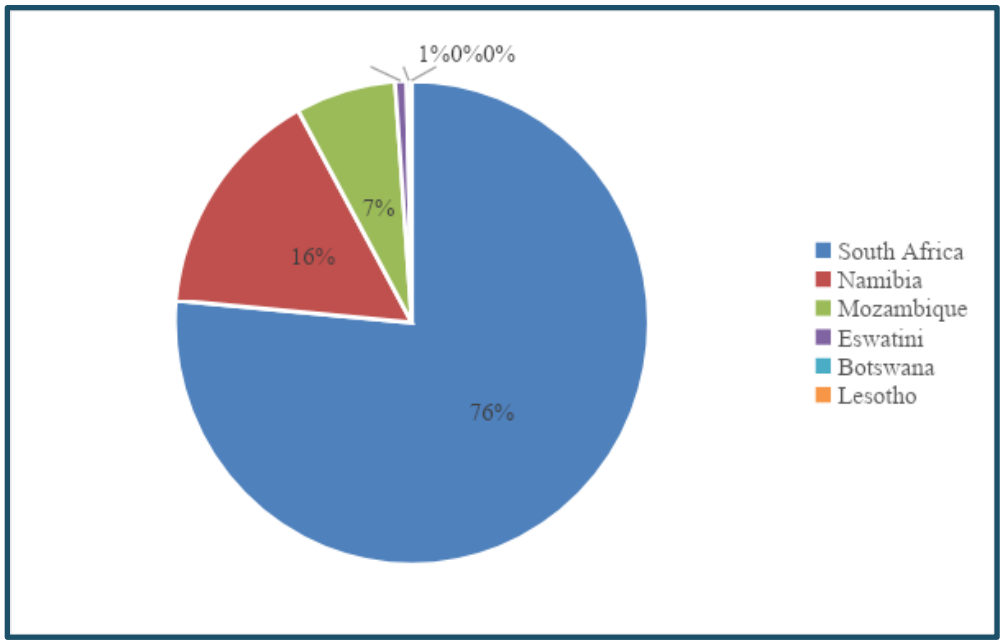
*Source: EU Farm to Fork Strategy (EC, 2020b)*

Other initiatives by the EC together with food-chain stakeholders include developing an EU Code of Conduct for responsible business and marketing practice as well as seeking commitments from food companies and organisations to start taking steps towards improving health, sustainability, and the environment. Reform of the common agricultural policy (CAP) is also envisaged.

## Industries affected

A healthier and more sustainable EU food system is a cornerstone of the EGD. The agricultural, and or agribusiness sector, is therefore central to the EGD action plan. Although no specific products have been targeted, the EGD outlines explicitly the need to establish "a fair healthy and environmentally friendly food system," and "preserving and restoring ecosystems and biodiversity." SADC EPA countries, and more specifically South Africa, export a significant share of agricultural (including fisheries) products which may be affected by EGD and CBAM regulation. In 2020, SADC EPA countries exported about US$2.5 billion to the EU, accounting for 13% of total exports to the EU. South Africa accounted for the bulk of these exports with a 76% share of total exports followed by Namibia (16%) and Mozambique (7%). Figure 2 highlights the proportion of agricultural exports to the EU.

**Figure 2: Proportion of agricultural product exported to EU by SADC EPA countries (2020)**




*Source: ITC Trade Map (n.d.)*

Edible fruits and nuts accounted for over 50% of total exports. Disaggregated, these include citrus, table grapes and apples, among other fruits that are grown mostly in South Africa and Mozambique. Fish products mostly from Namibia are also important accounting for an additional 26% of total exports to the EU.

**Table 6: Exports of agricultural and fisheries to the EU from SADC EPA countries, 2020**

| PRODUCT LABEL | (US$ 000) | % OF TOTAL EXPORTS |
|---|---|---|
| **SADC EPA total** | **2 479 111** | **13%** |
| Edible fruit and nuts; peel of citrus fruit or melons | 1 271 894 | 51% |
| Fish and crustaceans, molluscs and other aquatic invertebrates | 635 451 | 26% |
| Beverages, spirits and vinegar | 301 408 | 12% |
| Tobacco and manufactured tobacco substitutes | 132 916 | 5% |
| Residues and waste from the food industries; prepared animal fodder | 39 424 | 2% |
| Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage | 35 431 | 1% |
| Edible vegetables and certain roots and tubers | 22 981 | 1% |
| Meat and edible meat offal | 15 734 | 1% |
| Cereals | 11 069 | 0% |
| Coffee, tea, maté and spices | 9 273 | 0% |
| Cotton | 2 217 | 0% |
| Products of animal origin, not elsewhere specified or included | 877 | 0% |
| Live animals | 399 | 0% |
| Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere ... | 37 | 0% |

*Source: ITC Trade Map (n.d.)*

As highlighted, one of the main goals of the FtF strategy is the reduction of greenhouses gases, reducing subsidies that are harmful to sustainable agricultural products, and increasing adoption of organic farm. Innovation in the sector is crucial and SADC EPA countries need to start addressing mitigating factors and adoption mechanisms. Furthermore, there is need for alignment of regulatory requirements. For example, the SADC EPA Articles 56 – 67 deal with sanitary and phytosanitary seizures. These will need realignment to conform to the proposed/ revised legislation to meet EGD goals and advance the objectives of the FtF strategy.

Transitioning to sustainable food systems will be costly for South African farmers and SMEs along the value chains. However, economic opportunities also exist. Given that consumer preferences will shift towards sustainable food systems, the time to start transitioning, especially for the EU market, is now. Farmers and fishers and aquaculture producers, as well as food processors and food services, have an opportunity to make sustainability their trademark and guarantee the future of the EU food chain before their competitors. The transition to sustainability presents a first-mover opportunity for all actors in the EU food chain including from third party countries such as South Africa (EC, 2020b).

## The circular economy

A circular economy is an industrial system that is restorative or regenerative by intention and design. It is a system that places emphasis on restoration and shifts towards the use of renewable energy, eliminates the use of toxic chemicals, and aims for the elimination of waste through the specific design of materials, products and systems, and within this business models (Ekins, *et al.*, 2019). This regenerative approach contrasts with the traditional linear economy, which has a 'take, make, dispose' model of production.

EU industry accounts for 20% of its GHG emissions at present (EEA, 2020). Through the EGD, actions to strengthen the decarbonisation efforts range from product sustainability to the supply of raw materials. The adopted CEAP is one of the main building blocks of the EGD and presents initiatives to increase the duration of a product to alleviate pressure on natural resources. Regulation of improvement of product reusability, reparability, and integration of recycled contents is contained in the Sustainable Products Policy. Transition to a circular economy is a prerequisite to achieve the EU's 2050 climate neutrality target and to halt biodiversity loss.

Measures that will be introduced under CEAP aim to (EC, 2020c):

- Make sustainable products the norm in the EU;
- Empower consumers and public buyers;
- Focus on sectors that use most resources and where the potential for circularity is high, such as electronics and information and communications technology (ICT), batteries and vehicles, packaging, plastics, textiles, construction and buildings, food, water, and nutrients;
- Ensure less waste;
- Make circularity work for people, regions, and cities; and
- Lead global efforts on the circular economy.

### How it works

The CEAP presents a set of interrelated initiatives to establish a strong and coherent product policy framework that will make sustainable products, services, and business models the norm and transform consumption patterns so that no waste is produced in the first place (EC, 2020c). The EC will launch concrete actions which are sector specific. These will include regulatory and non-regulatory actions of which some are i) mandatory; ii) reviews and iii) aspirational. Table 7 lists the sectors where there is opportunity for high circularity and the intended actions.

**Table 7: Summary of sector specific actions under the CEAP**

| SECTOR | ACTION PLAN |
|---|---|
| **Electronics and ICT** | A Circular Electronics Initiative to have longer product lifetimes, and improve the collection and treatment of waste. |
| **Batteries and vehicles** | New regulatory framework for batteries for enhancing the sustainability and boosting the circular potential of batteries. |
| **Packaging** | New mandatory requirements on what is allowed on the EU market, including the reduction of (over)packaging. |
| **Plastics** | New mandatory requirements for recycled content and special attention on microplastics as well as biobased and biodegradable plastics. |
| **Textiles** | New EU Strategy for Textiles to strengthen competitiveness and innovation in the sector and boost the EU market for textile reuse. |
| **Construction and buildings** | Comprehensive Strategy for a Sustainably Built Environment promoting circularity principles for buildings. |
| **Food** | New legislative initiative on reuse to substitute single-use packaging, tableware, and cutlery with reusable products in food services. |
| **Ensure less waste** | The focus will be on avoiding waste altogether and transforming it into high-quality secondary resources that benefit from a well-functioning market for secondary raw materials.<br>The EC will explore setting an EU-wide, harmonised model for the separate collection of waste and labelling, including a series of actions to minimise EU exports of waste and tackle illegal shipments. |
| **Bioeconomy (agriculture)** | The EC, through the bioeconomy strategy, aims at sourcing bio-based materials such as recombinant spider-silk, mycelium-made fashion, creation of novel protein sources via biotechnological processes, climate neutral crops, and bio-based chemicals. |

*Source: EFIB (2020)*

To ensure smooth transitioning, the EC has taken measures to facilitate more sustainable production and consumption patterns. Examples of these initiatives include (EC, 2020c):

- Integrating the circular economy objective under the EU Taxonomy Regulation; and
  Carrying out preparatory work on EU Ecolabel criteria for financial products.
- Guidance for project promoters on circular incentives, capacity building and financial risk management through the Circular Economy Finance Support Platform.
- Proposal for a new own resource for the EU budget based on the amount of non-recycled plastic packaging waste.
- The European Regional Development Fund, through smart specialisation, LIFE and Horizon Europe will complement private innovation funding and support the whole innovation cycle with the aim to bring solutions to the market.

## Summary and conclusion

The EGD is the EU's most ambitious attempt to date to counter climate change and environmental degradation. The main objective is for the EU to eliminate or offset its greenhouse gas emissions (i.e. achieve "net zero emissions") by 2050, in line with global efforts to limit global

warming to 1.5-2°C above pre-industrial averages. The deal is not a piece of legislation but a set of agreed objectives. Underpinning that are a host of interconnected goals covering almost every element of society and the economy. These include decoupling economic growth and resource consumption by moving to a "circular" economy that increases recycling and reduces waste; preventing biodiversity loss and deforestation; overhauling agriculture; and electrifying transport.

Two building blocks of the EGD discussed are aimed at achieving the EGD targets. These are the FtF strategy and CEAP. The third important measure is the Carbon Border Adjustment Mechanism. These are integral to the compact of policies, regulations, measures and initiatives that collectively aim to ensure net-zero carbon emissions by 2050.

Food systems are responsible for around 21% to 37% of global greenhouse gas emissions and use up significant natural resources. The FtF strategy therefore aims to address these environmental issues as well as fairness, sustainability of the food system, and the health of Europeans. The strategy will focus on reducing waste, and transforming the manufacturing, processing, retailing, packaging, and transportation of food. The strategy sets out both regulatory and non-regulatory initiatives, with the common agricultural and fisheries policies as key tools to support a just transition. A proposal for a legislative framework for sustainable food systems will be put forward to support implementation of the strategy and the development of a sustainable food policy before the end of 2023. Although the FtF strategy does not specify any products for targeting, the EGD, however, outlines explicitly the need to establish "a fair healthy and environmentally friendly food system," and "preserving and restoring ecosystems and biodiversity".

The CEAP presents a set of interrelated initiatives to establish a strong and coherent product policy framework that will make sustainable products, services, and business models the norm and transform consumption patterns so that no waste is produced in the first place. The EC aims to launch concrete actions which are sector specific. These will include regulatory and non-regulatory actions of which some are 1) mandatory; 2) reviews; and 3) aspirational. Some of the sectors targeted include electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; and the food sector.

For some sectors in African countries, this could present new economic opportunities. Relocalising part of the circular economy value chain to African producers could strengthen manufacturing, allowing African businesses to engage in higher-value activities. It is important to align the EU's circular economy plan with existing African initiatives, such as the African Circular Economy Alliance founded by Nigeria, Rwanda, and South Africa. Europe's plans to use decarbonised gas as a transition fuel present some opportunities for African gas producers such as Mozambique (Usman, *et al,* 2021).

The EU remains an important export destination for South Africa. The bloc accounts for about 24% of South Africa's exports and is its second top destination after Africa. Top products include motor vehicles, precious stones, edible fruits, machinery, iron and steel, aluminium and inorganic chemicals. The bulk of South Africa's export products to the EU are affected by the EGD. Most notable are aluminium, iron and steel, as well as the bulk of agriculture and processed foods. These will need to be monitored closely and South Africa should have contingency plans in place to respond to EGD regulations and requirements, a process that has cost implications.

## SECTION 2: CBAM – THE CARBON BORDER ADJUSTMENT MECHANISM

The EU is one of South Africa's major export destinations. In 2019, 19% of South Africa's total exports went to the EU. South Africa's main exports to the EU include platinum, motor vehicles and catalytic converters, agricultural products (citrus and grapes) and unwrought aluminium. The EU has been leading globally in addressing climate change and reducing greenhouse gas emissions. The union has set ambitious carbon emissions reductions targets of achieving carbon neutrality by 2050. The EC has set a legally binding milestone target of reducing net greenhouse gas emissions by 55% by 2030 compared to 1990 levels (Mataba, 2020).

Climate change regulations aimed at reducing trade of carbon-intensive goods or from carbon-intensive jurisdictions, place South African exports at risk. There are four macroeconomic and policy factors underpinning South Africa's trade-related climate change risks with the EU. First, South Africa is one of the most carbon- and energy-intensive economies in the world. The economy relies on coal for about 86% of its electricity and about a quarter for liquid fuels production. Second, although South Africa implemented a carbon tax and carbon budgets, the country's climate change framework is unambitious by global standards. Third South Africa is relatively far from the EU, the average distance ranges from 1 500km to 4 100km for exports. The distance has implications for transportation costs (ITC, 2021). Fourth, South Africa's status as an emerging economy and upper-middle-income country means that it will not be exempt from climate change-related trade policies (Montmasson-Clair, 2020a).

To deliver on the emissions reduction targets the EU announced the Fit for 55 EU Green Deal (EGD) in 2019. The EU Green Deal is a set of 13 policy measures whose purpose is to transition the EU into a sustainable economic model. In the Green Deal, the Commission proposed to will review and revise all relevant climate-related policy instruments by June 2021 (EC, 2020a).

Among the policy changes are the review of the ETS, a new additional ETS for transport and buildings and a possible extension of emissions trading to include aviation, the introduction of a carbon border tax and stricter standards on vehicles fleets.

### What is CBAM?

The EU has already exceeded its 2020 carbon reductions targets. Between 1990 and 2018 the EU reduced greenhouse gas emissions by 23% below the 1990 level, while GDP increased by 61% (EC, 2020a).

As the EU introduces stricter emissions reduction measures on its industries, it faces the risk of carbon leakage. EU industries will be competing with industries from countries with weaker climate change policies. Carbon leakages occur when industries relocate to jurisdictions with weaker climate change policies or stay put and lose domestic and foreign market share due to increased carbon prices (Lo, 2021).

To mitigate the risk of carbon leakage the commission announced in 2019 its intention to introduce a carbon border tax. The Carbon Boarder Adjustment Mechanism was proposed in July 2021 as part of the Fit for 55 EU Green deal. The CBAM will serve as an essential element of the

EU toolbox for the EU to meet its climate-neutral EU by 2050 by addressing the risk of carbon leakage.

The Caron Border Adjustment Mechanism (CBAM) is a climate measure that should prevent the risk of carbon leakage and support the EU's increased ambition on climate mitigation, while ensuring WTO compatibility. The European Commission identified carbon leakage as the risk that either production is transferred from the EU to other countries with lower ambition for emission reduction, or that EU products are replaced by more carbon-intensive imports. Carbon leakage is currently controlled by the free allocation of allowances under the EU's Emissions Trading System, or compensation for energy intensive industries impacted by higher electricity costs because of carbon pricing under the EU ETS (Linscott, 2021).

The EC on July 14, 2021, agreed in principle on the introduction of the CBAM. The EU CBAM was first announced by the EC in 2019, as a central element of the EGD intended to achieve the goals of the Paris Agreement. One of the drivers of the CBAM is that carbon emissions should have a price, and the CBAM is intended to "align the carbon price on imports with that applicable within the EU" (EC, 2021). The CBAM is one of several tax and carbon price reforms proposed as part of the Green Deal. It is envisaged that the CBAM will ensure that the price of imports reflects more accurately their carbon content. Other key tax reform measures include:

- Extension of ETS, including possible phasing out of existing free permit allocations for many participants; inclusion of maritime sector and, possibly, the road transport and buildings sector; review existing support mechanisms for low-carbon investment.
- Reform of the Energy Taxation Directive; and
- A plastics tax.

## How it will work

The CBAM will be a tax on embedded emissions for goods imported into the EU. The CBAM would impose a tax on imported goods that emit more GHG emissions than allowed by EU manufactures. CBAM integrates into the EU ETS by applying an equivalent regime on imports. The CBAM will allow for the EU to reduce free allowances while ensuring its industries remain competitive (Linscott, 2021).

To allow importers to adjust, the CBAM will have a transitional period from January 2023 to 2026. The CBAM will apply to carbon intensive sectors at risk of carbon leakage, from non-Customs Union countries who do not have similar carbon regulations to the EU. The initial scope includes products from the iron and steel, cement, fertiliser, aluminium, and electricity generation sectors. CBAM will apply to only direct emissions (emissions released from the production process and are in the control of producers), it will also not apply to the downstream products using the materials in the sectors covered (EC, 2021).

In the transitional period, the burden on importers will be administrative rather than financial. During the transitional period importers will be required to report the embedded emissions in their goods but will not be required to buy the CBAM certificates (EC, 2021).

Under the CBAM, importers will be required to purchase digital certificates to import to the EU. Carbon certificates will correspond to the price that would have been paid had the goods been produced in the EU under the EU ETS. One certificate represents a tonne of carbon dioxide emissions embedded in goods. The price of the certificates will be linked to the average price of carbon permits under the EU ETS. The CBAM allowanced will be expressed will EUR per metric tonne emitted (EC, 2021a; Lo, 2021).

Once the CBAM becomes operational in 2026, the EU ETS will be revised, in particular the reduction of available free allowances in sectors covered by the CBAM. The free allowances will be phased out only by 2035. As such the CBAM will apply only to a proportion of emissions that do not enjoy free allowances, ensuring that importers are treated the same as EU producers. At the end of the transition period, the Commission will evaluate the CBAM and could extend the scope of products (to include all products in the value chain) and/or include indirect emissions (emissions from the electricity used to produce the goods).

In May every year, importers should declare the amount of emissions embedded in goods imported plus the number of CBAM certificates, corresponding to the total embedded emissions in imported goods surrendered in the previous year. The declaration should contain the total quantity of goods imported during the calendar year, expressed in megawatt-hours for electricity and metric tonnes for other goods, multiplied by the embedded emissions of each good based.

Importers from countries that have a carbon price may claim a reduction in the number of CBAM certificates to be surrendered, corresponding to the carbon price paid in the country of origin for the declared emissions. The information provided and proof of carbon price paid by the importer will need to be verified by an independent party.

Failure to surrender or submit by 31 May each year or the submission of false information will result in a penalty. Importers will be liable to pay a penalty on the excess emissions. The penalty will be €100 for each tone of $CO^2$ equivalent emitted (EC, 2021a).

Although the European Parliament has adopted the resolution to support the CBAM, it still requires the approval of the European Parliament and the European Council before it comes into effect.

The legal basis for the CBAM proposal is Article 192(1) of the Treaty on the Functioning of the European Union (TFEU), which notes that “In accordance with Articles 191 and 192(1) of TFEU, the Union shall contribute to the pursuit, inter alia, of the following objectives: preserving, protecting, and improving the quality of the environment, promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.”

## CBAM’s sectoral scope and focus products

The initial conceptualisation of the CBAM considered a broad range of sectors based on related emissions as illustrated in the CBAM proposal. The CBAM will initially apply to imports of the following goods:

- Cement
- Iron and steel
- Aluminium
- Fertilisers
- Electricity

The emissions of these sectors are listed in Figure 3.

**Figure 3: Proposed aggregated sectors sorted by emissions**

| Short sector name | Number of installations | Emissions [kt CO2/yr] | Number of PRODCOM codes | Cumulated emissions |
|---|---|---|---|---|
| Iron & Steel | 485 | 159 861 | 144 | 22.8% |
| Refineries | 130 | 132 164 | 10 | 41.7% |
| Cement | 214 | 118 164 | 3 | 58.6% |
| Organic basic chemicals | 331 | 64 877 | 168 | 67.8% |
| Fertilizers | 99 | 36 995 | 30 | 73.1% |
| Pulp & Paper | 672 | 27 233 | 57 | 77.0% |
| Lime & Plaster | 193 | 26 151 | 6 | 80.7% |
| Inorganic chemicals | 149 | 22 483 | 116 | 84.0% |
| Glass | 326 | 18 226 | 47 | 86.6% |
| Aluminium | 89 | 13 755 | 14 | 88.5% |
| Ceramics | 350 | 7 810 | 13 | 89.6% |
| Polymers | 121 | 5 655 | 50 | 90.4% |
| Other sectors | 1 200 | 66 902 | 281 | 100.0% |

*Source: Commission analysis*

*Source: EC (2021a)*

The scope of this broader focus was narrowed to a first shortlist of aggregated sectors based on the following three additional criteria:

- Relevance in terms of emissions – whether the sector is one of the largest aggregate emitters of GHG emissions;
- The sector's exposure to a significant risk of carbon leakage; and
- Balancing broad coverage in terms of GHG emissions while limiting complexity and administrative effort.

The first round of industries affected by the initial CBAM implementation design is discussed in the next section.

These sectors have a high risk of carbon leakage and high carbon emissions. The CBAM will apply to direct emissions of greenhouse gases emitted during the production process of the products covered. By the end of the transition period, the EC will evaluate how the CBAM is working and whether to extend its scope to more products and services – including down the value chain, and whether to cover indirect emissions (i.e., carbon emissions from the electricity used to produce the good). In sections to follow we discuss the implications for South Africa and the rest of

SADC EPA exports to the EU. Note that electricity is not discussed as there are no direct exports to the EU; however, the fact that the production and use of electricity may become an issue post 2026 is acknowledged, depending on the source of electricity used in the production process of some of the goods listed above.

## Chemicals/fertilisers

The EGD seeks to

- Better protect citizens and the environment; and
- Boost innovation for safe and sustainable chemicals.

This will be achieved by, among other actions, boosting the investment and innovative capacity for production and use of chemicals that are safe and sustainable by design, and throughout their life cycle. Inorganic fertilisers are identified among the products that will be affected by CBAM. A look at the trading relationship between the EU and the SADC EPA countries, shows that inorganic fertilisers account for less than 1% of SADC EPA countries' exports to the EU. Only US$1.6 million worth were exported to the EU in 2020. All exports originated from South Africa.

## Iron and steel

Steelmaking alone contributes 7% of global emissions, and successfully transitioning to decarbonised production methods is therefore a key challenge for delivering the European Green Deal and climate neutrality. In the EU economy, steel is a key component that underpins the development of major manufacturing sectors all along the value chain. While South Africa is highly competitive in iron ore production, it is not competitive in steel production. Current production methods require consumption of energy resources, mostly coking coal, and to a certain extent including electricity, which has been in short supply in South Africa as evidenced by the frequency of loadshedding in recent years.

The trading relationship of the EU and the SADC EPA countries reveals that only South Africa exports iron and steel to the world, albeit from a low base. In 2020, total exports of iron steel were about US$12 million (less than 1% of total EU exports), with virtually all originating from South Africa. Globally, SADC EPA countries exports of iron and steel account for about 1% of total exports. Most exports are destined to China (iron ore) and regional markets (SADC) –South Africa has a comparative and distance advantage in the latter.

## Aluminium

Another energy intensive product is aluminium, and is considered a key raw material in the EGD, as its material properties will support:

- A massive wave of the renovation of buildings and infrastructure;
- The further development of recycling management due to its high recyclability through the new development of design-based product innovations;
- The introduction of renewable energy projects (especially wind, solar and hydrogen); and
- The transformation of transport and logistics (e.g. EVs, rail transport – lightweight construction).

Despite being an important "green raw material", it is not exempt from green transformation. The EGD inherently implies a twin transition (digital and green) and the switch to a circular business model. This will have implications for countries that produce virgin aluminium. For SADC EPA countries, Mozambique, and South Africa, which have significant exports (US$1 billion, with each accounting for US$500 million of total exports) to the EU may be affected. This is because about 75% of all aluminium ever produced in the world is recycled and used through a circular economy loop frame. Recycling aluminium requires also little energy (only 5%) of the total energy required under normal circumstances for primary production. It is not a coincidence that the EU has set the goal of achieving a 100% aluminium circularity by 2030, as it recognises the importance of aluminium in the circular economy and as a green raw material. At this stage, the introduction of the CBAM is likely to have limited impact for the aluminium sector until at least 2026 because its carbon footprint predominantly (80%/90%) takes the form of indirect emissions, which are not covered during the transition period.

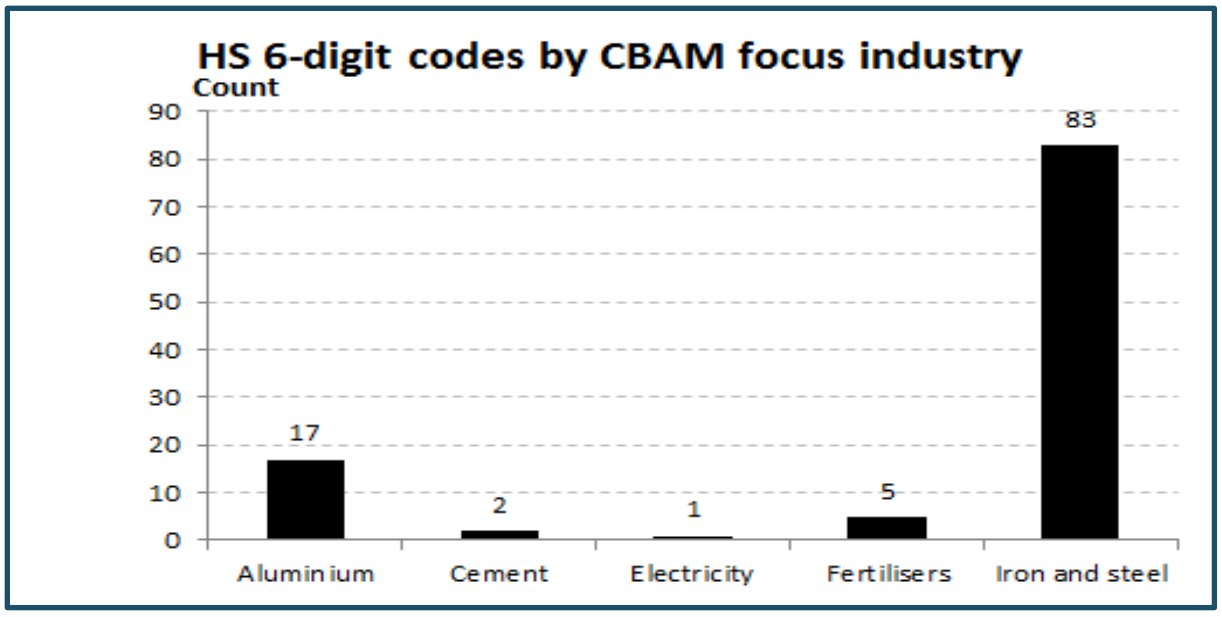
## Cement

The EGD explicitly recognises the cement sector as an essential industry for the EU economy. Cement and concrete are indeed vital construction materials for renewable energy infrastructure, low-carbon transportation systems, and sustainable buildings. They play a central role in achieving a carbon neutral and climate-resilient society. For South Africa and the rest of SADC EPA countries, cement exports to the EU are insignificant. This is therefore a sector about which they will not have be concerned about soon in dealing with the EGD and CBAM.

## Specific products (HS codes) affected

The CBAM proposal contains a specific set of tariff codes associated with these initial focus industries. In total 108 Harmonized System (HS) 6-digit tariff codes are affected. A summary of the number of codes is provided in Figure 4.

**Figure 4: HS codes summarised by CBAM focus industry**




*Source: Compiled from EC (2021a)*

The iron and steel industry contains the largest number of individual product codes (83) followed by aluminium (17), fertilisers (5), cement (2) and electricity (1).

A comparison of the CBAM product group with Green Economy and environmental products is conducted in Section 4. The main observation is that no direct overlap exists;, however, some of the Green Economy and environmental products use outputs from these primary sectors and hence may face increased risks in future as the EU Green Deal gains momentum and potentially expands its focus.

## Mitigation measures

### Short-term measures

Due to the administrative burden of the pilot period of the CBAM, supporting importers with the reporting requirements will be crucial. This support will be particularly important for SMEs.

### Long-term measures

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

- Decarbonising the industries: Companies and government should accelerate the decarbonisation of these carbon intensive industries. Increasing renewable energy in production processes and investing in energy efficient technologies will serve to decarbonise these sectors.
- Decarbonising South Africa's electricity system: South Africa's over-reliance on coal as a feedstock for electricity and liquid fuels production make it one of the most carbon-intensive economies in the world. Increasing renewable energy in the national grid will decrease the indirect emissions of sectors which consume large amounts of electricity.
- Introducing more ambitious climate change policies: South Africa's climate change policies are not ambitious by global standards. An ambitious national climate change policy is required to steer the country towards a low-carbon development trajectory.
- Reforming of the South African carbon tax to reflect global carbon pricing will be critical to ensure that South Africa's carbon intensive products reflect the real price. Ensuring the South African carbon price will stimulate heavy emitters to reform their business models and operations.

## SECTION 3: EGD GREEN TRANSITION CHALLENGES AND RISKS – A SOUTH AFRICAN PERSPECTIVE

While the CBAM is a headline initiative of the European Green Deal, and the most directly trade-related measure announced to date, the broader EGD, goes far beyond the CBAM. The EGD should be thought of as a framework for a comprehensive revision of Europe's regulatory environment and productive structures. The changing regulatory environment and market expectations will impact all exporters to the continent, and will create risks for exporters that are unable to adequately adapt their compliance and productive processes to meet the new reality. The scale and diversity of the change makes it difficult to develop a holistic understanding of the specific changes companies and policymakers should respond to.

To allow for a comprehensive accounting of expected risks, this section identifies and categorises the major risks expected from the EGD, breaking these down by sector and risk category. Four risk categories are examined. **Carbon pricing risks, which is discussed in section 2**. **Market risks** looks at the impact of changing regulations and consumer dynamics. **Supply chain risks** looks at changing supply conditions and expectations for suppliers. And **technology risks** look at the competitive impact of divergences in technologies among South African and European firms. These risks are summarised in a risk registry, which is attached to the broader report.

### Carbon pricing

#### Risk profile

**Fit for 55 EU Green Deal**

The European Commission presented 13 policy measures to reduce greenhouse gas emissions by 55% in 2030, from their 1990 levels. Among these proposals are a new additional EU Emissions Trading System (ETS) for buildings and transport; the phasing out of free emission allowances for aviation; the inclusion of shipping in the existing EU ETS; and tougher emission standards for cars. The package also contains a highly touted and internationally controversial CBAM on which we will focus in in this special.

The Fit for 55 package introduces a large number of different legislative measures aimed at reducing the EU's emission by 55% compared to 1990 levels by 2030, on the way to the 2050 net-zero goal. These include a revision of the EU ETS, and several other EU laws on emissions and energy.

To prevent this, the new CBAM will put a carbon price on imports of a targeted selection of products. This reduces the economic incentive to shift production to countries that impose a lower cost on carbon emissions, and creates greater certainty that European carbon regulation will contribute to an actual decline in global carbon emissions. The CBAM also aims to encourage industry outside the EU to take steps in the same direction (See section 2 for more detail).

**Revisions to the ETS**

The Commission intends to review the ETS as part of the steeper remissions reduction strategy envisaged under the European Green Deal. The reforms to the ETS include the extension of the scope to include the maritime sector and, possibly, the road transport and buildings sectors; provisions to protect against the risk of carbon leakage, and review existing support mechanisms for low-carbon investment.

Phase 4 of the ETS has several new elements. The commissions established the Union-wide quantity of allowances to be issued from 2021 and onwards. The cap will have a linear reduction factor increase from 1.74% to 2.2%. The linear reduction factor does not have a sunset clause and the cap will continue to decline beyond 2030 (Cabuzel, 2020).

The revised EU ETS directive also provides robust and fair rules to mitigate carbon leakage. Free allowances will be extended for another decade and have been revised for sectors at risk of carbon leakage. These sectors will receive 100% of their allocation for free. Sectors less at risk will have free allocations phased out after 2026 from a maximum of 30% to 0% at the end of Phase 4 (2030).

The allowance price was EUR 24.76 (USD 28.28) in May 2021, it is forecasted to increase to around €40/t by 2030 and above €230/t by 2050 (International Carbon Action Partnership, 2021).

## Regulation and market expectations

### Risk profile

Market expectations are among the broadest and most complex areas of the green transition for small firms to grapple with. Shifting consumer preferences, changing regulatory barriers, and the evolving competitiveness of competing technologies will all lead to substantial fractures that can undermine typical expectations for South African exporters. These challenges are accentuated by the fact that they tend to be highly idiosyncratic. Different sectors in different markets targeting different consumer segments will face very different changes in their market environment. The scale and diversity of this change can be difficult to cope with for large, established firms, but it is particularly concerning for small emerging companies that tend to rely on experience and common sense for market targeting, rather than large marketing and research budgets.

These challenges are similarly complex for policymakers aiming to provide support to firms. The breadth of changes occurring is difficult to keep track of, and without a systematised means of evaluating national vulnerabilities to emerging shifts, it is difficult to properly target limited support resources to those most in need. Adding to this problem is that the challenges need to be pre-empted to properly assist firms to quickly adapt to new market conditions. The combination of these factors can leave policymakers guessing in the dark about which of the hundreds of potential challenges need to be met, and how they can do so.

Risks from shifting market preferences affect all sectors. At times these are driven purely by consumer preferences, such as an increasing concern for organic production methods; and in

others by changing regulations, such as changes to compulsory product standards. As environmental concerns become increasingly important, political preferences and combined efforts – such as regulatory and consumer moves against combustion engine cars – will likely cause the sharpest market shifts.

The regulatory changes expected in the European Green Deal distil many of these complexities into their most concentrated form. While the GND is often reduced to its headline initiatives – such as the Carbon Border Adjustment Mechanism – the broader initiative is comprised of a sprawl of different strategies, regulatory reforms, and sector initiatives. As transition funds become more readily available and consumers join the call for transformation of productive structures, these official initiatives are increasingly being accompanied by industry-led initiatives that can similarly shift markets. The net result is a rapidly involving agenda of reform that exporters need to keep up with to assure their place in the European market.

The scale and pace of these changes differ substantially. In many cases, short-term initiatives involve regulatory changes targeted at the types of large, capital-intensive sectors that have the best capacity to cope with these shifting requirements. But, given the scale at which changes are expected under the EGD, the risks remain high that smaller firms could be caught unawares or unable to rapidly adapt, and could be shut out of otherwise competitive trading opportunities. Shifting standards for control measures, such as pesticide residuals in food, or labelling requirements for cosmetics will require investments in new compliance procedures and, at times, fundamental changes to the ways exporters produce their products.

As a starting point to assess these challenges, this section performs a broad stocktaking of EGD strategies, regulations, industry strategies, and other initiatives, to assess market risks for South African exporters to Europe. The EGD is still an emerging programme, and many of the key regulatory considerations have not yet been released or finalised. As such, these results should be considered preliminary and will need to be the subject of ongoing monitoring. At present, strategy documents often contain broad principles and approaches, without the specific detail of their enabling regulations. For this reason there are limits on the extent to which the impact or regulations can be quantified.

To provide a relatively comprehensive assessment of market risks, the section looks at South Africa's 50 largest export products to the EU, based on average exports from 2015 to 2019 (with 2020 not considered due to the distortionary impact of COVID-19 on the trade data). This is a relatively straightforward assessment, but to move from the customs classification to more generic products, the HS6 level data is reclassified to use a generic product categorisation system, known as the Narrative Product Categories (NPC). The results can be seen in Table 8.[1]

[1] Note that the high ranking assigned to 'legal tender' is due to South African Revenue Service (SARS) classification challenges with transactions performed by the South African Reserve Bank, and is not considered in further analysis. Similarly, the inclusion of shipping containers appears to be a classification error resulting from the handling of empty containers.

**Table 8: South African exports to the EU, by product cluster**

| PRODUCT | EXPORT VALUE, US$, TOTAL 2015-2019 | SHARE OF EXPORT VALUE, TOTAL 2015-2019 |
|---|---|---|
| **Automotive, cars** | 15 708 136 000 | 19,8% |
| **Automotive, trucks** | 6 870 506 000 | 8,7% |
| **Catalytic converters (and centrifuges)** | 4 956 757 000 | 6,3% |
| **Platinum Group Metals (PGMs)** | 3 824 848 000 | 4,8% |
| **Ferro-alloys** | 3 634 222 000 | 4,6% |
| **Iron ores, concentrates and chemical derivatives** | 2 830 006 000 | 3,6% |
| **Coal** | 2 370 224 000 | 3,0% |
| **Diamonds** | 2 032 204 000 | 2,6% |
| **Legal tender** | 1 928 157 000 | 2,4% |
| **Citrus** | 1 908 412 000 | 2,4% |
| **Precious-metal ores, concentrates and their chemical derivatives** | 1 514 285 000 | 1,9% |
| **Grapes** | 1 453 987 000 | 1,8% |
| **Wine** | 1 335 324 000 | 1,7% |
| **Other chemicals** | 1 332 665 000 | 1,7% |
| **Flat-rolled stainless steel** | 1 179 354 000 | 1,5% |
| **Tractors and heavy-duty vehicles** | 1 099 844 000 | 1,4% |
| **Sulphur & sulphuric chemicals** | 908 261 000 | 1,1% |
| **Aluminium** | 872 379 000 | 1,1% |
| **Fish** | 852 590 000 | 1,1% |
| **Engines and turbines** | 736 627 000 | 0,9% |
| **Aircraft** | 730 331 000 | 0,9% |
| **Waste and scrap of precious metals** | 678 027 000 | 0,9% |
| **Titanium ores, concentrates & their chemical derivatives** | 649 646 000 | 0,8% |
| **Wool & wool yarn** | 645 361 000 | 0,8% |
| **Leather & animal hides** | 603 299 000 | 0,8% |
| **Zirconium ores, concentrates and chemical derivatives** | 594 059 000 | 0,7% |
| **Processed aluminium** | 588 586 000 | 0,7% |
| **Manganese ores, concentrates & chemical derivatives** | 533 570 000 | 0,7% |
| **Shipping containers** | 488 589 000 | 0,6% |
| **Hydrogen and hydrogen chemicals** | 471 284 000 | 0,6% |
| **Apples & pears** | 461 517 000 | 0,6% |
| **Other seafood** | 431 861 000 | 0,5% |
| **Petroleum products** | 422 661 000 | 0,5% |
| **Paper and paperboard** | 418 528 000 | 0,5% |
| **Copper** | 362 648 000 | 0,5% |
| **Natural construction materials** | 355 524 000 | 0,4% |

| | | |
|---|---|---|
| **Other fruit** | 349 202 000 | 0,4% |
| **Chromium ores, concentrates and chemical derivatives** | 348 205 000 | 0,4% |
| **Pig iron & other primary forms** | 341 748 000 | 0,4% |
| **Petroleum oils** | 332 731 000 | 0,4% |
| **Chemical alcohols** | 319 903 000 | 0,4% |
| **Hydrocarbons** | 319 813 000 | 0,4% |
| **Propylene polymers** | 299 528 000 | 0,4% |
| **Aluminium producers** | 298 460 000 | 0,4% |
| **Wood pulp** | 296 719 000 | 0,4% |
| **Nickel** | 281 269 000 | 0,4% |
| **Fruit juice** | 280 233 000 | 0,4% |
| **Ketones/quinones** | 261 253 000 | 0,3% |
| **Other inorganic chemicals** | 259 131 000 | 0,3% |
| **Oxylic acids** | 251 023 000 | 0,3% |
| **Nuts** | 247 982 000 | 0,3% |
| **All other products** | 8 962 672 000 | 11,3% |

*Source: UN COMTRADE, with author's classification*

These fifty sectors form the basis for further evaluation, and market risks are individually considered for each product. However, because many products will face similar challenges, they are further grouped into the categories highlighted in Table 9, which also contains a brief note on the core risks identified for each sector.

**Table 9: Market risks to South African exports to the EU, by industry clusters**

| SECTOR | SHARE OF EU EXPORTS | SHARE OF SME INCOME | PRIMARY MARKET RISKS |
|---|---|---|---|
| **Automotive** | 34.80% | 3,0% | Emissions standards, phase out of internal combustion engines |
| **Mining and quarrying** | 15.90% | 0,4% | Declines in platinum and other end-use demand |
| **Metals** | 10.50% | 5,6% | Circular Economy Action Plan restrictions on scrap metal exports |
| **Agriculture, forestry & fishing** | 7.10% | 8,9% | Farm to Fork strategy standards |
| **Chemicals, plastics & rubber** | 5.50% | 3,9% | Chemicals Strategy for Sustainability CLP and REACH restrictions |
| **Coal and petroleum products** | 3.90% | 0,6% | Secular decline in coal demand |
| **Transport equipment** | 2.30% | 8,8% | Minimal risks |
| **Food, drink and tobacco** | 2.10% | 2,5% | Bulk transport of wine |

| | | | |
|---|---|---|---|
| **CTFL** | 1.60% | 12,3% | Carbon intensity of leather value chain |
| **Pulp, paper and wood products** | 0.90% | 7,9% | Minimal risks |
| **Machinery and related items** | 0.90% | 5,6% | Minimal risks |

*Source: UN COMTRADE (trade data), SARS Tax Statistics 2020 (SME shares), author's compilation (risks)*

Short analytical overviews of these risks can be found in the following section, while some initial observations on potential support measures that can help firms adapt to changing market conditions follows.

## Affected sectors

### Automotive

The Automotive sector has a long history of grappling with and innovating with environmental standards, but the new wave of regulations facing the sector are some of the most challenging in recent history. These standards tend to focus on stricter emissions limits in the short term and the phase out of internal combustion engines in the medium term. These shifts will impact South Africa's four core automotive sectors, namely passenger vehicles, heavy-duty vehicles, auto components, and catalytic converters – which collectively account for upwards of 35% of total exports to Europe.

At EU level, progress on decarbonising autos is already underway through a 2019 decision by the EU Commission (Regulation 2019/631) (European Parliament and Council of the European Union, 2019a), which requires automotive manufacturers to reduce emissions by 37.5% between 2021 and 2030 (Haas and Sander, 2020). The Fit for 55 package released in July 2021 redoubles these commitments, and further adjust emissions regulations to require a 55% reduction by 2030 (the dti, 2021d).

At member state level, nine countries have announced an end to the sale or registration of internal combustion engines in the coming decades: Austria (2020), Denmark (2040), France (2040), Germany (2030), Ireland (2030), the Netherlands (2030), Slovenia (2030), Spain (2040), and Sweden (2030) (Burch and Gilchrist, 2020). In addition, Portugal has phase-out regulations in place without moving to a full ban, and countries on the European periphery, such as Britain and Norway, have announced similar bans. The collection of countries acting against internal combustion engines account for over 81% of total South African automotive exports to Europe (including the UK).

At present, all automotive sector products exported to the EU from South Africa are internal combustion engine cars, and virtually the entire value chain is expected to be impacted by the ongoing shift to electric and hybrid vehicles. European consumers show an increasing preference for electric vehicles (EVs), although the sector still accounted for a minority (11.9%) of new car sales in 2020 (ACEA, 2021). Electric vehicle (EV) demand also differs substantially by country and market segment, but demand tends to be higher in South Africa's main EU export markets – notably Germany.

The shift to electric vehicles and low-emission internal combustion engine (ICE) vehicles is likely to be self-reinforcing. As EVs assume a growing share of the market, pressure will rise on petroleum producers and retailers, likely increasing costs for ICE cars, and speeding up the shift away from these vehicles. This inflection point is a high-risk zone for South African producers if they have not yet substantially transitioned to EV manufacture.

Heavy-duty vehicles face many similar challenges to those facing passenger automotive, but to a less stringent degree. This largely stems from the fact that electric engine technologies are, at present, less suited to long-range heavy-duty vehicles. Nevertheless, the EU introduced the first zone-wide emissions restrictions on heavy-duty vehicles in 2019 – although implementation will only start in 2025 (European Parliament and Council of the European Union, 2019). National bans on combustion engines do not generally place limitations on heavy-duty vehicles.

Market expectations appear to differ between heavy-duty and passenger vehicles, and there is evidence that trucks are much less likely to undergo a radical shift to electric vehicles in the short term, with only about 7 000 electric heavy-duty trucks registered in the EU as of 2019 (IEA, 2021). This will likely change as the technology advances and price pressures on petroleum begin to bite. The electric market is likely to expand more rapidly in light-utility vehicles and recreational trucks, which may have an impact given South Africa's traditional strengths in some of these areas.

While consumer market trends will impact auto firms, component manufacturers will likely be more significantly affected. As discussed in detail in the technology section below, the consolidation of the sector around the production of a few core electronic components will likely permanently displace many suppliers of traditional mechanical components. Without repeating the analysis in the technology section below, an estimated 65,2% of South African auto exports to the EU are assessed as being at high risk of displacement due to the changing demands of the EV value chain.

Catalytic converters, which are by far the largest auto component exported to the EU, make up the bulk of this share of high-risk products. Understanding the impacts of the transition for catalytic converters is complex. In the short term, demand for catalytic converters will likely increase as stricter standards increase demand for pollution control systems. However, changes to catalytic converter technologies (including reductions in platinum content) and the eventual rise of electric vehicles will both likely lead to significant reductions in exports over time – although the timeline for this shift is difficult to judge.

In many ways, automotive represent an advanced vision of the type of regulatory changes that can be expected in multiple sectors in the future. The nature of the autos transition and the risks involved are well known, and domestic policy support already acknowledges these shifts and is planning to adapt. The globally integrated nature of the auto industry also means that risks tend to be less concentrated at a national level, as original equipment manufacturers (OEMs) have the necessary capacity to drive changes across all their major productive hubs.

Nevertheless the scale of the regulatory changes – and the accelerated pace of the transformation rolled out with the Fit for 55 package – requires renewed and urgent attention for South African exporters and their suppliers. Special attention needs to be paid to component manufacturers, both to assure firms are positioned to adjust their offering to a very different

future supply chain, and to assure that South Africa's established component manufacturing sector continues to be a draw for OEMs. While attention needs to focus on producers of mechanical components, there seems to be substantial scope to offer additional support to transition other component suppliers, such as automotive leather and composite fixtures, to a more sustainable basis.

While automotive are among the most at risk from the transition in the EU, the impact on these changes on small firms is likely to be less pronounced. A number of smaller firms do participate in the auto components value chain, but these companies still tend to be relatively large by South African standards. Risks do, however, remain high that the transition could raise barriers to the entry of smaller firms in the sector, as shifting standards and expectations among OEMs trickle down to reinforce the complex standardisation processes that already leave small firms on the margin of the sector.

**Mining and quarrying**

On the opposite end of the spectrum from automotive, the Green New Deal has relatively little to say on mining and quarrying. Much of the focus on the sector in existing EGD initiatives has rather been on security of supply for the types of critical raw materials needed to produce things such as solar panels and battery storage technologies. These initiatives identify a number of products – like rhodium and iridium – that will likely benefit South African miners.

Nevertheless, the EGD could have substantial impacts on South Africa's mining sector through the regulation of end-uses of products. The clearest example of this is platinum, which faces many of the same uncertainties associated with the production of catalytic converters, which remains the largest industrial use of platinum. The rapid displacement of combustion-engine vehicles could lead to a sharp decline in platinum demand, and challenge the viability of some of South Africa's more marginal mines.

These risks may be offset by the expanded use of platinum metals in battery technologies and other innovations, but it remains difficult at this time to make this assessment, given the breadth of competing technologies in the energy storage space. In general, it should be expected that the highly volatile price environment for platinum will continue in the short term, even if a rapid secular decline in demand seems unlikely.

Similarly to platinum, most of the market concerns for South African mined goods are indirect – driven by shifting demand patterns for the end use of goods further downstream from primary mineral commodities. Table 10 maps out the primary uses for the core cluster of commodities exports to the EU.

**Table 10: South African mining exports to the EU, end uses**

| MINERAL | PRIMARY USE | SECONDARY USES |
|---|---|---|
| **Platinum Group Metals (PGMs)** | Catalytic converters | Catalysts for bulk-chemical production and petroleum refining; dental and medical devices; electronic applications, such as in computer hard disks, hybridized integrated circuits, and multilayer ceramic capacitors; glass manufacturing; |

| | | |
|---|---|---|
| | | investment; jewellery; and laboratory equipment |
| **Iron ores, concentrates and chemical derivatives** | Steel | |
| **Diamonds** | Jewellery | Computer chip production; construction; drilling for minerals, natural gas, and oil; machinery manufacturing; stone cutting and polishing; and transportation (infrastructure and vehicles) |
| **Precious-metal ores, concentrates and their chemical derivatives** | Electronics, jewellery, silverware, coins, photography | Antimicrobial bandages, clothing, pharmaceuticals, and plastics; batteries; bearings; brazing and soldering; catalytic converters in automobiles; electroplating; inks; mirrors; photovoltaic solar cells; water purification; and wood treatment |
| **Titanium ores, concentrates and their chemical derivatives** | Aerospace | Defence, chemical processing, marine hardware, medical implants, power generation, consumer, and other applications |
| **Zirconium ores, concentrates and chemical derivatives** | Ceramics, foundry sand, opacifiers, and refractories | Abrasives, chemicals (predominantly, zirconium basic sulphate and zirconium oxychloride octahydrate as intermediate chemicals), metal alloys, and welding rod coatings |
| **Manganese ores, concentrates and chemical derivatives** | Steel | Dry cell batteries, in fertilizers and animal feed, and as a brick colorant |
| **Chromium ores, concentrates and chemical derivatives** | Ferrochrome/stainless steel | Tanning, metal plating, machinery |

*Source: USGS (2021)*

A number of downstream industries – particularly steel and ferrochrome - are at high risk from the type of carbon border adjustments detailed in above, but few are likely to be directly impacted by regulations related to the environmental transition. Risks are higher for a number of secondary uses, notably in metallic chemicals and fertilisers, but the composition of this impact is difficult to understand in the absence of a deep-dive analysis into particularly minerals value chains. Similarly, some issues that are often bundled with sustainability concerns – such as ethical sourcing and voluntary standards on fair trade – are relevant, but largely outside the scope of this paper.

On balance, it seems the bulk of risks to the mining sector are concentrated in platinum and the impact of a carbon border adjustment mechanism on steel and ferrochrome, but direct effects from changing market demand are not obviously a concern at present. In the short term, potential disruptions may be offset by increased demand from the EU for crucial raw materials that are needed to drive the transition. This is particularly the case for minerals classified as

critical raw materials by the European Commission, which includes major export commodities such as PGMs, vanadium, and fluorspar.

In addition, small firms account for a particularly marginal share of mining, accounting for less than 0,4% of taxable income (SARS and National Treasury, 2020), and thus the impact of potential disruptions are unlikely to significantly impact SMEs.

**Metals**

Metals share many similarities with the minerals value chain described above, particularly in the risks posed by carbon border adjustment taxes (detailed above). Similar to many base minerals and metals ores, processed metals products are not likely to fall out of favour as markets shift to a more sustainable footing, and indeed many of the components used in key green investments are heavily reliant on inputs from the metals sector. The core transformation facing the sector is the shift to more sustainable production techniques, rather than a shift towards new competitor products.

Perhaps the market consideration that is most pressing for metals is the potential for rising recycling of metal scrap in the European Union, combined with improvements to recycling technologies and the achievement of critical levels of existing metal materials that are suitable for recycling. The ability to recycle metals varies by type, and in many cases scrap metal is only a component in the production of primary metals products. The average recycling rates and share of recycled content for different metal exported to the EU can be found below.

**Table 11: Recycling rates for key metals exports**

| PRODUCT | SHARE OF EXPORTS TO THE EU | AVERAGE RECYCLING RATES | AVERAGE RECYCLED CONTENT |
|---|---|---|---|
| Ferro-alloys | 4,60% | More than 50% | 10% - 25% |
| Stainless steel | 1,50% | More than 50% | 10% - 25% |
| Aluminium | 2,20% | More than 50% | 25% - 50% |
| Waste and scrap of precious metals | 0,90% | More than 50% | 25% - 50% |
| Copper | 0,50% | More than 50% | 10% - 25% |
| Pig iron and other primary forms | 0,40% | More than 50% | 25% - 50% |
| Nickel | 0,40% | More than 50% | 25% - 50% |

*Source: UNEP (2011)*

As the table indicates, South Africa's exports are clustered into highly recyclable metals types. All products are already in the highest category of recycling rates identified by the United Nations Environment Programme (UNEP) International Resource Panel, but improvements in the rate of recycling are feasible, even if they would be challenging. Despite this, the extent of the risk posed by improved recycling is mixed. This is largely because recycled inputs are already a standard part of metals production, and would not necessarily displace existing smelters through the creation

of specialised recycling facilities – effectively, existing smelters already double as recycling facilities.

Core risks are clustered in efforts by various regions, including the EU, to potentially limit the export of scrap metals. The EU is by far the world's largest exporter of scrap metal, which is typically shipped to producer countries such as Turkey or India, or European producers such as Belgium and Italy. In line with the Circular Economy Action Plan, (EC and European Economic and Social Committee, 2020a).

The EU has proposed revisions to Regulation (EC) No 1013/2006, which governs the export of waste products from the region (Karamfilova, 2021). While the regulations are still in the development process, there is widespread belief that the rules will either ban or place significant restrictions on the export of waste.

The aim of the regulations, as stated in the Circular Economy Action Plan, is to "take action with the aim to **ensure that the EU does not export its waste challenges to third countries**. Actions on product design, quality and safety of secondary materials and enhancing their markets will contribute to making **'recycled in the EU'** a benchmark for qualitative secondary materials." (emphasis in the original text) (EC and European Economic and Social Committee, 2020a). As presently written, the strategy would impact the export of metals scrap, which is classified as a waste produce in the existing regulations.

If restrictions were placed on these exports, European metals producers would gain access to a captive market for a core productive input, at a time in which various countries – including South Africa – are struggling to access cheap, reliable sources of scrap metal. While South Africa does not source scrap from the EU, existing global scrap shortages could be worsened by a major scrap exporter like the EU limiting exports. For example, India is by far the largest purchaser of South African scrap, and would lose access to a roughly US$226 million in imports of scrap from the EU – potentially resulting in expanded efforts to source scrap from existing suppliers like South Africa.

Given the limited production capacity in the EU, and the very high costs associated with investments in the metals sector, it is unclear if this competitive advantage would be significant enough to change market conditions, but it is a risk worth watching.

On balance, market risks in the metals sector are worth monitoring, but are relatively mild in the short-term – and certainly much less pressing than risks from carbon pricing and border adjustment taxes. Small firms are also less impacted by what risks do exist, since the production of metals is extremely capital intensive and exports are dominated by a few large firms.

**Agriculture, forestry and fishing[2]**

While smaller in absolute terms than sectors like mining and metals, agriculture is perhaps the most high-impact export product to the EU – featuring relatively high shares of earnings for small firms, high proportions of low-skilled labour, and good potential for additional processing. The specific agricultural products exported to the EU are also relatively low on carbon emissions, with most of their emissions stemming from off-grid power generation, liming, and embodied emissions from value chain linkages to sectors like fertiliser (see the supply chain section below).

Agriculture is already highly regulated, with extensive sanitary and phytosanitary restrictions and a complex broader regulatory environment that is strictly governed by agreements such as the SACUM Economic Partnership Agreement, the free trade area between the EU and the SACU member states and Mozambique. Partly as a result of this, export-oriented growers in sectors such as citrus or table grapes are highly sophisticated, with strong existing control systems and strong capacity to engage with new and emerging regulatory changes. Smaller firms, which are more likely to target the domestic market or immediate regional neighbours, are less exposed to potential regulatory changes. On balance, most major South African agricultural exports to the EU are well positioned to respond to potential changes.

However, there may still be challenges associated with the EU's Farm to Fork strategy (EC, 2020b). Farm to Fork is a major strategic shift to move EU agriculture towards a more sustainable basis, including initiatives to reduce the carbon footprint of farming, promote a bio-based economy, reduce the use of chemical pesticides, avoid waste in fertiliser use, and expand organic farming – among other issues.

The strategy at present is relatively light on specifics on how these changes will impact imports, although it clearly does have global ambitions. The EU envisages Farm to Fork as an effort towards "setting global standards", noting that "sustainability of food systems is a global issue and food systems will have to adapt to face diverse challenges." The strategy notes that:

> *"EU trade policy should contribute to enhance cooperation with and to obtain ambitious commitments from third countries in key areas such as animal welfare, the use of pesticides and the fight against antimicrobial resistance. The EU will strive to promote international standards in the relevant international bodies and encourage the production of agri-food products complying with high safety and sustainability standards, and will support small-scale farmers in meeting these standards and in accessing markets. The EU will also boost cooperation to improve nutrition and to alleviate food insecurity by strengthening resilience of food systems and reducing food waste" – EC, 2020b*

While it is generally too early to know what specific rules will accompany the strategy, and how these will impact South African farms, a few initial details are worth noting.

[2] Forestry issues are discussed alongside the pulp, paper and wood products subsection.

The first is that the strategy appears to take a more stringent line on the assessment of import tolerances for foods using pesticides that are not approved in the EU. Rules have already begun to be tightened, with a 2020 decision by the European Food Safety Authority reducing the maximum residual pesticide levels allowed on agricultural products. Further restrictions on these tolerances will raise the need to assist smaller farmers in transitioning to export-compatible pesticide regimes, and will also increase the impact of the expected revisions to Minimum Residual Levels (MRL) for pesticides as part of the Farm-to-Fork shift.

Second, are a broader set of concerns on the need to prevent offshoring of production in light of new regulations, and to improve the resilience of agricultural supply chains. Discussions in the European Parliament have occasionally drawn parallels between the Farm to Fork Strategy and the European Carbon Pricing Mechanism, particularly on the need to assure that stronger regional restrictions do not encourage the off-shoring of production (Southey, 2021). This raises the potential of agricultural specific restrictions that somehow parallel those implemented under the CBAM, or which could take on the more traditional agricultural form of expanded subsidies to encourage farms to adopt sustainable practises.

Beyond these regulatory concerns, consumer expectations may also play an increasing role, as voluntary certifications become more popular and demanded in the EU market. Organic farming and certifications like Fair Trade are popular in the European Union, and are often cited as a way for smaller-scale farmers access high-value markets, in a way that highlights existing traditional farming approaches. However, as recently highlighted by UNCTAD, (Elamin and de Cordoba, 2020), there is limited and contradictory empirical evidence on the impact of these certifications on trade patterns, which makes it difficult to conclusively proclaim on the role played by these voluntary standards.

While the direct market implications of these shifts are difficult to judge at a macro or national level, there is clearly a need to assure that organic farming is available to the South African agricultural sector as strategic tool to use in cases when it can have an impact. Farmers need to be aware of and have access to voluntary certifications for methods like organic farming. However, South Africa's organic farming sector is still emerging, which an African Union assessment categorising existing organic systems as an Infant (Ecological Organic Agriculture) Country – a grading that places South Africa behind 13 other African states.

Without going into detail on the state of organic agriculture in the country, at a high level there may be a need to develop formal domestic certification standards (which are currently privately developed), and to help farmers access the private standards providers that certify for organic labelling in the EU (such as SGS and Ecocert). While the future of the integration of organic farming into the EGD reforms remains uncertain, consolidation of organic standards in the EU may actually help with this process, by allowing farmers to coalesce around a more established set of guidelines. Pre-emptively starting the process of formalising organic certifications locally can help position South Africa's standards environment for this coming consolidation.

Fisheries are in a similar position to agriculture, with the sector already subject to stringent regulations, and likely to face new and evolving rules as a priority in the Green New Deal, but with considerable current uncertainty on the specific changes that might come about. Marine pollution and the safeguarding of oceans as crucial carbon sinks are both identified as priorities in the EGD's primary aquaculture strategy, titled *Transforming the EU's Blue Economy for a Sustainable Future* (European Parliament and European Economic and Social Committee, 2021) – but much of the focus to date has been on the governance of European fisheries, not imports.

The strategy has a very broad scope, covering topics such as offshore renewable energy and carbon emissions from marine transport, while also emphasising many existing efforts to protect vulnerable food stocks. While a roadmap is mentioned for reducing the environmental impact of fisheries and broader aquaculture food systems, the proposed legislative framework is expected to be tabled only in 2023. Some smaller initiatives, such as new standards for labelling and marketing, including disclosing carbon footprints, are expected to be proposed in 2022.

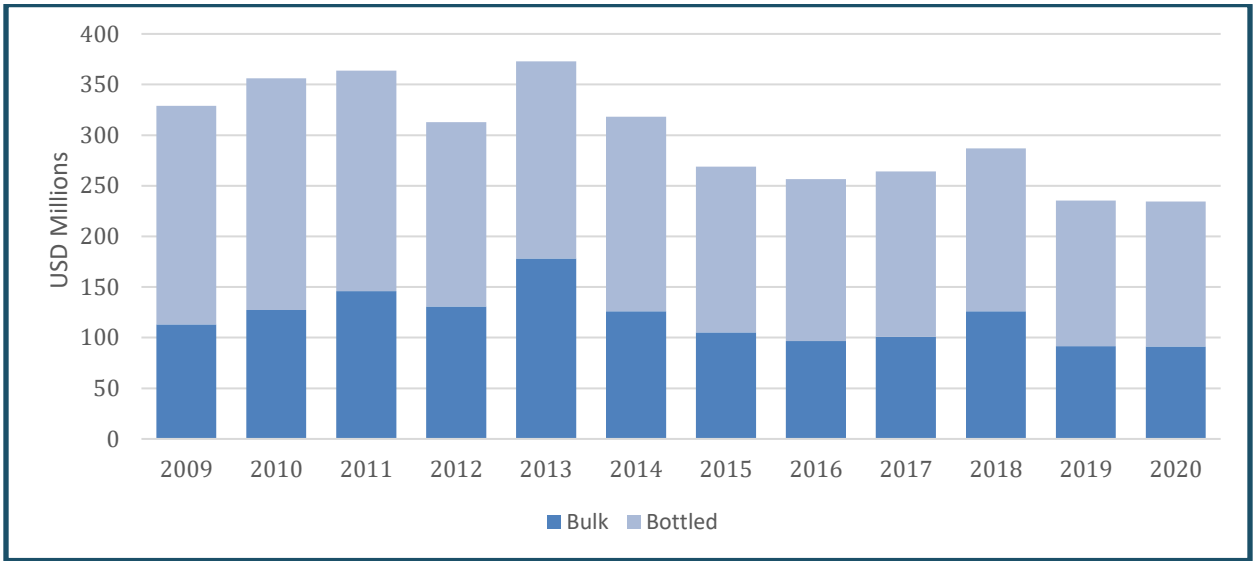
It remains difficult to know what these new frameworks might include. While fisheries are a politically charged and highly regulated area in Europe, most of this focuses on protecting fishing rights and preventing illegal fishing. Import regulations tend to rather emphasise the type of sanitary and phytosanitary standards seen in the broader agriculture value chain. Nevertheless, pre-emptive support to small fisheries may be viable if it focuses on improved control and monitoring systems, to prepare firms for whatever additional labelling and disclosure requirements they may face in the future. Helping small firms improve internal controls and monitoring is beneficial for compliance with a wide range of voluntary standards and compulsory specifications, and has positive spill overs that help firms identify waste and improve performance – meaning generalised support of this nature could be viable even in light of the significant uncertainty that remains on fisheries regulations.

**Food, drink and tobacco**

Food and drink exports will be similarly affected as with primary agriculture, and for that reason many of the observations noted above will not be repeated in this subsection. However, the largest agro-processing export, wine, faces a number of additional potential export challenges. The most serious concerns relate to emissions standards (such as the EU Emissions Trading Scheme and Effort Sharing Decision), and related monitoring efforts (such as the Single Market for Green Products Initiative), but a number of market risks are also notable (Montmasson-Clair and Mataba, 2020).

In particular, concerns on transport and packaging costs have led to a shift away from bottled wine exports to bulk wine exports, and may accelerate as regulations and carbon pricing on these parts of the value chain come into effect. This erodes the benefits of wine exports, by removing important value chain linkages in the glass packaging sector, and potentially undermining local brand owners and their associated marketing margins. Significant increases in bulk exports may also complicate market access, as quotas for duty-free access under the EU Economic Partnership Agreement are larger for bottled than bulk wine.

**Figure 5: South African wine exports to the EU, by packaging type**




*Source: UN COMTRADE, with author's classification*

Worryingly, the shift to bulk wine exports largely impacts smaller, less well-established firms, as higher-end manufacturers have the brand recognition needed to defend their own packaging (Montmasson-Clair and Mataba, 2020). Aside from repackaging for house brands, bulk shipping also brings secondary risks, with TIPS previously finding that "South African winemakers fear that their wine could be blended with lower-quality wines, which could present a reputational risk for their products" (Montmasson-Clair and Mataba, 2020).

For the purposes of this project, these issues are of greatest concern because they make entry into the wine export business significantly more complicated for small firms. This is both because of the direct impacts details above, but also because the resultant gap between large and small producers can make it difficult for smaller firms to invest in the type of upgrading, branding and packaging needed to eventually transition to higher end retail.

While it is too early to definitively say what impact the Green New Deal will have on the shifting market for bulk wine, close observation will be needed to assure that this ongoing trend does not combine with the shifting standards requirements mentioned, to further complicate the already difficult prospects for export for small firms.

**Chemicals, plastics and rubber**

South Africa's exports of chemicals and plastics to the EU are clustered in a collection of basic chemicals, most of which have a wide variety of applications in a number of industries. With some exceptions – such as sulphur's strong dependence on sale to the eventual production of fertilisers – chemical exports' diverse value chain makes it difficult to gauge the impact of market shifts on chemicals exports. Most of the chemicals exported by South Africa are by-products of either primary petroleum refining or mining, and thus production is often disconnected from demand – further complicating the prospects for a broad assessment of the sector.

Most of the regulatory impact on chemicals will be driven by the EU's Chemicals Strategy for Sustainability (European Parliament and European Economic and Social Committee, 2020b), which governs changes to the chemicals sector as part of the Green New Deal. The Chemicals Strategy centres on significantly more stringent restrictions on the use of harmful chemicals, or on the use of chemicals that may pose a risk when used in combination with others (the so-called 'cocktail effect'). This will be implemented, in part, through revisions to two existing pieces of regulations, namely Classification, Labelling and Packaging (CLP, which governs warnings and labelling requirements) and Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH, which governs the use of chemicals).

At present, the specifics of which chemicals are impacted, and what these impacts will be, are not clear. However, a general indication of the risks involved can be scoped based on existing chemicals regulations. Table 12 shows the current classifications applied to the top 10 chemicals exports from South Africa to the EU.

**Table 12: Classification and labelling requirements of major chemical exports to the EU**

| CHEMICAL | ENVIRONMENT | HUMAN HEALTH |
|---|---|---|
| Sulphates of copper | Yes | Yes |
| Hydrocarbons, acyclic, unsaturated (excluding ethylene, propene "propylene", butene "butylene" and isomers thereof and buta-1,3-diene and isoprene) | Yes | Yes |
| Vanadium oxides and hydroxides | No | Yes |
| Butan-1-ol "n-butyl alcohol" | No | Yes |
| Phosphates of calcium (excluding calcium hydrogenorthophosphate "dicalcium phosphate"): other | No | No |
| Sodium dichromate | Yes | Yes |
| 4-methylpentan-2-one "methyl isobutyl ketone" | No | Yes |
| Propan-1-ol "propyl alcohol'' and propan-2-ol "isopropyl alcohol" | No | Yes |
| Esters of acrylic acid: butyl acrylate | Yes | Yes |
| Carbides, whether or not chemically defined (excluding of calcium or silicon, and inorganic or organic compounds of mercury whether or not chemically defined) | No | No |

*Source: European Chemicals Agency (ECHA) substances database, https://echa.europa.eu/information-on-chemicals*

The most significant risks are for products classified as being a risk to the environment, which includes sulphates (primarily used in agriculture), acyclic hydrocarbons (use varies by type), sodium dichromate (primarily used in ferrochrome production), and butyl acrylate (primarily used in paint manufacture). All four are already subject to compliance regulations, and provided changes aren't extremely punitive, they will likely be able to manage any potential changes.

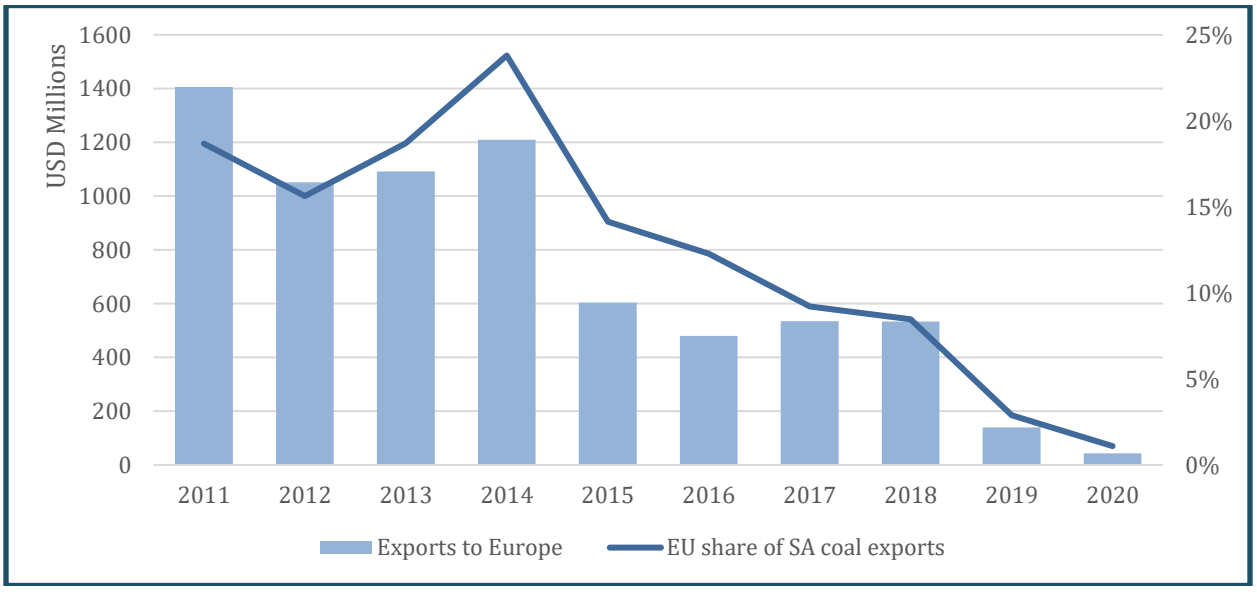
In general, the main risks for chemicals are associated with carbon pricing and disruptions to inputs from the petrochemicals sector (discussed in other sections), and for now the focus on market regulations should be ongoing monitoring of changing rules resulting from the chemicals strategy. Support may be needed to assure firms are aware of and able to comply with changes to existing regulations – but these changes are likely to have significant impacts only when combined with factors such as the rising costs of basic chemicals as a result of slowing by-product supply as petroleum refineries cut back on production capacity. While investing in biochemicals is an essential future initiative for the sector, regulations and market factors likely won't drive this shift – the decline in petroleum refining will.

Small firms are, in addition, unlikely to be significantly impacted, given the relatively concentrated nature of the sector, and the dominance by a handful of large producers.

**Coal and petroleum products**

South Africa's coal sector is in the early process of a long-term secular decline, but that decline is already well advanced in the case of the EU. While coal exports still rank highly when considering five-year trends, they are less than 3% of the rate they were 10 years ago, and the EU accounts for less than 1% of South Africa's coal export market. While much can be said about the shifting dynamics around coal, and the many initiatives that impact coal exports to Europe, these shifts are mainly already in place, and further changes under the Green New Deal are unlikely to significantly change the already dire competitive outlook for coal exporters.

**Table 8: South African coal exports to the EU**




*Source: UN COMTRADE*

Perhaps counterintuitively, the more serious new concerns with reference to the EU in the coal and petroleum category are the risks associated with paraffin wax, bitumen and petroleum jelly. All three are likely to be severely impacted by declining supply from South Africa's diminishing petroleum production capacity, and from the carbon border adjustment mechanism, which will

hit hardest on the low-value outputs of very high energy consumption processes like petroleum refining.

However, the three products don't face significant obvious market risks. All three are primarily used as intermediaries in sectors such as cosmetics, construction and coatings – none of which are in immediate risk of serious declines, or have immediate access to competitive alternatives. Focus should likely remain on carbon pricing and sustainable inputs (discussed elsewhere in the report), while market-focused risks are monitored as a secondary concern.

**Transport equipment, machinery and related items**

South African exports of transport equipment and machinery are structured around aircraft components, heavy earth movers and turbines. Aircraft component exports are likely underpinned by the supply of components to Airbus by Denel Aerostructures and Aerosud Aviation (although the former is expected to cease supply in the near future); while the machinery and heavy-duty earth mover categories are both automotive components that largely encounter the same challenges as those listed in the automotive section.

The EU Green New Deal does raise transformation of the aerospace sector as part of its long-term ambition, but the priorities within this broad space are not identified. The Green New Deal identified that "air quality should be improved near airports by tackling the emissions of pollutants by aeroplanes and airport operations (EC, 2019b), but it remains unclear how stringent these changes will be in the short term. Given the significant political influence wielded by Airbus, and the relatively efficient nature of air travel already, it seems unlikely that radical changes will be implemented in the short term.

On balance, market risks for this relatively diverse segment aren't obviously apparent, except for those that are detailed in the broader automotive space above.

**Clothing, textiles, footwear and leather**

The leather sector is the most prominent risk in the clothing, textiles, footwear and leather (CTFL) space. Leather is connected to an extremely carbon intensive value chain, both in the production of hides (through enteric fermentation among cattle) and in the tanning process (through tanning chemicals sourced from dirty sectors like metals, particularly chromium in the case of South Africa). Leather was one of the sectors chosen as part of the pilot programme for the EU's Product Environmental Footprint Category Rules, which aim to standardise assessments of life-cycle carbon inventories, and appears to be a priority area of concern for the European Commission's work on standardising life-cycle assessments of environmental impact.

Leather also impacts a disproportionately large number of small firms, and is a sector that has limited resources or capacity to rapidly adapt to changing circumstances. The combination of high risks, large exposure for small firms, and a relatively weak sector resilience means leather is a significant area of concern.

Most of these risks, again, come from the types of carbon pricing discussed elsewhere, with much of the lobbying around the issue squarely focused on whether leather carbon assessments should

include the carbon burden of livestock. Given the limited application of draft CBAM regulations to heavy industry, these risk seem to have receded in the short term.

Beyond carbon pricing, specific regulations for the leather sector have not yet been defined as part of the Green New Deal. However, risks still remain high that leather could face a backlash from consumers, particularly among more affluent tiers of the consumer market. In some ways, leather could be compared to the conditions facing furs during the 1980s/90s, with the sector sitting on a major environmental fault-line that comes with significant risks. For now, however, there is little concrete action that can be taken until specific regulations or trends make themselves clear.

Significant options are available to improve the environmental impact of leather at the tannery phase. Pilot initiatives on green leather, which aim to remove metal-based tanning chemicals from the production cycle, are useful indicators of potential future interventions. But, on balance, the sector's impact will be determined by the extent to which hide production is included in calculations on emissions. Considering most livestock used in leather production is bred specially for the purpose, it seems unlikely that these considerations will be ignored.

**Pulp, paper and wood products**

Both primary forestry and downstream pulp and paper will likely be impacted by the Green New Deal. For forestry, changes will likely focus on sustainable practises and certification schemes; while for pulp and paper manufacture the focus will fall on the carbon-intensive nature of production, and the high levels of pollutants produced during the production of pulp products.

While not yet finalised, the European Commission has begun consultations on an EU Forest Strategy (EC, 2020d), which is closely linked to the EU Biodiversity Strategy (EC, 2020e), a broader document that outlies key principles for protecting and expanding natural areas within the EU. The consultations are still at an early stage, and very little is known about what the strategy will entail – particularly given that it will almost certainly focus on forestry within the European Union, with regulations on imports likely to only be indirect through this primary concern.

The roadmap for the strategy does mention a previous EU strategy, *Stepping up EU Action to Protect and Restore the World's Forests* (EC and European Economic and Social Committee, 2019), which has an international focus based on stringent certification standards, improved transparency of forestry value chains, and enhancements to global forestry governance. If, as seems likely, this is the approach eventually taken, it would bode well for South African exports, as the country has the highest percentage of Forest Stewardship Council-certified forests in the world (Ledger, 2017).

It is, of course, possible that unexpected new regulations pose a specific challenge for the South African forestry sector, but while the approach remains in the abstract, they seem well-suited to South Africa positioning itself as a supply of wood products with high standards.

Pulp and paper is similarly vulnerable to the green transition, featuring high carbon emissions and high levels of water usage. But, at present, there aren't clear regulations that would impact the sector in the EGD, outside of the carbon pricing mechanism. Some of the challenges involved

in the pulp and paper sector are highlighted in the results of the EU Commission's High-Level Group on Energy-Intensive Industries, which found limited scope for greening of the pulp and paper value chain, outside of expanding existing uses of biomass and further deepening recycling (High-Level Group on Energy-intensive Industries, 2019). With few alternative production methods available, and little current sign of regulations on the horizon, focus for the sector should remain on carbon pricing, rather than market restrictions.

## Mitigation measures

To review the market risks facing various sectors above, the core risks, the extent of their impact, and the scope of impact on small firms is outlined below.

**Table 13: Overview of market risks from the EGD, exports to the EU**

| SECTOR | SHARE OF EU EXPORTS | SHARE OF SME INCOME | IMPACT OF RISKS | SCOPE OF RISKS |
|---|---|---|---|---|
| **Automotive** | 34.80% | 3,0% | Very high | Broad |
| **Mining and quarrying** | 15.90% | 0,4% | High | Focused (platinum) |
| **Metals** | 10.50% | 5,6% | Mid (uncertain) | Broad |
| **Agriculture, forestry and fishing** | 7.10% | 8,9% | Mid (uncertain) | Broad |
| **Chemicals, plastics and rubber** | 5.50% | 3,9% | Mid | Broad |
| **Coal and petroleum products** | 3.90% | 0,6% | Low | Broad |
| **Transport equipment** | 2.30% | 8,8% | Low | Focused (aerospace) |
| **Food, drink and tobacco** | 2.10% | 2,5% | Low | Focused (wine) |
| **CTFL** | 1.60% | 12,3% | Mid | Focused (leather) |
| **Pulp, paper and wood products** | 0.90% | 7,9% | Low | Focused (pulp and paper) |
| **Machinery and related items** | 0.90% | 5,6% | Low | Broad |

*Source: UN COMTRADE (trade data), SARS Tax Statistics 2020 (SME shares), author's compilation (risk assessment)*

Managing a mitigation strategy for such a diverse set of sectors and challenges, and grappling with the high levels of uncertainty present in regulations related to the Green New Deal, is complex. The uncertainty in particular is something that can only be managed by ongoing monitoring of new regulations as they arise, and consistent consultations with industry bodies about upcoming changes. As a systematic intervention, sectors with weak or underdeveloped industry representation may benefit most by helping industry bodies build the type of capacity that could allow them to interpret, analyse, and respond to changes as they arise. Sectors with existing industry representation might also benefit from support to appoint transformation

champions – specific experts in the body that can drive the agenda on the part of industry themselves.

For some of the highest risk sectors, changes need to come at a very high level, with local operations of large multinationals working in concert with national government. A clear example of this is the shift to electric vehicles, and the implementation of new strategic initiatives to prepare the domestic automotive sector for a drastically different value chain. While the market risks associated with EVs are probably the most significant in this sector. They are also largely beyond the scope of this project, which aims to prioritise rapid interventions that benefit small firms. For this reason, the largest risks do not always align with the best project interventions.

Despite these limitations, a few quick-win mitigation measures are available to manage risks associated with the EU's green regulatory transition. These are quick wins in as much as they can be rapidly and relatively cost-effectively rolled out – but, given that the risks faced are still a way off, most of their impact will only be felt in the future.

**Table 14: Summary of market risks and potential interventions**

| SECTOR | RISK | MEASURES |
|---|---|---|
| **Cross-cutting** | | Support the hiring of a Transition Champion in sector bodies and/or export councils facing high risks |
| **Automotive** | Transition to EVs and low-emission technologies | Rollout of support to South African trim and fitting component manufacturers – for example, support to a green auto leather initiative or to the Composites Cluster |
| **Agriculture, forestry and fishing** | Farm to Fork pesticide standards | Expanded support for small firms' compliance with maximum residual levels of pesticides |
| **Food, drink and tobacco** | Increasing bulk exports of wine | Export promotion support to boost small producers brand recognition |
| **CTFL** | High emissions footprint of leather | Support for a national green Leather Initiative |

*Source: Author's compilation*

As mentioned, the automotive transition will need to be part of a larger process, and one with an uncertain future given the drastic nature of the changing value chain. However, smaller initiatives are still viable, if they target support to firms outside of the direct shifting technology. These firms – which manufacture components like fittings, car seats, or supplementary electronics – will need to adapt their designs and practises to meet new requirements from OEMs, but these changes won't be as complex as shifting from mechanical parts to building electronics. Supporting the sector will help firms manage upcoming transitions, but can also help protect South Africa's position as an automotive ecosystem that can support EVs and other new

technologies, and thus assist the bigger picture shift in core manufacturing technologies, while keeping OEMs committed to local production.

The specifics of such an initiative are beyond the scope of this paper, and would need to be assessed in discussion with industry. But a useful starting point would be to target components linked to carbon intensive or otherwise "dirty" sectors – such as by pushing for the supply of green automotive leather for car seats, composite materials for fittings and interiors, and safely produced polymers and chemical inputs across the board. Positioning these firms as green suppliers of components that will be in demand by an increasingly transition-focused sector, will again add to the broad scope of South Africa's preparedness for a very different auto industry.

Agriculture, food and drink industry bodies are already well versed in engaging on changing pesticide regulations, such as maximum residue limits, and could form useful partners in efforts to expand preparedness for changing regulations to smaller firms. Helping small farms adopt compliant pesticides and management practises would improve preparedness for a changing regulatory environment, and would introduce the type of control measures that can be important for more ambitious transitions, such as the adoption of organic farming techniques.

Similarly, the wine industry would be a supportive partner of efforts to assure environmental regulations don't undermine margins for small wine exporters. While little can be done to directly transform pressures towards bulk wine shipping, individual exporters can be empowered to maintain local bottling and ownership of their wine through strategic export promotion that targets awareness of brands from small producers. Assisting small farmers to collectively market products under shared branding may also help create a sustainable platform for companies to build the type of presence that has enabled larger firms to avoid bulk shipping, by leveraging the power of their brand.

Finally, leather is an emergent industry with substantial capacity for further development and value addition, including for regional neighbours such as Namibia and Botswana. The mixed level of development in the sector mean that new and smaller firms are well suited to growth built on new "green leather" techniques, such as alternative approaches to tanning that avoids environmentally unfriendly chemicals.

## Supply chain

### Risk profile

In aim of carbon neutrality and the European Commission's Action Plan on Financing Sustainable Growth, the European Green Deal imposes several supply chain risks for South African green exporters. It is, therefore, necessary that a supply chain risk assessment is required to mitigate potential negative impacts on South Africa's green export trade to the EU.

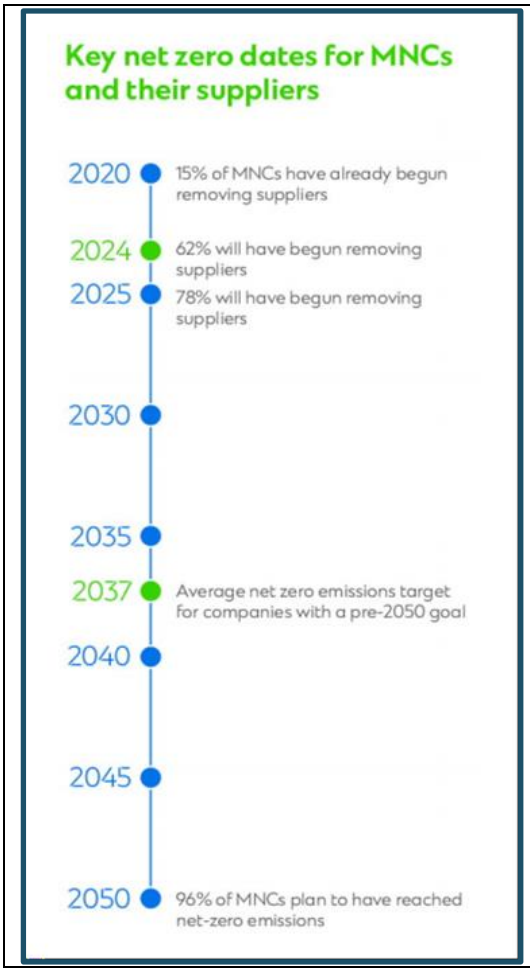
One of the policy instruments to achieve carbon neutrality will include the lifecycle assessment of goods to determine their green credentials. This measure has not yet been finalised, but the EU appears serious about its implementation. The implications are that the EU could demand that all imported goods should be carbon neutral.

The EU is unlikely to allow imports from South Africa that have not invested in greening supply chains. The implications are penalties. This study identifies critical steps towards Sustainable and Responsible Supply Chains to meet the European Green Deal export requirements. These include:

- A need for expanded standards and traceability down the value chain;
- Rising prices for inputs from declining sectors like petroleum refining; and
- Scarcity of products that are in high demand for green transition purposes.

The Standard Chartered Bank`s Carbon Dated report that was released in July 2021, examines the impact of multinational companies' (MNCs') net-zero plans on their supply chain. Figure 6 below presents a futuristic 30 year timeline indicating carbon expiry dates for suppliers. The textbox on the right provides a more detailed overview.

**Figure 6: Illustration of net-zero dates for MNCs and their suppliers**




Multinational companies (MNCs), in turn, are feeling the pressure, but with 73 percent of their total emissions sitting in their supply chain, their challenge is far from simple.

The majority (62 per cent) of MNCs say they will remove some suppliers that endanger their carbon transition plan in just three years' time. By 2025, this rises to almost four in five MNCs (78 per cent). This suggests that, although companies are not ramping up action on net zero until 2030, they plan to start acting on supply chain emissions much sooner.

On average, MNCs expect to exclude around a third (35 per cent) of their current suppliers as they transition away from carbon.

Thus decarbonising supply chains is fundamental to net-zero transition, and multinational companies needs to take action on supplier emissions.

*Standard Chartered Bank, Carbon Dated Report. 2021.*

*Source: Standard Chartered Bank, 2021*

Global value chains (GVCs) may represent a significant opportunity for SACU to improve the region's prospects for expanding non-commodity exports. Such an expansion would support growth, diversification and, ultimately, job creation.

South Africa and Namibia, meanwhile, show moderate levels of GVC participation. From a sectoral perspective, services—particularly transport, hotels, and restaurants—have grown more rapidly than manufacturing in most countries. South Africa has limited backward links in GVCs; in most sectors (with the notable exception of automotive) its use of foreign inputs in exports is less than half, often closer to one-third, of the global average. However, South Africa (along with Namibia) makes use of relatively high-technology imported inputs within GVCs. All countries are positioned relatively weakly in value chains, either far upstream (commodity sales) or far downstream (end-market sales with limited value added, such as Lesotho in apparel).

Regional value chains remain significantly underdeveloped. Apparel represents the one exception, with regional trade developing significantly in recent years. That said, the apparel trade in SACU is a short value chain. It consists of cut-make-trim operations using mainly inputs imported from outside the region to sell into South Africa. Incipient value chains may be developing in the automotive sector, with South African firms outsourcing some labour-intensive activities into Botswana and Lesotho. But this is likely to remain niche.

## Key challenges

This section unpacks some critical challenges in the net-zero supply chain transition.

The impact of supply chain emissions is shifting the net-zero pressure from big corporates to their suppliers. These are often small businesses in South Africa that are price sensitive. Thus if big corporates are pressurising small companies that are often least-equipped to deal with the transition, then the emerging-market suppliers face the most formidable challenge.

**Net-zero supply chain data and knowledge gaps:** The gathering and reporting of reliable, high-quality emissions data is a real issue, particularly in emerging markets, where proxies often used in place of actual data. Suppliers have knowledge and data gaps, and thus, they cannot report on zero-carbon supply chain traceability requirements. This will need to be improved over time, but there is a long way to go, and different data providers use different metrics, making comparison difficult. Two-thirds of MNCs that measure supply chain emissions are using secondary data sources to plug the gap left by supplier emissions surveys, and 46% indicated unreliable data from suppliers is a barrier to reducing emissions.

**Removal of non-green compliance suppliers:** Suppliers that do not meet zero-carbon sustainability supply chain expectations will be negatively impacted due to MNCs planning to take a zero-tolerance approach with suppliers by 2025. There might be suppliers that are meeting emissions standards in their own markets, but risk losing business as they are not meeting the standards set in the markets they are supplying (Standard Chartered Bank, 2021). A major risks that Southern African SME suppliers are facing is that 57% of MNCs are preparing to replace some of their emerging-market suppliers with developed market alternatives to hit net zero with more than half of the markets that have no net-zero government commitments.

**Financing requirements for the net-zero supply chain revolution**: A risk identified is that South Africa is not yet positioned in terms of adequate net-zero supply chain finance. The role of banks cannot be underestimated as there is a financing need for companies in both emerging markets

and carbon-intensive sectors to transition to net zero. International trends indicate that MNCs are offering 8% grants or loans to suppliers to invest in reducing emissions. Raising the required capital to meet new requirements to participate in supply chain emission reduction will put additional pressures on small green businesses, for these suppliers are expected to do much of the heavy lifting. They will have to spend additional costs on traceability and provide regular audits. Another risk SMEs are facing is an added financial burden. These increased costs will have to be absorbed, and greater efficiencies and a shorter supply chain will be the ideal strategy to circumvent higher export prices. The Standard Chartered (2021) report shows that two-thirds of MNCs target supply chain emissions as the first step on their transition journey. Suppliers cannot do it alone – they need to rely on support from both banks and trading partners to reach net zero.

**Supply chain reductions:** MNCs are applying a zero-tolerance approach to their supply chains, swiftly removing suppliers that endanger their transition. MNCs expect to cut around 35% of their current suppliers as they respond to net-zero pressure. This has significant risks for South Africa, which is already facing employment shortages, with additional pressure on the economy should supply chain reductions be implemented. Limiting the number of participants in the value chain can ensure less complexity and a reduction of risks. The implications are that big corporations in South Africa (for example the JSE-listed companies) will have to relook at supply chain optimisation and the impacts on emerging suppliers and vulnerable groups such as female-owned enterprises, youth-owned enterprises and people with disabilities.

## Affected sectors

This section provides an overview of the key South African export sectors to the EU that will be impacted by the risks detailed above, the sectors that will be impacted, and the risks impact on the different sectors.

## Mitigation measures

Mitigation measures needs to address the following range of challenges:

Regulatory reform to support financing of the shift to a net-zero supply chain: Due-diligence requirements through the supply chain calls on regulatory reform to standardise approaches to risk management that measure, monitor, and manage supply chain impacts. The Standard Chartered Carbon Dated Report that was published in July 2021 indicated that small suppliers have limited regulatory support for decarbonisation. The Sustainable Trade Finance Proposition builds the Loan Market Association's Green and Sustainability-linked Loan Principles into Standard Chartered's trade financing framework, encouraging clients to improve disclosure, reporting and definition of use, while meeting their Environmental, Social and Governance goals. Thus new Sustainable Trade Finance Propositions is required to help companies implement sustainable practices across their ecosystems and build more resilient supply chains. Findings from the Standard Chartered Bank (2021) shows that one out of five MNCs offers grants or loans to their suppliers to invest in reducing emissions from operations. Carbon markets and

transparent carbon pricing will provide even stronger signals to reduce carbon emissions and the tools to manage the related risks. Thus mitigation measures needs calls for financing support.

**Capacity building:** Small suppliers will need to be supported to decarbonise. They will need to undergo training to understand how to implement net-zero supply-chain interventions. It will require a capacity-building programme to ensure green businesses have the know-how to report on new auditing requirements to ensure traceability requirements in their supply chain is undertaken. Increasing supplier skills, addressing the knowledge gap, and providing data capturing tools will play an important part in a successful net-zero transition. Measures undertaken to provide supply "greening" capacity building programmes will also ensure that micro, small and medium enterprises gain competitive advantage. This will bridge the data and knowledge gap qualified green suppliers could potentially join a low-carbon procurement or green procurement club. This can offer preferred supplier status to sustainable suppliers, giving them an advantage over their less sustainable peers.

**Mitigating the risk of shortening supply chains:** Collaboration through shared sustainability goals is recommended to avoid unnecessary reductions in supply chains that are not meeting net-zero requirements (Standard Chartered Bank, 2021:6). A just transition approach can be followed whereby MNCs can collaborate with their smaller partners to make net-zero a reality. Research indicates that MNCs are developing shared sustainability goals with their suppliers, and some are offering additional benefits and better prices to decarbonising suppliers. Thus collaboration between MNCs, smaller companies, finance providers and policymakers will also be critical. These are recommended measure that can combat potential job losses due to the transition to a net-zero supply chains

Recommendations for SMEs (local green entrepreneurs):

1. **Build internal support**: The key to ensuring that greener supply chain initiatives are implemented long term is having the right foundation in place, which means first building a business case for action. This helps to build internal support for greener business practices, evaluate any potential risks, and also help identify the areas in which action is most needed to make the supply chain more environmentally friendly.
2. **Be accountable for all emissions throughout the supply chain:** Businesses need a greater awareness of all of the emissions produced throughout their supply chain. While it is mandatory for businesses to report on Scope 1 (direct GHG emissions) and Scope 2 (electricity indirect GHG emissions) emissions, there is currently no legal obligation to report on all indirect emissions produced throughout the supply chain, known as Scope 3 (other indirect GHG emissions) emissions (WBCSD, 2004).

## Technology

### Risk profile

Very few companies specialise in exporting. In the overwhelming majority of cases, export successes are built on success in the domestic market. Building a solid domestic sales base allows

companies to access the learning, capital and expertise needed to undertake the more complex business of exporting. In the case of South Africa, only a handful of sectors are primarily export-oriented, and most of these are based on specific natural endowments (like platinum or gold) or the dictates of value chains with a few central drivers (like the automotive value chain).

The centrality of domestic markets to exporters means that exports suffer when there is a sufficient disconnect between conditions in domestic markets and conditions in target export markets. This was notable in the green energy space in recent years, when South Africa's capacity to supply export markets rose and fell largely in concert with the rise and decline of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP).

These challenges are particularly marked in cases in which, like the EU in the Green New Deal, differences in the two markets are the result of an early, aggressive adopter of new technologies. Supplying a major EU push towards a technology like, for example, distributed generation, will be extremely difficult if South African manufacturers don't have a domestic market they can leverage to build quality products and establish the resources needed to enter new, highly competitive markets.

This section focuses on the risks associated with this disconnect, which is referred to as technological compatibility in this report. Unlike the other risks explored in this section, compatibility risks primarily impact exporters in green sectors, or suppliers of green technologies. The risks faced by these firms can broadly be divided into three categories: policy divergence, technological divergence, and supply chain consolidation.

**Policy divergence** refers to challenges resulting from a domestic policy environment that requires firms to specialise in production that isn't suited to exports. The REIPPPP is a good illustrator of what this looks like – a slowing rollout of renewable energy policy domestically undermined the potential to supply an increasing rollout of renewable energy globally. Policy divergence can be a long-term phenomenon, if efforts to protect sensitive sectors like coal or petroleum result in South Africa being locked out of new technologies adopted by more progressive sectors.

But the greater challenge in the context of the Green New Deal may be the lasting competitive impacts of a temporary mismatch in policy ambition. The EU's EGD is designed to be the large, first-mover push that pulls global change along with it. In contrast, South African policy exhibits a less certain focus on the green transition. While there are a number of encouraging policies and a lot of rhetorical support for the transition, these are restrained by strong vested interests, structural challenges outside of sustainability (such as the viability of Eskom), and serious policy implementation failures.

While a number of South African policy initiatives and companies are well positioned to take advantage of emerging export opportunities, this will erode if the policy and the technology they support lags behind aggressive advances in regions like the EU. This is particularly a problem because trade patterns tend to get locked-in, with initial suppliers best positioned to build deep relationships and improve their product – and risking locking laggard adopters of new technologies out of emerging export opportunities in the long term.

**Technological divergences** are more long term than policy divergences, and refer to the competitive impact of different types of green technologies being adopted in different parts of the world. Global technological differences are inevitable in shifts as comprehensive as those seen in the green transition. Competing global standards will likely be common across the full range of new technologies – from solar power to electric vehicles, to more technical areas like biochemicals. The technology adopted domestically can easily lock firms into spheres of potential exports determined by those markets with common or similar technologies.

These long-term divergences are difficult to anticipate, largely because global standards tend not to be based on absolute considerations of the technology itself, but rather on a complex mix of compatibility with existing technology, path dependency and historical happenstance. Most of the key preparatory work will have to focus on building a suitably supportive standards environment, capable of actively participating in global standards setting bodies and working with firms to assure ease of adoption of new standards, and strong interoperability with foreign standards.

Finally, **supply chain consolidation** refers to the risks associated with new technologies having supply chains that are structurally less open to participation by a significant number of supplier firms. This is a common challenge when transitioning from mechanical to more digital or electronic technologies, in which key components can be developed only as single whole unit. For example, estimates from UBS note that an internal combustion engine has 113 moving parts, whereas a comparable electric engine has three moving parts – meaning a radical compression of the potential for firms to supply the autos value chain (UBS, 2017).

The challenge of this consolidation is particularly worrying for emerging markets, which tend to specialise in simpler technologies, such as engine housings or structural components as in the example above, as a stepping-stone to moving up the value chain. That is much more difficult if stepping onto the value chain requires an immediate jump into producing a few extremely complex electronic components. Even among relatively simple electronics components, such as printed circuit boards (PCBs) and microcontrollers, South Africa has a limited manufacturing presence; and these fundamental changes to the scope of value chains may impact firms in ways that will be difficult to offset even with good policy.

Assessing these risks is complex, but one useful starting point is to compare different policy initiatives and transition plans between South Africa and the EU, as a baseline for understanding the potential for divergence between the two markets. This divergence, and the implications for exports, is explored next, followed by view of mitigation measures, although it should be noted upfront that the risks in this section are much more difficult to offset than those seen elsewhere. This is because divergence risks can often only be countered by the strategic rollout of new technologies in the domestic economy, which is a prospect well beyond the scope of this project.

Strategic support to improve access by small firms to new technologies – such as through establishing an Innovation Observatory – might be the best point of leverage to intervene in an environment that remains extremely fluid and unpredictable.

## Affected sectors

While the Green New Deal provides a useful framing for European efforts towards the green transition, in reality EU policy on the transition is governed by a sprawl of different strategies, many with overlapping or connected mandates. As can be seen in Table 9, a rough collection of some of these key strategies demonstrates the breadth of the focus areas being tackled. South Africa has clear equivalents for many of these documents, but in reality the approach to the transition in most sectors has been to integrate considerations of new technologies or changing conditions into broader planning documents, such as sectoral masterplans or broad strategic plans – a difference that makes it difficult to directly compare transition obligations, but still provides some indication on key considerations like which technologies are favoured.

**Table 9: Core documents of the green transition, select subject areas**

| SUBJECT AREA | EU STRATEGY | RSA STRATEGY |
|---|---|---|
| **Clean energy** | EU Energy System Integration Strategy | Integrated Resource Plan |
| | A Hydrogen Strategy for a Climate Neutral Europe | Hydrogen Society Roadmap |
| | Offshore renewable energy | Integrated Resource Plan |
| **Sustainable agriculture and forestry** | Farm to Fork Strategy | No central strategy |
| | Sustainable Common Agricultural Policy | Strategic Plan for South African Agriculture |
| | Sustainable blue economy | Operation Phakisa |
| | Organic Action Plan | National Policy on Organic Production |
| | Roadmap: EU Forest Strategy | Masterplan for the Commercial Forestry Sector in South Africa |
| | EU Biodiversity Strategy for 2030: Bringing nature back into our lives | National Biodiversity Strategy and Action Plan |
| **Sustainable industry** | European Industrial Strategy | Re-imagined Industrial Strategy/Sector Masterplans |
| | Masterplan for a Competitive Transformation of EU Energy-intensive industries | Sector Masterplans |
| | Circular Economy Action Plan | National Waste Management Strategy |
| | Chemicals strategy for sustainability | No central strategy |
| | Methane Strategy | No central strategy |
| **Sustainable mobility** | European strategy on Clean Air and Energy Efficient Vehicles | Auto Green Paper on the Advancement of New Energy Vehicles in South Africa |
| | European Battery Alliance | No central strategy |
| | CO2 emission performance standards | South Africa's Low-Emission Development Strategy 2050 |

| | | |
|---|---|---|
| **Construction** | Renovation wave | Green Building Framework and Policy |
| | New European Bauhaus | No central strategy |
| | Zero pollution Action Plan | National Cleaner Production Strategy |

*Source: Author's compilation*

The level of detail in existing EU plans around the Green New Deal varies greatly. In many cases specific technologies are not the focus of strategic documents, which tend to rather focus on broad concepts and approaches. This will change as the EGD and its constituent documents move from concept to implementation, but at present this lack of detail makes it hard to anticipate the impact of changing technology on South African exporters. As a placeholder for some of this detail, industry inputs to the EGD and related strategies are also examined, and at time provide an indication of where – from the narrow perspective of industries themselves – new technological priorities may lie.

**Table 10: Select industry responses to the EU EGD**

| SECTOR | STRATEGY | AUTHOR |
|---|---|---|
| Metals | A green deal on steel | European Steel Association (EUROFER) |
| Chemicals, plastics and rubber | Cementing the European Green Deal: Reaching climate neutrality along the Cement and Conrete Value Chain by 2050 | European Cement Association (CEMBUREAU) |
| Multiple | European Battery Alliance | Various |
| Pulp, paper and wood products | Innovative Bio-Based Products for a Sustainable Future: A Confederation of European Paper Industries (Cepi) study on Pulp and Paper Industry biorefineries in Europe | Cepi |
| Chemicals, plastics and rubber | Molecule Managers: A journey into the Future of Europe with the European Chemical Industry | European Chemical Industry Council (Cefic) |
| Food and drink | Position paper on the European Green Deal: operationalising the decarbonisation agenda | Glass for Europe |

*Source: Author's compilation*

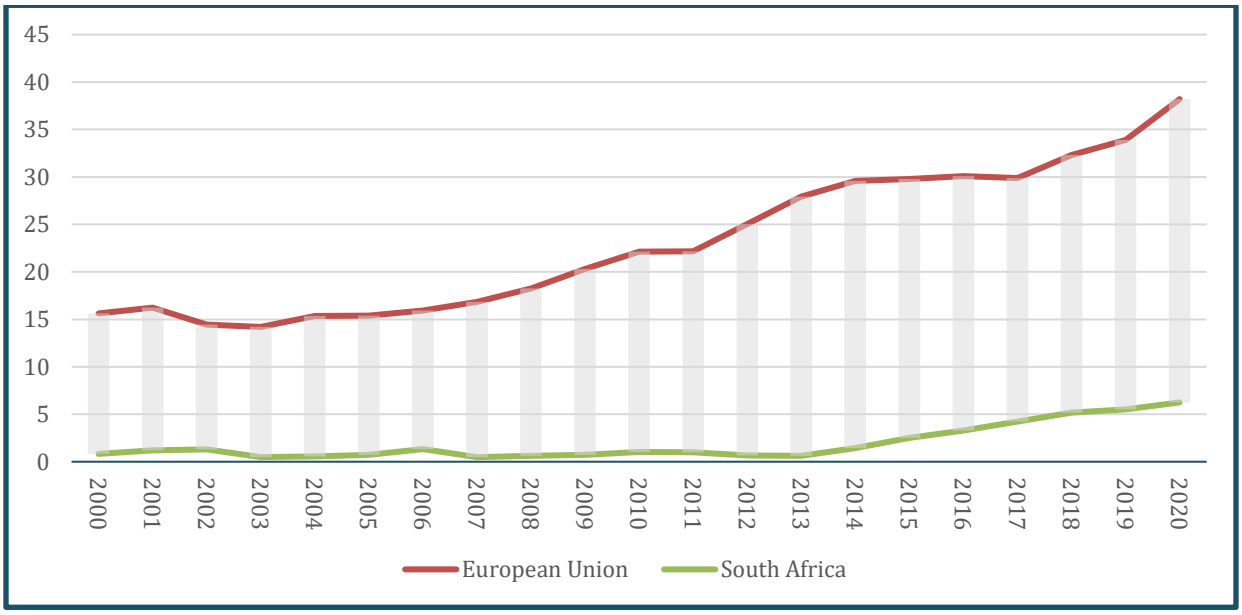
The following sections provide a brief overview of some observations of key technological divergences, and on the impact of technological changes mentioned in the documents in Table 10. As a high-level summary, these sections should not be considered a deep-dive on policy, but rather a useful initial benchmark for comparing approaches, which should guide further focused work on specific areas of vulnerability.

**Energy**

While not the focus of the challenges assessment, it is worth noting that many of the types of technological compatibility questions that arise for traditional export sectors are similarly a concern for Green Economy products. As a brief example of this shared challenge, renewable energy is a particularly useful case study of how differences in policy support, when combined with technological change, can create stubborn trade divergences.

Both South Africa and the European Union have significant ambitions to expand the role of renewable energy in their energy mix in the coming decades, but both the existing state of renewables and the levels of ambition differ substantially. Even ignoring the EU's greater access to hydroelectrical energy, the region has vastly outpaced South Africa's own rollout of renewable energy sources in the broader energy mix, as can be seen in Figure 7. This trend is likely to remain for the immediate future, and in 2022 alone the European Union is expected to install almost nine-times more new renewable capacity than the entire Sub-Saharan Africa (IEA, 2020).

**Figure 7: Renewable energy as a share of total energy consumption**



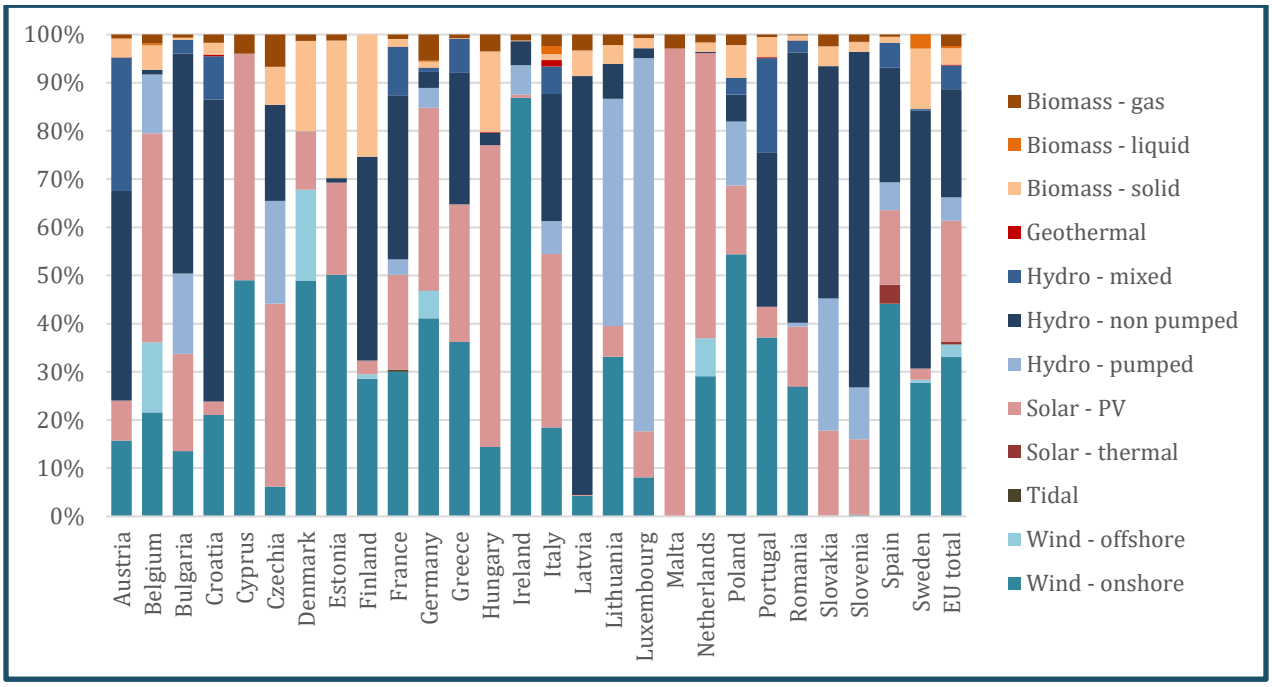

*Source: Our World In Data (2020)*

As mentioned, the slowing rate of South Africa's expansion of renewables during the uncertainty over the continuation of REIPPPP undermined the potential to leverage this shared focus on renewable technologies into real export success. While the REIPPPP did inspire investments by major manufacturers, like inverter producer SMA and wind tower manufacturer DCD (Montmasson-Clair, 2020a).

Both subsequently closed their local operations during the uncertainty around the REIPPPP. This highlights both the need for a renewed domestic focus on renewable energy in order to underpin exports to the EU, and the importance of leveraging exports to stabilise local manufacturing during periods of subdued government procurement.

At the high level, there is good technological compatibility between the two regions. South Africa's renewable energy mix will be primarily based on wind and photovoltaic (PV) solar (Department of Mineral Resources and Energy, 2019), which broadly matches the two major categories of technology employed by the EU (excluding hydro power), as highlighted in Figure 8.

**Figure 8: Share of installed renewable capacity in the EU, by technology, 2019**




*Source: Eurostat (2019)*

Beyond this high-level assessment, differences in specific technologies used are likely to occur, but most of South Africa's export potential appears to be in components that would not be significantly impacted by these differences – such as wind tower components, or solar panel housings. South Africa is also well-positioned for certain newer technologies, such as the rollout of smart metering solutions, which are generally versatile enough to work with a mix of different energy generation sources (PAGE, 2018).

In general, technological differences do not appear to be a major barrier to the export of renewable energy components – although mismatches in ambition and the realisation of planned clean energy projects clearly are. The uncertainty brought about by the break in the REIPPPP will also make it more difficult to assure investors that future rounds will create adequate assured demand to make building factories viable, although evidence from previous rounds indicate that local content requirements should be enough to overcome this barrier. On balance, technological readiness needs to be matched by policy readiness to overcome potential challenges to realising the potential of clean energy exports.

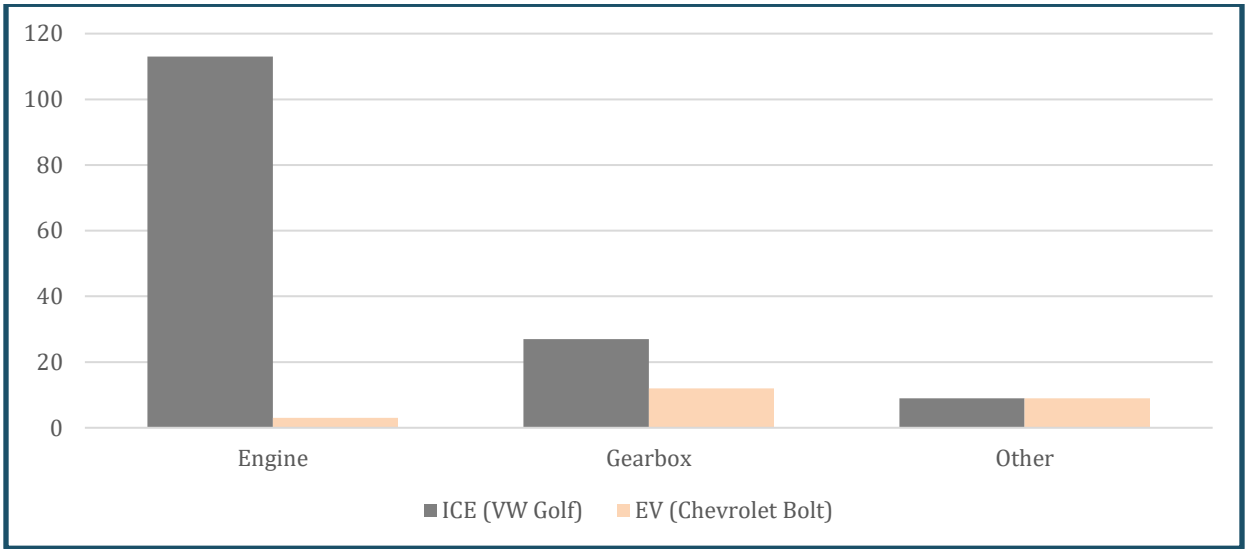
**Automotive sector**

As discussed previously,, the rollout of electric vehicles is perhaps the most significant technological change facing a major South African export sector to the EU. The transition to

electric vehicles fundamentally changes the nature of the supply chain. Whereas modern automotive supply chains have been characterised by a wide network of suppliers providing a diverse set of mechanical components to a few coordinating OEMs, electric vehicles are likely to see a sharp shift in production to the OEMs themselves and to a handful of specialist suppliers.

While core parts of the car itself – like panelling, fittings, and safety equipment – will remain roughly the same, the mechanical components of engines and drivetrains are likely to shift radically. EV engines have far fewer moving parts than traditional combustion engines, and do not feature the same type of drive or gearing systems as traditional vehicles (Figure 9). The parts that replace these mechanical components are also much more specialised, and often need to be constructed as a whole unit, with limited capacity to split tasks between many suppliers and manufacturers.

**Figure 9: Moving parts in a standard drivetrain, EV vs ICE**




*Source: UBS (2017)*

The contraction of the automotive supply chain as a result of an EGD-inspired boom in electric vehicles will impact South Africa, although the relatively diversified component manufacturing sector should be able to withstand the changes, provided OEMs remain committed to assembly and production in country as an anchor for the industry. Table 11 provides a rough overview of which exported auto components may be impacted by the shift. As the table indicates, catalytic converters are at highest risk (and are by far the largest export item) – although these risks are complex, because demand for catalytic converters will likely increase in the short term, as stricter emissions standards drive greater need for these parts in ICE and hybrid cars. Leaving aside catalytic converters, around 33,4% of South Africa's remaining auto components are at high risk of being impacted by the shift to EVs.

**Table 11: Risk assessment of EV transition for exports of South African auto components**

| COMPONENT | SHARE OF AUTO COMPONENTS EXPORTS, 2019 | EV RISKS |
|---|---|---|
| Catalytic converters | 47,7% | High |
| Engine parts | 6,1% | High |
| Tyres | 5,0% | Low |
| Radiators/parts | 2,4% | High |
| Transmission shafts/cranks | 2,2% | High |
| Engines | 2,0% | High |
| Automotive tooling | 1,4% | Low |
| Clutches/shaft couplings | 1,1% | High |
| Filters | 1,0% | High |
| Automotive glass | 1,0% | Low |
| Gauges/instruments | 0,9% | Mid |
| Shock absorbers/suspensions | 0,9% | Low |
| Batteries | 0,8% | High |
| Axles | 0,8% | Low |
| Silencers/exhausts | 0,6% | High |
| Ignition/starting equipment | 0,5% | High |
| Brake parts | 0,5% | Low |
| Gear boxes | 0,5% | High |
| Road wheels | 0,4% | Low |
| Body parts/panels | 0,4% | Low |
| Lighting equipment | 0,4% | Low |
| Gaskets | 0,3% | High |
| Wiring harnesses | 0,2% | Low |
| Stitched leather seats | 0,2% | Low |
| Alarm systems | 0,2% | Low |
| Air conditioners | 0,1% | Mid |
| Springs | 0,1% | Low |
| Seats | 0,1% | Low |
| Steering wheels/columns | 0,1% | Mid |
| Jacks | 0,1% | Low |
| Car radios | 0,1% | Low |
| Seat belts | 0,0% | Low |
| Other parts | 21,9% | Uncertain |

*Source: Lamprecht (2021)*

It would be difficult to offer direct support to component suppliers before EV production has expanded in South Africa, particularly because the components required will vary depending on the specific technologies used by the mix of OEMs in South Africa.

The Green Paper on the production of electric vehicles in South Africa (the dtic, 2021d) does identify EV components that would need to be imported in the near term; however, the specific list of these products was not available to the author at the time of writing. This approach, of localising more basic electric vehicle production based mainly on imports, and then building to EV component manufacture, seems a good route to follow – but it will mean that risks and uncertainties will remain for the near term.

Work will need to be ongoing on the extent to which lost value chain participation is the result of a lack of appropriate expertise in South Africa, or an absolute contraction of the EV value chain. While developing the sector, focus should rest on reinforcing components unaffected by the change, and continuing to develop the electronics sector outside of automotive – which may ultimately have a greater role to play in readiness for EV cars than a history of auto production.

**Manufacturing**

Outside of the two high-profile sectors above, an assessment of the technological readiness of broader industry in South Africa is a large exercise, that is mainly beyond the scope of this paper. Even within the context of the EU Green New Deal, the rate of rollout of new technologies differs substantially between industries, and many of these changes are more visible in the changing regulatory requirements as previously outlined.

The exception to these regulatory and sector-strategy approaches is a broader shift in the EU to moving energy-intensive sectors onto a more sustainable grounding.

Even this initiative is a challenging prospect. Many of the sectors identified for focused work in this area are also important export sectors for South Africa. But, as shown in Tabel 12, the scope for quick wins is limited in most of these sectors. While investments in areas such as heat recycling in production processes, moving to gas from coal for some processes, or implementing improved downstream recycling all show promise for improvements, they aren't necessarily going to be adequate to move carbon-intensive sectors onto a sustainable footing.

**Table 12: EU assessment of low-$CO^2$ technology potential for energy-intensive sectors**

| SECTOR | ELECTRIFICATION (HEAT AND MECHANICAL) | ELECTRIFICATION (PROCESSES) | HYDROGEN | CCU (CARBON CAPTURE, UTILISATION) | BIOMASS AND BIOFUELS | CCS (CARBON CAPTURE AND STORAGE) | OTHER |
|---|---|---|---|---|---|---|---|
| **Steel** | Already in use | Medium potential | Already in use | Already in use | Low potential | Already in use | Avoidance of intermediate process steps and recycling of process gases; Recycling high quality steel |
| **Chemicals & fertilizers** | Already in use | Already in use | Already in use | Already in use | Already in use | Already in use | Use of waste streams (chemical recycling) |
| **Cement** | Medium potential | Low potential | Low potential | Already in use | Already in use | Already in use | Alternative binders; Improving concrete mix design; Use of waste streams |
| **Lime** | Low potential | Low potential | Medium potential | Already in use | Low potential | Already in use | - |
| **Refining** | Medium potential | Low potential | Already in use | Already in use | Already in use | Already in use | Efficiency |
| **Ceramics** | Already in use | Low potential | Medium potential | Low potential | Low potential | Low potential | Efficiency |
| **Paper** | Medium potential | Low potential | Low potential | Low potential | Already in use | Low potential | Efficiency |
| **Glass** | Already in use | Low potential | Low potential | Low potential | Already in use | Low potential | Higher glass recycling |
| **Non-ferrous metals/alloys** | Already in use | Already in use | Low potential | Low potential | Already in use | Low potential | Efficiency; Recycling high quality nonferrous; Inert anodes |

*Source: High-Level Group on Energy-intensive Industries (2019)*

An initial analysis of industry plans for seven core EU sectors, that also have notable South African export implications, reveals a dual focus on short-term efforts to improve efficiencies and beneficiate waste, and a long-term focus on research and development for an uncertain technological future. This focus means that near-term risks of technological divergence are not always pressing for major South African export sectors, but that ongoing investment in new technologies will be vitally important in the coming decades.

Steel is a good example of a sector facing this two-track process. A recent update to the EU's new industrial strategy, 'Towards competitive and clean European steel', largely acknowledges that steel is a "hard to abate" sector, with a timeline for the green transition set at around 2050 and would "requires radical changes to the way steel is produced"(EC, 2020f).

The core technological approaches identified by the EU are improve recycling, better use of waste energy (heat) produced as a by-product of production processes, carbon capture and processing, and the use of renewable-energy based sources – although the latter would be an ambitious undertaking, with the EU steel sector consuming as much power as all of Germany (EUROFER, 2020).

These technologies and approaches are generally still emerging, and while iterative improvements to the efficiency of South African steel system are essential, there doesn't appear to be large near-term risks to the sector from a divergence in core productive technologies. Steel does, of course, remain highly exposed to the carbon pricing risks discussed in the carbon pricing section – and there are spill over risks when it comes to innovation if policies like carbon pricing squeeze steel margins to such an extent that firms cannot or do not invest in new technologies. Until specific technologies emerge as clear leaders, the focus of policy may need to be remain on building a steel sector that is healthy enough to adapt to uncertainty.

EUROFER mainly aligns with this view on green steel technologies, arguing that technological advancements could "reduce EU steel production's $CO^2$ emissions by 30% by 2030 compared to 2018 emissions" (EUROFER, 2020).

Importantly, however, the industry makes the ability to realise this transition contingent on more protectionist trade measures, arguing that the near-term focus should be "on the application of existing and deployment of new tools that effectively tackle distortions from imports and guarantee access to export markets". Practically, the industry calls for more aggressive use of EU Trade Defence Instruments, the extension of existing safeguards, and WTO reforms to allow for more aggressive action on perceived distortions. (EUROFER, 2020).

This should be considered a risk for hard-to-abate sectors across the spectrum. In many cases, the challenge in transitioning these sectors to a more sustainable basis is the need to adopt new technologies before they have reached a financially viable state of development. When renewable energy faced a similar challenge, state procurement could help offset these costs with limited distortions to global markets. However, for sectors that are more private sector-oriented, there is a risk that cost offsets and incentives for early adopters may take more distortionary forms, like trade protectionism, that can have implications for South African firms. Regardless, it

is too early to know how steel's transition will impact South African exporters, and the focus for now should remain on closely monitoring a rapidly evolving situation.

Many of these broad themes are closely mirrored by the cement industry, where the industry's main identified transition technologies are carbon capture and alternative energy sources, particularly focused on waste and biomass. (CEMBUREAU, 2020).

As can be seen in Table 13, new technologies will play a key role in improving efficiencies and reducing waste, but they're not currently expected to dramatically change the emissions conditions of cement production in the short term.

**Table 13: EU cement industry plan for decarbonisation**

| CATEGORY | ACTION | SHARE |
|---|---|---|
| **Carbon emissions** | Carbon capture | 37% |
| **Clinker** | Decarbonised raw materials | 4% |
| | Alternative fuels | 9% |
| | Thermal efficiency | 3% |
| | Low carbon clinker | 2% |
| | Hydrogen and electrification | 3% |
| **Cement** | Clinker substitution | 10% |
| | Electrical efficiency and renewable energy | 5% |
| | Carbon neutral transport | 1% |
| **Concrete** | Concrete mix | 7% |
| | Carbon neutral transport | 1% |
| **Construction** | Concrete in use | 12% |
| | $CO^2$ capture in built environment | 7% |

*Source: CEMBUREAU (2020)*

Industry proposals on policy support for these transformations closely mirror those of steel (and other hard to abate sectors discussed below). This includes significant direct investment support, focused on technological development, end-user procurement of low-carbon products, and on building infrastructure for carbon capture – with the latter having the potential to give European producers the unique ability to rapidly ramp up carbon capture relative to firms in countries like South Africa (CEMBUREAU, 2020).

Similar to steel, the cement industry calls for expanded trade protections, but in this case specifically focuses on the implementation of a mechanism like the CBAM (CEMBUREAU, 2020).

Elsewhere in the construction value chain, glass producers have similar produced a position paper in response to the EGD, but it focuses almost exclusively on the role that glass can play in sustainable construction, waste reduction, and the integration of life cycle management – and does not provide much detail on potential changes to production processes. (Glass for Europe, 2019).

This is likely due to the glass sector having a relatively clear path towards sustainability, given a high existing base of recycling and the strong potential that electric furnaces have to replace gas-

fired furnaces. Initiatives like Furnace for the Future, a joint EU-industry initiative to roll out furnaces sourced from 80% electricity, is an example of the general approach being pursued by the glass sector. It also points to the vulnerabilities for the South African sector, where a lacklustre transformation of the domestic energy grid means that shifting to electrical furnaces does not offer the same levels of sustainability as those operating in markets with high levels of renewable energy generation.

European Pulp and paper industry body Cepi has launched an initiative to drive the transformation of the sector, called 4evergreen (Cepi, 2021).

Much of the work to date appears to focus on the potential for biorefineries to process alternative feedstock – although the logic of this approach appears to be centred on maintaining forests as carbon sinks, rather than decarbonising production processes. While not necessarily transforming production processes, the rise of paper biorefineries could be transformative for the economics of the sector, if firms adopt a model that leverages the productive competencies of pulp manufacture to reach the much more diverse market for biorefinery outputs. South African operations would need to adapt to this shift from pulp to diversified biorefinery production, and could come under pressure if they lag behind or lack the supportive waste-to-input environment needed to drive a biorefinery ecosystem.

The chemicals sector laid out its long-term vision for transformation in a position paper called *Molecule Managers* (Cefic, 2019), which emphasises the role of improved recycling and industrial symbiosis, as well as the rise of bio-based input materials as feedstocks for the chemicals sector. This broadly aligns with the EU's official Chemical's Strategy for Sustainability, which – while placing the largest focus on managing waste and improving controls on hazardous substances – also highlights the importance of new productive techniques, bio-based chemicals, and the production of more advanced materials. (EC and European Economic and Social Committee, 2020b). In both cases, the strategies are still emerging, with detailed working well underway on new controls for existing regulations such as REACH, but weak on the specifics of potential new technologies. This largely reflects the uncertainties around the competitiveness of specific biochemical technologies, and the focus of industry and policy will likely progressively coalesce around technologies as their competitiveness becomes clear. A similar approach – with a greater emphasis on recycling standards – defines the plastic industry's vision for transformation of the sector.

On balance, the Green New Deal, and industries' response to it, indicates a generalised commitment to embracing new technologies, with a short-term focus on improving existing sustainability practises – like recycling, the shift to greener sources of energy, and ongoing improvements in productive efficiency. As discussed in the regulation section above, many of these changes will impact South African producers, but they don't generate the type of immediate technological compatibility risks seen in sectors like automotive.

Many of these risks are longer term in nature, with some core technologies – such as green cement, steel, and chemicals – still being developed to a point of full market viability. But while timelines on these changes are long term, investment cycles for heavy industries like steel are similarly long term, and changes will need to be considered in the development and

refurbishment of capacity. While focused interventions are probably difficult in many of these industries, supporting an environment conducive to ongoing research and development will be key to maintaining competitiveness and access to the market as core production techniques shift.

**Agriculture**

A number of the observations about heavy industry apply to agriculture as well, particularly in as much as new technologies will be the result of iterative development rather than the type of big-bang shift seen in automotive. That being said, the Green New Deal does aim to introduce a range of new standards for agricultural production and to drive adoption and monitoring of these standards with new technology. Technology in this case is a broader term than elsewhere, and often refers to practises and techniques used by farmers and others in the agri-space. While new technologies are certainly on the cards – including innovations like drone usage and automation – these don't always have sustainability as their primary focus, and don't form the core of planning under the Green New Deal.

While the Farm to Fork strategy is the grounding document for sustainable agriculture in the Green New Deal, it does not have a strong focus on specific technologies. Rather, it lays out the framework for a conducive environment for innovation in agriculture, including improvements to infrastructure considerations like farmers' access to high-speed internet, and assuring adequate finance for research and development. The strategy provides for €10 billion to be made available for research and innovation in the agri-space through Horizon 2050 (EC, 2020b).

In general, the key technological developments identified in the Farm to Fork strategy include:

> *"…microbiome, food from the oceans, urban food systems, as well as increasing the availability and source of alternative proteins such as plant, microbial, marine and insect-based proteins and meat substitutes. A mission in the area of soil health and food will aim to develop solutions for restoring soil health and functions. New knowledge and innovations will also scale up agro-ecological approaches in primary production through a dedicated partnership on agro-ecology living laboratories. This will contribute to reducing the use of pesticides, fertilisers and antimicrobials"* – EC, 2020b

Implementation of much of this work will likely fall to the European Innovation Partnership for Agriculture (EIP-AGRI), which can serve as a useful proxy to understand what focus areas might be adopted as part of efforts towards sustainable innovation in the sector under the EGD. As can be seen from Tabel 14, most of these are structured around innovation in core sectors, and in key technological areas – such as digitisation, organic practises, management of soil nutrients, and processing of waste streams.

### Table 14: EIP-AGRI thematic networks

| CATEGORY | PROJECT |
|---|---|
| **Animal production systems** | 4D4F - Data Driven Dairy Decisions 4 Farmers |
| | BovINE - Bovine Beef Innovation Network Europe |
| | EU PiG - EU Pig Innovation Group |
| | EuroDairy - A Europe-wide thematic network supporting a sustainable future for EU dairy farmers |
| | EuroSheep - European Network for interactive and innovative knowledge exchange on animal health and nutrition between the sheep industry actors and stakeholders |
| | HENNOVATION - Practice-led innovation supported by science and market-driven actors in the laying hen and other livestock sectors |
| | Inno4Grass - Shared innovation space for sustainable productivity of grasslands in Europe |
| | OK-Net Ecofeed - Organic Knowledge Network on Monogastric Animal Feed |
| | SheepNet - Sharing expertise and experience towards sheep productivity through networking |
| **Animals and health** | DISARM - Disseminating Innovative Solutions for Antibiotic Resistance Management |
| | EuroSheep - European Network for interactive and innovative knowledge exchange on animal health and nutrition between the sheep industry actors and stakeholders |
| **Digital transformation** | 4D4F - Data Driven Dairy Decisions 4 Farmers |
| | SMART-AKIS - European Agricultural Knowledge and Innovation Systems towards innovation-driven research in Smart Farming Technology |
| **Ecological approaches and organic** | AFINET - Agroforestry Innovation Networks |
| | BIOFRUITNET - Boosting innovation in organic fruit production through strong knowledge networks |
| | CERERE - Cereal Renaissance in Rural Europe: embedding diversity in organic and low-input food systems |
| | HNV-link - High Nature Value Farming: Learning, Innovation and Knowledge |
| | Inno4Grass - Shared Innovation Space for Sustainable Productivity of Grasslands in Europe |
| | Legumes Translated - Translating knowledge for legume-based farming for feed and food systems |
| | OK-Net Ecofeed - Organic Knowledge Network on Monogastric Animal Feed |
| | OK-Net-Arable - Organic Knowledge Network Arable |
| **Knowledge and innovation systems** | AgriSpin - Space for Agricultural Innovation |

| | |
|---|---|
| | EURAKNOS - Connecting Thematic Networks as Knowledge Reservoirs: towards a European Agricultural Knowledge Innovation Open Source System |
| **Plant health** | INNOSETA - Accelerating innovative practices for spraying equipment, training and advising in European agriculture through the mobilisation of agricultural knowledge and innovation systems |
| | SMARTPROTECT - Smart agriculture for innovative vegetable crop protection: harnessing advanced methodologies and technologies |
| | WINETWORK - Network for the exchange and transfer of innovative knowledge between European wine-growing regions to increase the productivity and sustainability of the sector |
| **Public goods** | HNV-link - High Nature Value Farming: Learning, Innovation and Knowledge |
| **Rural dynamics and policies** | NEWBIE - New Entrant netWork: Business models for Innovation, entrepreneurship and resilience in European agriculture |
| **Soils** | BEST4SOIL - Boosting best practices for soil health in Europe |
| **Sustainable cropping systems** | BIOFRUITNET - Boosting innovation in organic fruit production through strong knowledge networks |
| | EUFRUIT - EU fruit network |
| | PANACEA - A thematic network to design the penetration path of non-food agricultural crops into European agriculture |
| **Value chains** | AGRIFORVALOR - Bringing added value to agriculture and forest sectors by closing the research and innovation divide to valorise and exploit sidestream biomass resources from agriculture and forestry |
| | ENABLING - Enhance new approaches in bio-based local innovation networks for growth - website CORDIS (12/2017-11/2020) |
| | INCREDIBLE - Innovation Networks of Cork, Resins and Edibles in the Mediterranean basin |
| | ROSEWOOD4.0 - EU Network of Regions on sustainable wood mobilisation ready for digitalisation |
| | SKIN - Short supply chain Knowledge and Innovation Network |
| **Water, nutrients and waste** | AGRIFORVALOR - Bringing added value to agriculture and forest sectors by closing the research and innovation divide to valorise and exploit sidestream biomass resources from agriculture and forestry |
| | FERTINNOWA - Transfer of innovative techniques for sustainable water use in fertigated crops |

| | |
|---|---|
| | NUTRIMAN - Nutrient Management and Nutrient Recovery Thematic Network |
| | SuWaNu Europe - Network for effective knowledge transfer on safe and economic wastewater reuse in agriculture in Europe |

*Source: EIP-AGRI (2020)*

A couple of key themes can be identified from existing investment in agricultural research in the EU. Organic farming is unsurprisingly a cross-cutting theme, which also encompasses focused research on specific crops (like legumes) that can be used in organic crop rotation strategies. Similarly, there is the expected focus on more stringent controls on agrichemicals, including in the management of soils, controls on pesticides and herbicides, and managing antibiotic resistance among livestock, as well as a cross-cutting focus on water management.

None of these focus areas are a surprise, and they broadly align with the overarching strategies defined by the EGD, but they do highlight the risks for South African farmers. The challenge of many of these changes is that they look set to reinforce many of the most difficult barriers small farmers already face in trying to reach the EU market.

The EU's strict control regimes for food safety, including pesticide residue levels and the governance of antibiotics, are often too costly and difficult for small farmers to comply with, and for that reason most export-oriented agricultural producers are larger farms and processors. To some extent, this existing imbalance means the changes will most directly impact the large farmers who are best placed to adapt to them. But the tightening of regulations can still be expected to raise the already high barriers to entry for small farmers, and once again point to the need for reforms to improve state-support programmes and revitalise extension services, and to build an environment in which the ambitions of small farmers can work alongside the high standards reasonably demanded by European consumers.

While not directly linked to agricultural strategies, the industry will also need to be prepared for the rise of bio-based inputs in many new potential client industries, such as CTFL and chemicals, and even traditional mineral value chains like cement. While not directly changing productive technologies in agriculture, control mechanisms such as registering waste and sorting goods by chemical considerations (such as starch or lignin content) will need to be implemented. In the medium term, spiking demand for biomatter may also drastically change the economics of the agri-sector, creating a complicated balance in which small-scale sustainable practises may sit awkwardly alongside the need for mass production to meet the needs of both food and industrial systems.

**Mining**

Mining is perhaps the least clearly defined component of the EGD. In the few areas in which strategy documents do identify technological changes for the mining sector, they remain focused on activities in Europe. Given that most EU minerals are sourced from outside the continent, it is not expected that mining will be as significantly impacted by EGD-inspired shifts as other sectors covered in this report. Mining will be impacted by changing demand patterns, particularly for the

raw materials needed to produce new technologies like renewable energy and battery storage. But the changes that can be expected for mining technologies themselves are much less clear.

Climate advocates have criticised the EGD for being weak on mining regulation, with particular criticism reserved for the agreement's discussion of "green mining" and "sustainable mining". This largely reflects a fault line in the broader transition, in which many sustainable technologies rely on ramping up mining in important inputs, or on supporting dirty extractive co-production sources like natural gas. The broader uncertainty in the policy space, and the lack of clear existing policy direction within the EGD, makes it difficult to assess what technological change might take place in the mining space and how it will impact South African firms.

The focus that does exist is on the sourcing of essential raw materials to supply new technologies. Two documents produced by the Commission, on strategic industrial dependencies (EC, 2020g) and critical raw materials resilience (EC, 2020h), include a focus on a range of South African mineral exports – particularly PGMs like iridium, platinum, rhodium and ruthenium. However, neither document has much to say on the approaches or techniques used in mining, aside from a general commitment to monitoring sustainability in raw materials (particularly through the Raw Materials Information System), and a commitment to "contribute to global efforts towards better resource management in co-operation with relevant international organisations" (EC, 2020h).

On balance, risks from EGD-driven technological changes to mining techniques and practises appear to be low. While the broader mining environment will likely see increasing pressure towards more sustainable practises, the EGD does not appear to pose any specific risks to South African exports. On the contrary, rising demand for critical raw materials will likely drive growth in many key mineral exports, and should be seen as a potential source of growth. This growth will need to be carefully managed domestically, to assure that European sustainability isn't achieved at the cost of South African environmental degradation.

### Mitigation measures

The transition will without doubt result in the speeding up of the already breakneck pace of innovation in a wide range of sectors. This will help reinforce the uptake of new technologies among South African exporters, but it will also expose long-term weaknesses in areas like science, technology, engineering and mathematics (STEM) education, financing for research and development, and the need to support technological readiness for smaller firms. The Green New Deal will play an important part in driving this change, and Europe could well replicate the role it played as an anchor early adopter of renewable energy technologies, and help ground emergent technologies in a viable economic climate.

However, despite this role as an engine of innovation, the Green New Deal does not currently have a concentrated enough focus on specific technologies to warrant major concerns among South Africa's exporters – with some exceptions. Of those exceptions, automotive is clearly the most significant and urgent shift that needs to be addressed, while renewable energy needs a clear and credible procurement commitment to realise the productive impact of an already mature technology. In both cases, change needs to come at the level of major national government initiatives – particularly the Automotive Production and Development Programme

(APDP) and the REIPPPP respectively – and there is only a limited role to be played by smaller initiatives until the certainty of these policies are in place.

Outside of these changes, and without the scope for a deep-dive per sector, it is difficult to identify individual technology changes that are both imminent and will have a significant distortive impact on South African exports to the EU. A great deal of policy support will be needed to prevent technological divergences from undermining exports, but this support needs to be designed with an eye to the sprawl of new technologies, the spread of sectors and processes impacted, and the uncertainty inherent to many emergent technologies. As a rough starting point, the following core risks detailed in Tabel 15 are worth noting.

**Table 15: Summary of core technology risks resulting from the EGD and related shifts**

| RISK | INDUSTRY |
|---|---|
| Mismatch in ambition in the domestic rollout of renewable energy undermines South Africa's capacity to manufacture renewable energy components for export. | Energy |
| Compression of EU automotive value chain resulting from the transition from mechanical to electrical components leads to a decline in auto component exports. | Automotive |
| Persistent underinvestment by a strained steel industry harms competitiveness, as EU firms rollout technologies like improved heat recycling. | Metals |
| Inadequate state investment in carbon capture infrastructure limits the uptake of capture technologies among heavy emitter industries, and unduly punishes South African producers. | Metals |
| High upfront costs for adopting sustainable technologies in hard to abate sectors results in lobbying for trade protectionism as a means to offset costs for early adopters. | Metals |
| South African paper mills lag behind in the transition to multi-output biorefineries, eroding global export competitiveness. | Pulp, paper and wood products |
| Poor biowaste management practises and a lack of biorefinery infrastructure stifles the transition to bio-based chemical production, while collapsing petroleum production leads to surging prices for traditional inputs. | Chemicals, plastics and rubber |
| Inadequate standards and control mechanisms stifle farmer's ability to supply an expanding EU bio economy, as demand surges for inputs to sectors like biochemcials and bioplastics. | Agriculture, forestry and fishing |
| Domestic glass producers do not reap the benefits of industry's rollout of electrical furnaces, due to a dirty energy grid, undermining the broader export of pre-packaged food products. | Food and beverages |

*Source: Author's compilation*

Notably, many of the most drastic technological changes are likely to be in highly concentrated and capital-intensive heavy industries, like chemicals and metals. The planned changes are suitably complex and expensive in that they will likely have to be led by wealthier firms and, given the already concentrated nature of these sectors, will likely have minimal impacts on small companies in the short term. There is nevertheless substantial scope for small firms to benefit as suppliers to some of these transformed industries. Perhaps, most notably, introducing accessible standards to classify biomatter and biowaste, and helping small firms undertake the process of building control systems for their bioproducts, could position a wide range of farmers and other small producers to be suppliers to the coming bioeconomy.

Addressing these changes can be achieved only through systematic interventions that support a conducive environment for innovation, and which allow small enterprises to fully benefit from those innovations. Given that the environment for innovation will need a major holistic investment in core competencies like education and digital infrastructure, much of the short-term focus on technological readiness should be on helping small firms track and prepare for upcoming innovations.

One approach that could offer immediate gains, would be to create an Observatory of Sustainable Technology, which would be a group of experts charged with monitoring changing technologies and their impact on market access for regions like the EU. Regular monitoring activities could be used to maintain a risk registry, which could form the basis for ongoing work with small firms and sector bodies to spread awareness on the need to adapt to a changing technological environment. Institutionalising monitoring in this way would also improve the scope for good policymaking, since it would allow for the type of systematic evaluation of new technologies at the level at which support can be prioritised, based on the potential impact of individual changes. By helping small firms adapt to technology that is ready for a post-EGD EU, the Observatory could also help European firms find and partner with sustainable suppliers, assuring the type of mutually reinforcing innovation that is key to more sustainable global value chains.

Other, more focused initiatives are available, but would need to match the more process-focused initial stages of technological transformation facing many industries. For example, support for training and certification in sustainable building practises could help align approaches in the EU and South Africa, while creating a base of expertise to support the manufacture of green construction materials. Developing systems to identify, categorise and register biowaste and other bioproducts could help develop an ecosystem for bio-based feedstock. Deepening, and potentially regionalising, existing efforts to beneficiate waste streams through industrial symbiosis could also help South African firms take advantage of European investments in improved recycling techniques. The menu of options for these initiatives will continue to grow as the Green New Deal comes closer to implementation, and ongoing sectoral monitoring of these developments will likely offer the best possible opportunities for focused interventions.

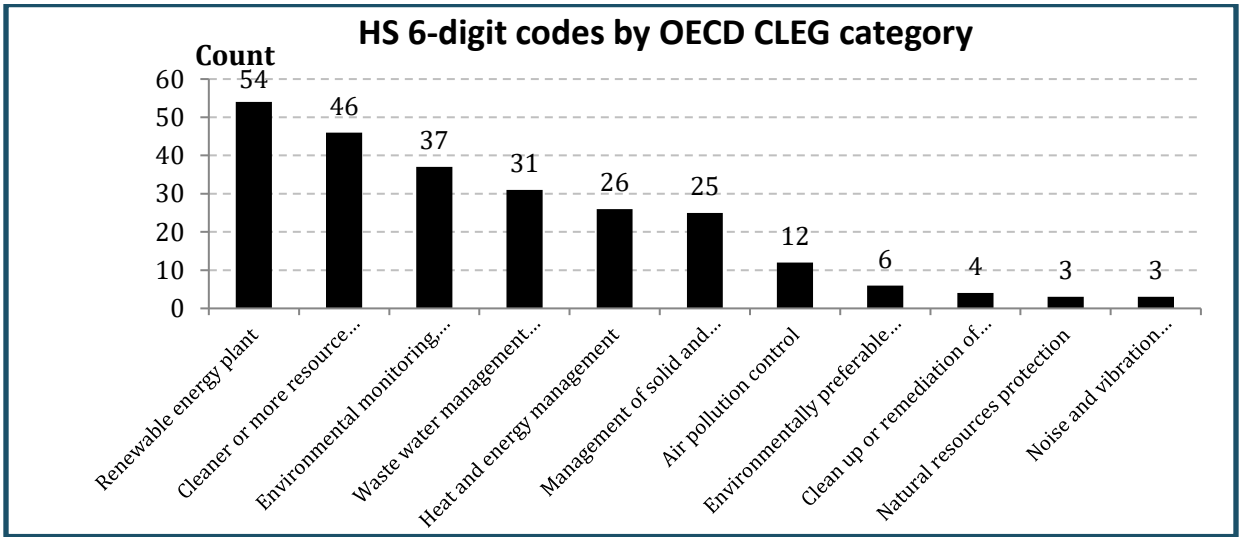
## SECTION 4: EGD FOCUS SECTORS AND RELEVANT PRODUCT TARIFF CODES

### OECD Combined List of Environmental Goods

While the CBAM focus is on "primary" production activities, some of the outputs from these industries are used as inputs into Green Economy and broader "environmental goods" products downstream. For this reason the Green Economy and broader "environmental goods" products are considered in this study in addition to the CBAM-focused products.

The challenge is that the term "environmental goods" is not precise and the universe of products that qualify as such continues to grow and evolve over time (and is further extended in this study). The Organisation for Economic Co-operation and Development (OECD) started tracking trade in such goods more than 20 years ago. The EU's statistical office, Eurostat, produced a serviceable definition to help focus on these specific products, expressed as: environmental goods are those that are used "to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems, [including] cleaner technologies … that reduce environmental risk and minimize pollution and resource use" (OECD/Eurostat, 1999). While it may sound specific at first glance, the definition is quite open to different interpretations, and as technologies evolve, so do notions as to which ones should be added and which dropped. The total of 247 product codes by broad CLEG category are shown in Figure 14.

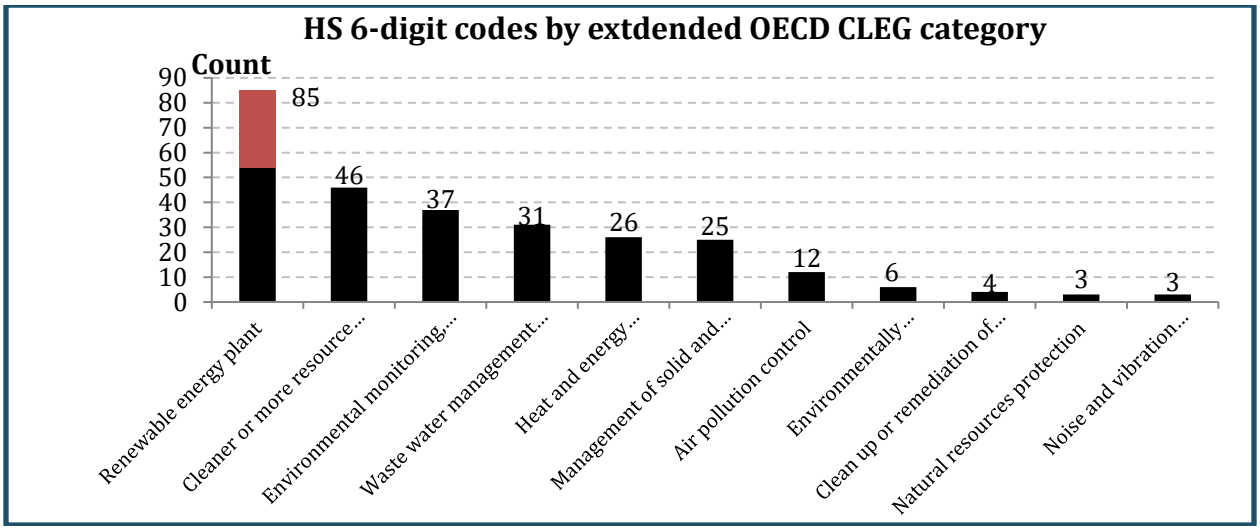
**Figure 10: Number of HS 6-digit codes per environmental category**




*Source: Trade Research Advisory, adapted from Sauvage (2014)*

For the purpose of this study, the renewable energy related products identified by Wind (2008) were incorporated into the OECD (CLEG) mapping to produce a broader group of HS codes used for this particular analysis, referred to as CLEG-E (for CLEG extended). However, only a subset of products identified in Wind (2008), relevant to current potential product development in South Africa, were incorporated. Therefore groups associated with geothermal energy, hydropower and ocean power were excluded. In addition other products included are biomass-related, solar and wind energy. The resulting extended list of 278, based on the same broad CLEG categories as shown in Figure 10 is shown in Figure 11.

**Figure 11: Number of extended HS 6-digit codes per environmental category**




*Source: Trade Research Advisory*

Note that a HS6-digit product line code may belong to more than one of the technologies, and does not imply that the HS6-digit product line is "solely" associated with the technology. It simply means that the product is also potentially used as an input into these types of renewable power plants' construction.

## Product tariff code comparisons – CBAM versus CLEG-E and South Africa's Industrial Master Plans

To understand the potential "direct" implications for products related to the broader Green Economy and broader "environmental goods" products downstream, the following comparisons were constructed based on the EU published CBAM HS 6-digit codes, the CLEG-E discussed in the preceding section, and an "unofficial" estimate as to which products related to South Africa's Industrial Master Plans. Since the status of the Plastics, Chemicals, Tourism and Health Master Plans are not clear, these were not included in the classifications compiled for this study.

**Table 16: Comparison – CBAM versus selected Industrial Master Plan products**

| | Industrial Master Plans | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CBAM** | Automotive | CTLF | Forestry | Furniture | Iron & Steel | Poultry | Renewable Energy | Sugar | Not allocated |
| Aluminium | - | - | - | - | - | - | - | - | 17 |
| Cement | - | - | - | - | - | - | - | - | 2 |
| Electricity | - | - | - | - | - | - | - | - | 1 |
| Fertilisers | - | - | - | - | - | - | - | - | 5 |
| Iron and steel | - | - | - | - | 83 | - | - | - | - |
| Not allocated | 123 | 358 | 183 | 16 | 208 | 22 | 82 | 15 | 4093 |

*Source: Trade Research Advisory*

When comparing the overlap between the products associated with the Industrial Master Plans versus the CBAM focused set, it is evident that only the Iron and Steel Master Plan has direct overlap (yellow) with the current focus of the CBAM. However, as the EGD and CBAM are "evolving" and dynamic, the potential risk for other Master Plan areas into the future may change. These areas are highlighted in orange in Tabel 16. For example, while the current focus of the CBAM is on primary aluminium products, it is highly likely that this focus could be extended to some downstream applications of aluminium in future.

**Table 17: Comparison - CLEG-E versus selected Industrial Master Plan products**

| | Industrial Master Plans | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **OECD CLEG-E** | Automotive | CTLF | Forestry | Furniture | Iron & Steel | Poultry | Renewable | Sugar | Not allocated |
| Air pollution control | - | - | - | - | - | - | 1 | - | 11 |
| Clean up or remediation of soil and water | - | - | - | - | - | - | 1 | - | 3 |
| Cleaner or more resource efficient technologies and products | 13 | - | - | - | 6 | - | - | - | 27 |
| Environmental monitoring, analysis and assessment equipment | - | - | - | - | - | - | 6 | - | 31 |
| Environmentally preferable products based on end use or disposal characteristics | - | 3 | 1 | - | - | - | - | - | 2 |
| Heat and energy management | - | - | - | - | - | - | 1 | - | 25 |
| Management of solid and hazardous waste and recycling systems | - | - | - | - | - | - | 2 | - | 23 |
| Natural resources protection | - | - | - | - | - | - | - | - | 3 |
| Noise and vibration abatement | - | - | - | - | - | - | - | - | 3 |
| Renewable energy plant | - | - | - | - | 6 | - | 66 | - | 17 |
| Wastewater management and portable water treatment | - | 1 | - | - | 11 | - | 5 | - | 16 |
| Not allocated | 110 | 354 | 182 | 16 | 268 | 22 | - | 15 | 3957 |

*Source: Trade Research Advisory*

A comparison between the Industrial Master Plans and the OECD CLEG-E list was also conducted (Table 17). The relative overlap between these two groupings is much more pronounced than between the CBAM and the Master Plans. As expected, the renewable energy plant groups share the most overlap, followed by Iron and Steel Master Plan products spread over three OECD CLEG-E groups, namely "Cleaner or more resource efficient technologies and products", "Renewable energy plant" and "Wastewater management and portable water treatment."

Comparing the CBAM and OECD CLEG-E lists (Table 18), demonstrates that the current focus of CBAM is more on primary products and OECD CLEG-E list more on downstream applications of

such products. As a result, no short-term potential risk exposure is identified for the OECD CLEG-E. However, as mentioned in the discussion on the Industrial Master Plans versus the CBAM focused set, the possibility exists that more focus can be placed on downstream applications of the current CBAM primary product groups.

**Table 18: Comparison – CBAM versus CLEG-E products**

| | CBAM | | | | | |
|---|---|---|---|---|---|---|
| **OECD CLEG-E** | Aluminium | Cement | Electricity | Fertilisers | Iron and steel | Not allocated |
| Air pollution control | - | - | - | - | - | 12 |
| Clean up or remediation of soil and water | - | - | - | - | - | 4 |
| Cleaner or more resource efficient technologies and products | - | - | - | - | - | 46 |
| Environmental monitoring, analysis and assessment equipment | - | - | - | - | - | 37 |
| Environmentally preferable products based on end use or disposal characteristics | - | - | - | - | - | 6 |
| Heat and energy management | - | - | - | - | - | 26 |
| Management of solid and hazardous waste and recycling systems | - | - | - | - | - | 25 |
| Natural resources protection | - | - | - | - | - | 3 |
| Noise and vibration abatement | - | - | - | - | - | 3 |
| Renewable energy plant | - | - | - | - | - | 85 |
| Wastewater management and portable water treatment | - | - | - | - | - | 31 |
| Not allocated | 17 | 2 | 1 | 5 | 83 | 4816 |

*Source: Trade Research Advisory*

## Summary and conclusion

While the EGD and CBAM developments inherently seems to pose a risk to the exports of goods in the green and environmental space, direct comparison of the particular trade products associated with these focus sectors shows that, at least in the initial stages, the EDG and CBAM developments will not place direct pressure on such products.

However, this comparative analysis shows that some products associated with the current (and those that are in development) South African Industrial Master Plans are potentially directly (Steel and Iron) and indirectly (e.g. aluminium related products in the Automotive, Renewable energy and other sectors) affected, through possible future further refinements and expansion of the EGD and CBAM focus. These product groups need to keep track of such potential developments into the future to proactively be in a position to mitigate the risk associated of potentially becoming uncompetitive into the EU market as a result.

The opportunities for exports into the EU, associated with these product groups from a South African exporter's perspective, are discussed in more detail in Section 5.

# SECTION 5: EGD GREEN ECONOMY FOCUSED POTENTIAL OPPORTUNITIES – A SOUTH AFRICAN PERSPECTIVE

## Identifying potential export opportunities associated with the EGD

The preceding sections have provided context and detail on aspects related to not only the CBAM, but also broader issues such as Farm to Fork, CEAP and generalised environmental-related developments from a production and trade perspective.

### Approach applied in brief

While in theory any product can be produced in a home market (such as South Africa) and exported to the world, the reality of real-world production and trade dictates what potential products are more feasible and realistic than others to consider for particular markets from the perspective of a particular home market. The EGD, CBAM, Farm to Fork and CEAP are some examples of such real-world developments that need to considered by potential exporters.

For existing exporting producers and possible new producers/exporters a major challenge is that of "cutting through the noise" and identifying potential opportunities that could be developed from an exporting perspective, in this instance with particular focus on the EPA partners.

To provide some direction and assistance to relevant stakeholders, the following analysis of products (no direct analysis of services is included due to the "immature" and limited nature of currently available services trade data) that related to the EGD and for which market demand within the EU exists.

This analysis follows a structured and well-researched approach and considers both the short to medium term as well as the longer term. However, the analysis does not include any forecasts or projections, as it is informed by structural analysis of demand, supply and logistics considerations relevant in the current and historical context only.

This provides pragmatic and focused information for interested potential exporters. The modelling approach provides a structural analysis of export opportunities informed by global import demand patterns over the last five years for which international trade data is available for all countries and products (HS 6-digit).

**Box 1: TRADE-DSM® methodology in a nutshell**

This method was initially developed (Cuyvers *et al.,* 1995) to identify the product-country combinations with the highest export potential for a single country. It was specifically designed to provide export promotion agencies with a more scientific way of determining those products and destination countries on which to focus their scarce export promotion resources.

Further refinements to the approach have been introduced over the past two decades by the trade research focus area at the North-West University in South Africa and Trade Research Advisory, a spin-out company of the North-West University. The outcomes of this analysis are based on this subsequent refined approach that considers not only demand and supply considerations, but also aspects of economic geography such as transport logistics and market access dimensions. This aspect distinguishes the TRADE-DSM® approach from other approaches, including that of the International Trade Centre (ITC).

The ITC recognises the TRADE-DSM® as the only other export opportunity market selection methodology that includes all possible export opportunities for product-country combinations in the world at an HS-6 product level (Decreux and Spies, 2016), while the WTO acknowledges the TRADE-DSM methodology as an "aid to trade facilitation" (Steenkamp, Grater, and Viviers, 2016).

In a nutshell, the method involves evaluating all worldwide country and product combinations, and screening these using various intelligent "filters" to eliminate export opportunities that are not potentially viable – from the specific context (within global trade capabilities and logistics and market access considerations) of a particular country. Hence, for each country to be analysed, a specific model needs to be constructed, in this case for South Africa.

® TRADE-DSM is a registered trademark of the North-West University, South Africa.

For purposes of this analysis, the TRADE-DSM (TRADE – Decision Support Model) (see Box 1 for more detail) methodology was employed to help inform the question combined with the so-called Product Space approach (see Box 2 for more detail). This approach incorporates not only supply-side production aspects (which is what most of the typical approaches apply for this type of analysis), but also the demand-side and logistics considerations, which is what distinguishes the TRADE-DSM approach from other approaches, including that of the International Trade Centre (ITC). Therefore, this analysis combines both the Product Space and TRADE-DSM approaches. In addition, a more detailed HS 6-digit product analysis is conducted for identifying potential export opportunities related to EGD opportunities.

**Box 2: Product space and economic complexity in brief**

In recent times the Product Space and Economic Complexity approach has gained popularity to inform on export evolution and industrialisation policy formulation.

The Product Space work of Hausmann and Klinger (2006), Hidalgo and Hausmann (2009) and Hausmann and Hidalgo (2011) postulate that countries get richer, not through deeper specialisation in products that they already export, but through export diversification into new products. In simple terms, they suggest that changes in a country's productive structure can be understood as a combination of two processes, namely:

a) The first process is based on capabilities that countries already have which can be applied in the production and export of "new", alternative – but related – products (this relatedness is quantified through the calculations of a concept termed "distance" between products).

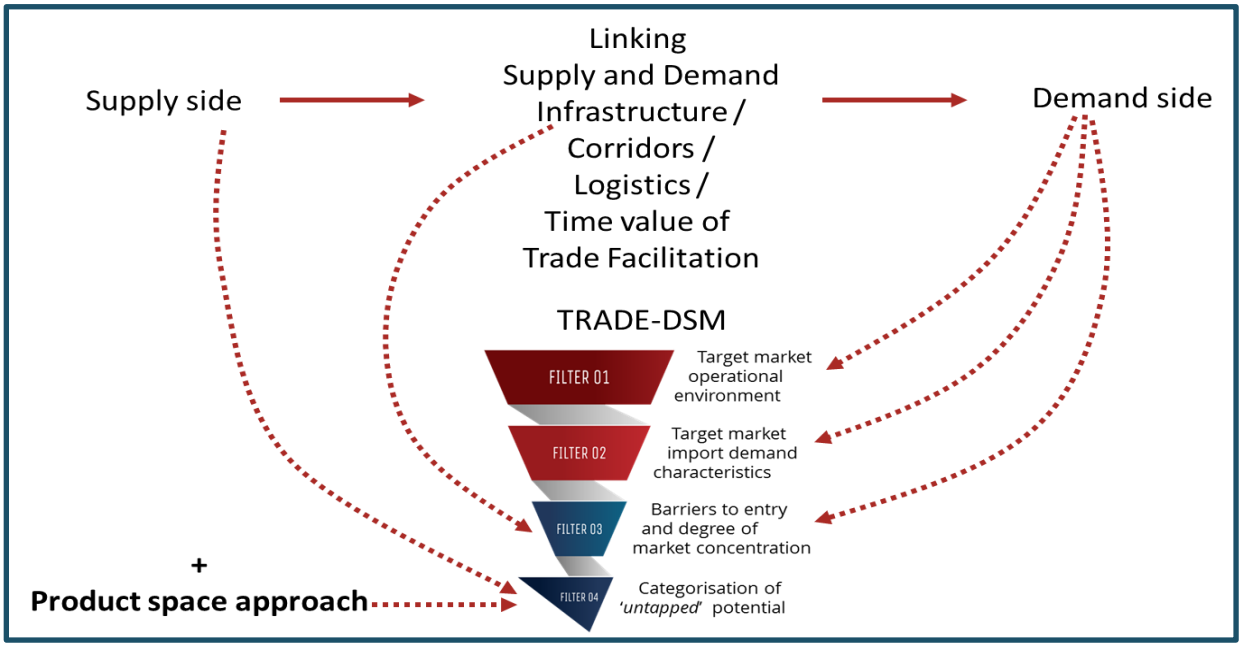
b) The second process entails countries developing new capabilities which, combined with other, existing capabilities, allows them to develop more products, with typically a focus on upgrading into the value chain through a concept termed "complexity" of products.

The evidence from the Product Space analysis points to the fact that generally developed countries mainly export core and more complex products (such as within the metals, machinery and chemicals groups), while developing countries mainly export periphery (or less complex) products (such as within agriculture, forestry, un- or low-beneficiated mining and other primary products). These "core" industries in general have three key characteristics, namely (1) more capabilities embedded, (2) generally higher export monetary value per unit, and (3) more potential for diversification.

For more information see https://atlas.cid.harvard.edu

The diagram in Figure 12 demonstrates the combination of these approaches for the purposes of this analysis.

**Figure 12: Informing both supply and demand side analysis**




*Source: Trade Research Advisory*

To this effect, the TRADE-DSM approach (for demand-side focus with some supply-side considerations in terms of demonstrated comparative advantage of existing exports) will be combined with logistical considerations (in terms of linking to potential target markets) and further enhanced by conducting a further iteration of analysis informed from a supply side (Product Space) perspective.

In the context of this analysis a key concept, used both in the TRADE-DSM as well as Product Space approaches, to indicate products where South Africa already exhibits the capability for production for the purposes of exports, is the so-called revealed comparative advantage (RCA) index (see Balassa, 1965).

The RCA for a specific export product for a specific exporting country (e.g. South Africa) is often used as an indicator of relative export advantage or proxy for export competitiveness of a country for a specific product relative to the world as a comparator. The literature suggests that an RCA of at least 1 indicates that a country is specialised in producing and exporting a particular product. It can therefore be considered a proxy for export production capability and capacity of the exporting country if considered in combination with the revealed trade advantage (RTA).

While the RCA index is often used as an indicator of relative export advantage or competitiveness, it only accounts for exports without consideration of imports. The RTA index, however, accounts for exports and imports simultaneously and is used as an indicator of product-level competitiveness and productive capacity. An RTA>0 reveals positive comparative trade advantage or trade competitiveness. It can be assumed that an RTA>0 implies that most of the product exported is locally produced as it corrects for re-exports.

To combine the TRADE-DSM model and the Product Space approach, the following process is applied:

a) First, the implications of different outcomes obtained from the TRADE-DSM analysis is considered, taking into account South African export capabilities regarding the products associated with the CLEG-E group, as well as import demand patterns and market access elements in terms of the respective EU-27 partner countries;
b) The focus of the first round of analysis is on identifying those products for which South Africa has both an RCA >=1;
c) As a second-round analysis the top five associated “adjacent possible” products are investigated for each of the “mature” export products as identified by the Product Space proximity index;
d) To identify potential products for which South Africa already has “some export capability”, products identified by the Product Space analysis that also appear in South Africa’s basket of existing export goods, but that are deemed “relatively immature” (with 0.5 < RCA < 1) are selected. This ensures that “new” potential products already have some traction in the export basket of the country.
e) Last some “completely new” possible products that also fall within the CLEG-E group are investigated. These are products for which the TRADE-DSM shows demand potential and

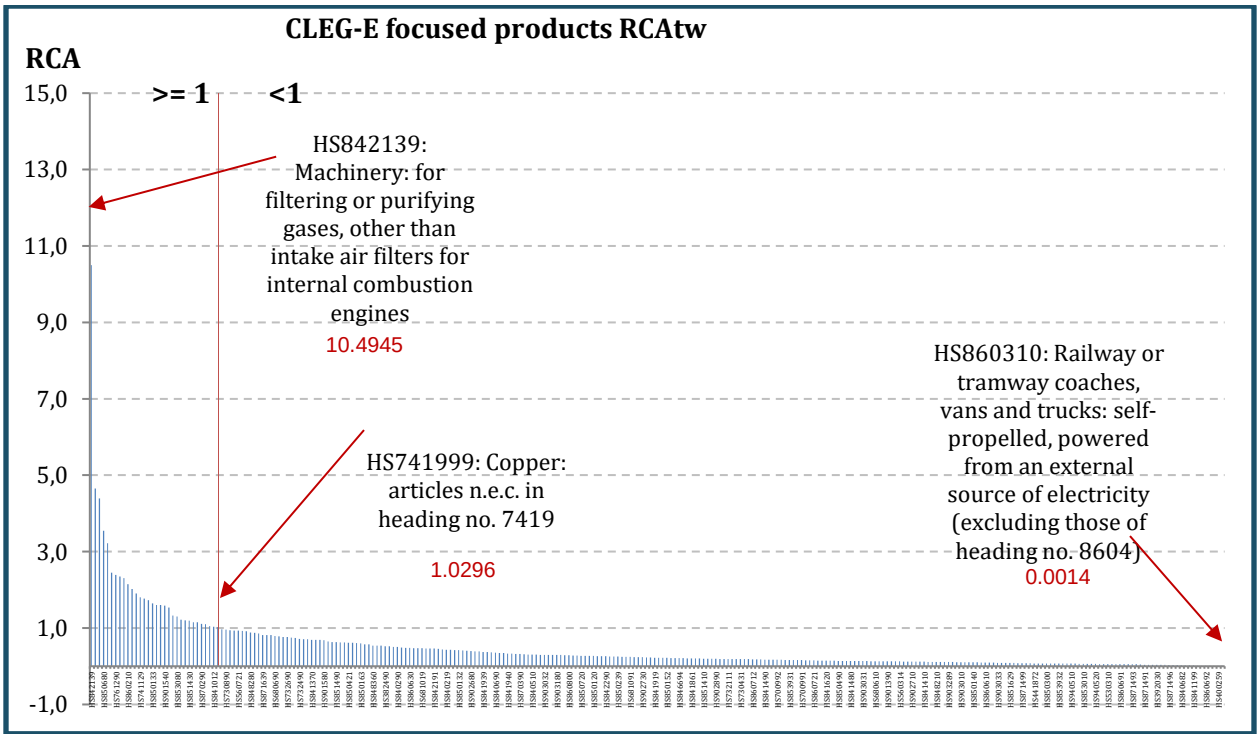
relatively accessible markets (for South African exports). For these products South Africa will have 0 =< RCAs < 0.5 and RTAs < 0, but these opportunities "relate" to some existing export production capabilities activities informed by outcomes from the initial TRADE-DSM analysis explained in (a).

Through this process the export strategy development process is informed from three different perspectives, namely that of:

1) Shorter-term, lower hanging export promotion opportunities (as informed by steps (a) and (b) in the preceding process);
2) Medium-term export development and possible investment opportunities that will require more effort and a longer time frame to yield results (as informed by steps (c) and (d) in the preceding process); and
3) New investment opportunities aimed at exports that may require major new product or sector developments and will probably take the longest to yield results explained in (e).

For context, Figure 13 demonstrates the relative outcomes for each of the CLEG-E products at HS 6-digit level in terms of existing export "maturity" as indicated by the RCA (calculated on a five-year time-weighted basis).

**Figure 13: CLEG-E group of products – RCAs**




*Source: Trade Research Advisory, calculated from CEPII (2021)*

In terms of RCAs, South Africa's "most mature" export product is automotive catalytic convertors (HS842139: Machinery: for filtering or purifying gases, other than intake air filters for internal combustion engines) with an RCA of 10.5. Within the "mature" group of products (RCAs>=1) Copper products (HS741999: Copper: articles n.e.c. in heading no. 7419) have the lowest RCA at

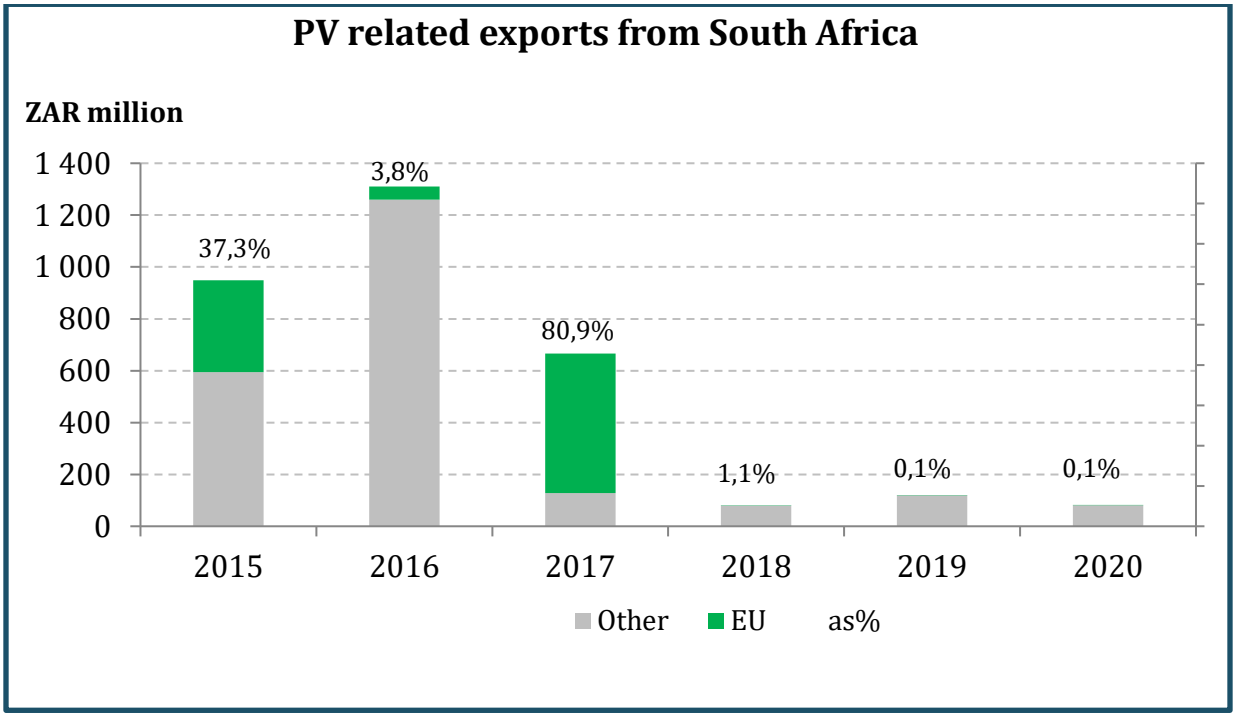
just over 1 (1.03). The least "mature" product in the CLEG-E group is associated with electrical self-propelled railway coaches, vans and trucks (HS860310: Railway or tramway coaches, vans and trucks: self-propelled, powered from an external source of electricity (excluding those of heading no. 8604) with an RCA of around 0.0014 only.

However, before discussing outcomes, an illustrative real-world case study on the possibilities for CLEG-E products to the EU is provided.

## Possibilities: example of renewable product successfully exported to the EU

While exporting to global markets (and specifically to the EU, see Figure 14) may seem daunting to prospective exporters within the Green Economy, a practical case study shows it is possible. In this instance the product in question is photo-voltaic panels (reported under HS8541.40.10: Photo-voltaic cells whether or not assembled in modules or made up into panels).

**Figure 14: Example of PV panel exports to EU**




*Source: SARS, Department. of Customs and Excise Trade Statistics, compiled by Trade Research Advisory*

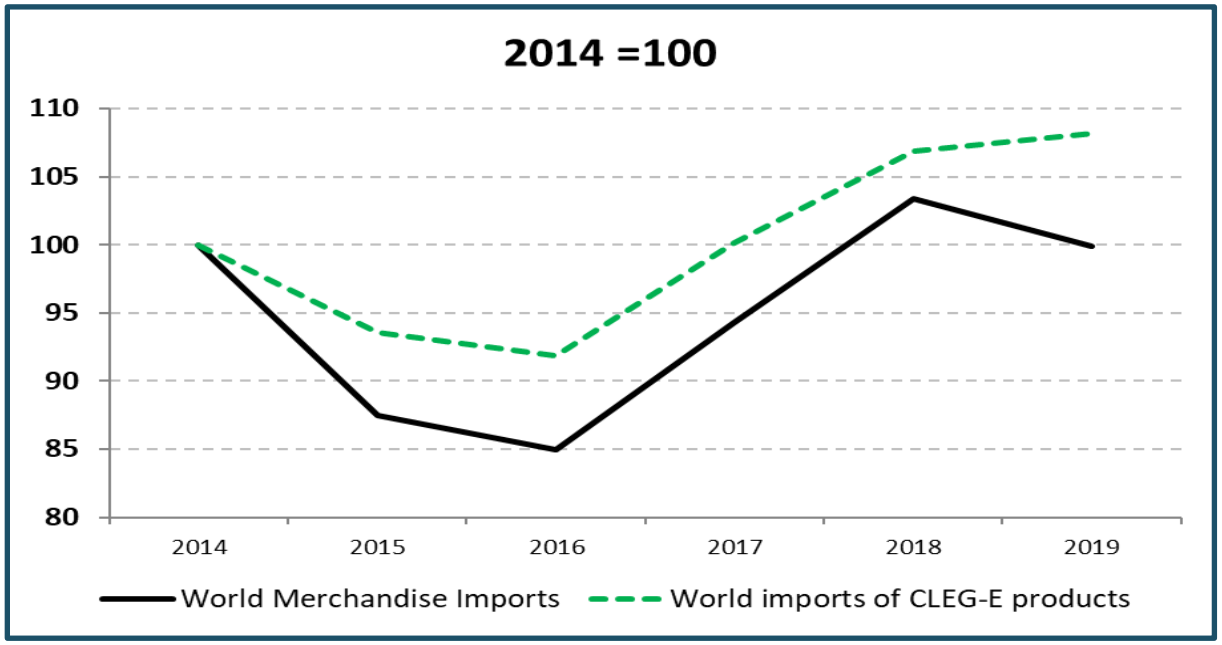
While the underlying driving force for PV panel production was the Independent Power Producer's Programme starting in 2011, the case study serves to demonstrate that it is possible to export technically complex products such as PV panels to the EU (as opposed to South Africa's generally lower value added products concentrated mainly in the agricultural and food processing related products).

The reasons for the lack of growth in production capacity for exports of these products are many and intricate, and beyond the scope of this analysis. The example merely serves to demonstrate that it is possible.

## Global context relative to the EU-EPA partners

In terms of global trade trends, growth in environmental goods has exceeded that of general merchandise trade relative to 2014 for the last 5 years as is evident from Figure 15.

**Figure 15: Global relative imports of OECD CLEG-E products**




*Source: Trade Research Advisory, calculated from CEPII (2021)*

On a structural import basis (i.e. based on a five-year time-weighted basis) imports into the different economies of the world is demonstrated in Figure 16.

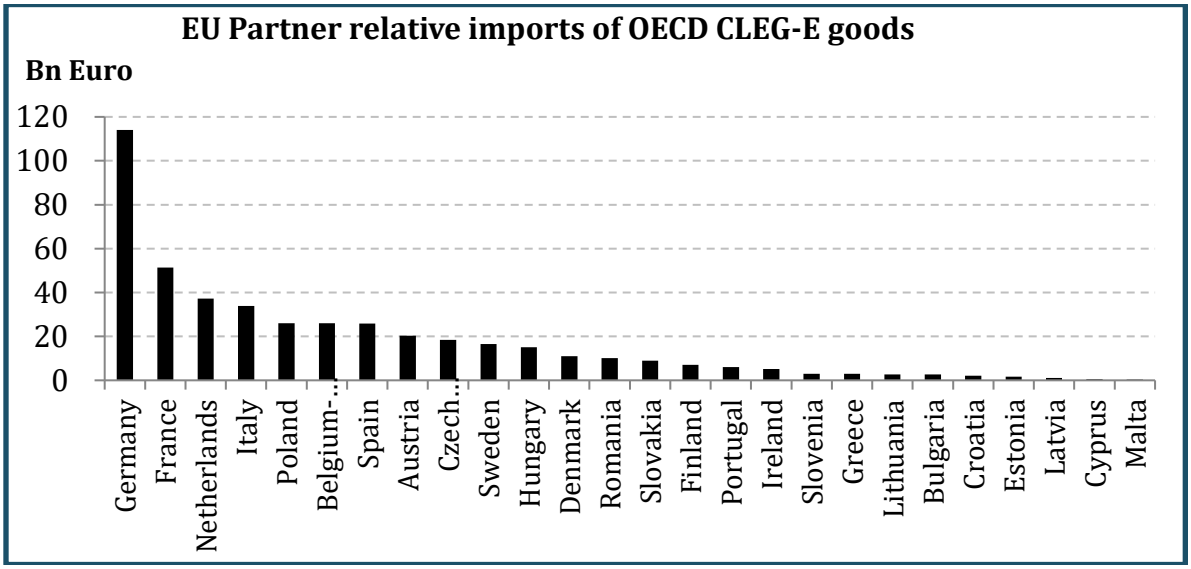
**Figure 16: Global relative imports of OECD CLEG-E products**


*Source: Trade Research Advisory, calculated from CEPII (2021)*

Notable is that the United States overall is the largest single import demand market for the group of products (14.3%), followed by China (8.1%) and Germany (7.7%). However, the EU as a combined market represents 30.3% of global imports of these products.

Within the EU[3], as expected, Germany is the largest importer (25% of EU import demand in value terms), followed by France (11.4%), Netherlands (8.3%), Italy (7.5%) and Poland and Belgium both at around 8% (Figure 17).

**Figure 17: EU relative imports of OECD CLEG-E products**




*Source: Trade Research Advisory, calculated from CEPII (2021)*

The challenge remains for individual exporters to understand which of these markets for particular products are "realistic" actually opportunities. The following section provides a breakdown of the opportunities by OECD CLEG-E group as well as for each individual market within the EU partner countries.

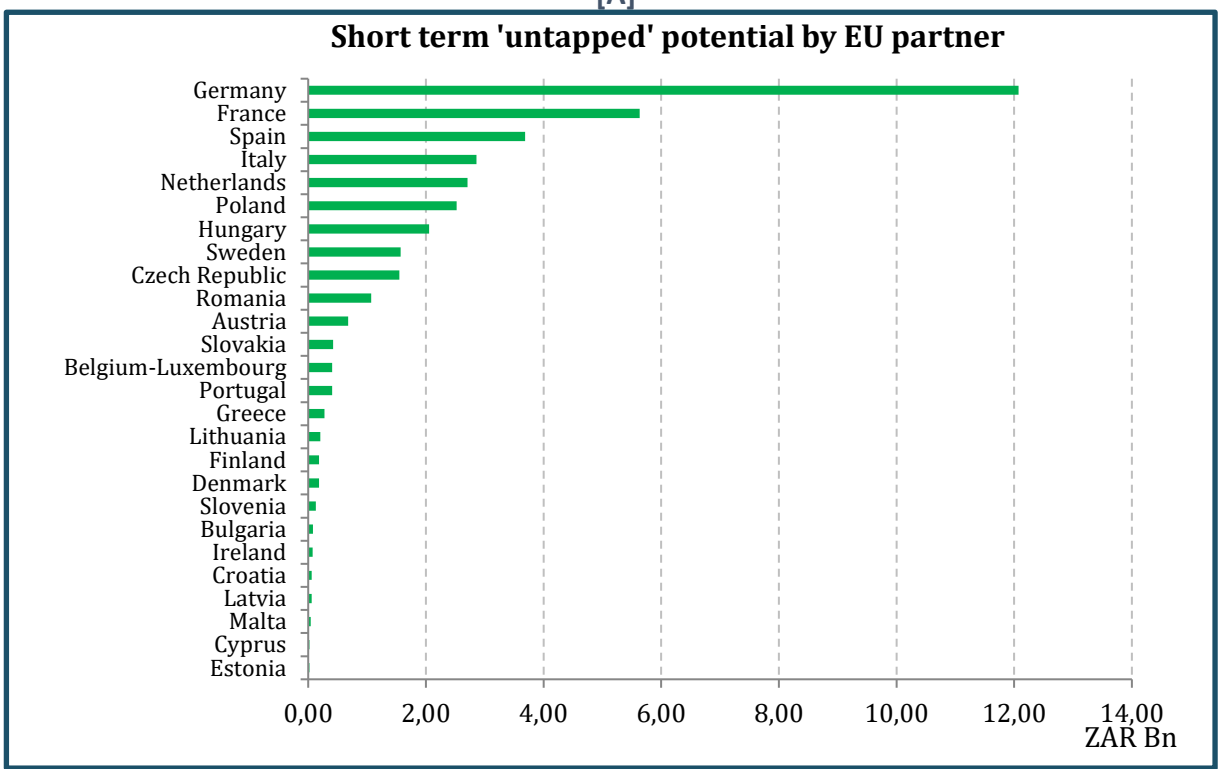
## Short-term opportunities

The reason why these opportunities are classified as "short-term" opportunities is that the target markets (EU partner countries) already exhibit import demand for these products (and has met all the methodology's requirements to be classified as a "realistic" opportunity) and South African exporters already can produce and export these products (and have done so to selected markets in the past). Hence, the inference is that South African exporters should be able to potentially expand sales into these identified EU markets. In reality, many further aspects need to be verified and clarified (e.g. standards requirements, logistics arrangements, relative market pricing and details of competitors, market demand preferences) but as a first "screening" process, the identified EU partner countries merit further investigation and understanding.

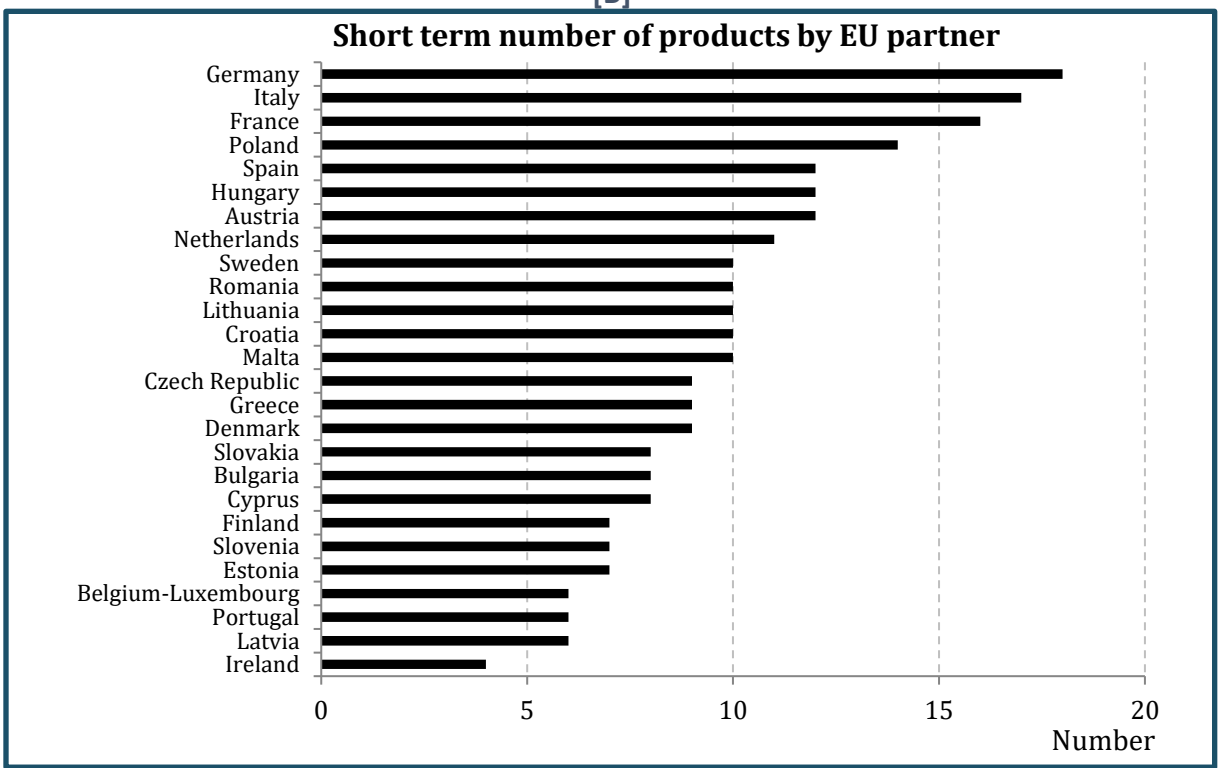
[3] Note that due to data constraints from a modelling perspective Luxembourg and Belgium are treated as a single market.

**Figure 18: EU relative 'realistic' export potential for OECD CLEG-E 'short term' opportunities**

[A]




[B]




*Source: Trade Research Advisory*

The “untapped” potential (in ZAR billion) as well as number (of HS 6-digit products) for each of the EU group of countries are shown in Figure 18 (panel [A] and [B]). A more detailed cross-tabulation of “untapped” potential by country and CELG-E group is also shown in Table 19.

**Table 19: Short-term 'untapped' potential summarised (CLEG-E and EU partner)**

| | CLEG-E Group | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU-27 partner | Air pollution control | Clean up or remediation of soil and water | Cleaner or more resource efficient technologies and products | Environmental monitoring, analysis and assessment equipment | Environmentally preferable products based on end use or disposal characteristics | Heat and energy management | Management of solid and hazardous waste and recycling systems | Natural resources protection | Noise and vibration abatement | Renewable energy plant | Waste water management and portable water treatment | Total | Rank |
| Austria | - | - | 0.16 | - | 0.00 | - | 0.23 | 0.00 | - | 0.02 | 0.27 | 0.68 | 11 |
| Belgium-Luxembourg | - | - | 0.06 | - | - | - | 0.29 | - | - | 0.01 | 0.05 | 0.41 | 13 |
| Bulgaria | 0.02 | - | 0.00 | - | 0.00 | - | 0.02 | - | - | 0.00 | 0.03 | 0.08 | 20 |
| Croatia | - | - | 0.01 | - | 0.00 | - | 0.02 | - | - | 0.01 | 0.03 | 0.06 | 22 |
| Cyprus | 0.01 | - | 0.00 | - | 0.00 | - | - | - | - | 0.00 | 0.01 | 0.02 | 25 |
| Czech Republic | 1.13 | - | 0.12 | - | 0.00 | - | 0.15 | 0.00 | - | 0.01 | 0.14 | 1.55 | 9 |
| Denmark | - | - | 0.01 | - | 0.00 | - | 0.00 | 0.00 | - | 0.02 | 0.15 | 0.18 | 18 |
| Estonia | - | - | 0.00 | - | - | - | - | - | - | 0.02 | 0.00 | 0.02 | 26 |
| Finland | 0.15 | - | 0.00 | - | 0.00 | - | - | - | - | 0.01 | 0.03 | 0.19 | 17 |
| France | 1.13 | - | 0.11 | - | 0.01 | - | 0.52 | 0.01 | 2.90 | 0.32 | 0.63 | 5.63 | 2 |
| Germany | 4.71 | - | 0.71 | - | 0.01 | - | 0.41 | 0.01 | 4.64 | 0.60 | 0.98 | 12.08 | 1 |
| Greece | 0.03 | - | 0.01 | - | 0.00 | - | 0.05 | - | 0.14 | 0.00 | 0.05 | 0.28 | 15 |
| Hungary | - | - | 0.01 | - | 0.00 | - | 0.21 | 0.00 | 1.66 | 0.12 | 0.06 | 2.06 | 7 |
| Ireland | - | - | - | - | 0.00 | - | 0.04 | - | - | - | 0.04 | 0.08 | 21 |
| Italy | - | - | 0.15 | - | 0.01 | - | 0.22 | - | 2.02 | 0.19 | 0.27 | 2.86 | 4 |
| Latvia | - | - | 0.00 | - | - | - | 0.00 | - | 0.04 | 0.01 | 0.01 | 0.06 | 23 |
| Lithuania | 0.03 | - | 0.01 | - | - | - | 0.06 | - | 0.08 | 0.00 | 0.02 | 0.20 | 16 |
| Malta | 0.01 | - | 0.00 | - | 0.00 | - | 0.01 | 0.00 | 0.02 | 0.00 | 0.01 | 0.04 | 24 |
| Netherlands | - | - | 0.03 | - | 0.03 | - | 0.43 | 0.02 | 1.67 | 0.18 | 0.34 | 2.71 | 5 |
| Poland | - | - | 0.15 | - | 0.00 | - | 0.31 | 0.00 | 1.62 | 0.21 | 0.23 | 2.52 | 6 |
| Portugal | 0.36 | - | - | - | - | - | 0.00 | 0.00 | - | - | 0.04 | 0.41 | 14 |
| Romania | 0.34 | - | 0.01 | - | - | - | - | 0.00 | 0.52 | 0.01 | 0.19 | 1.07 | 10 |
| Slovakia | 0.32 | - | 0.05 | - | 0.00 | - | - | - | - | 0.00 | 0.06 | 0.43 | 12 |
| Slovenia | 0.04 | - | - | - | 0.00 | - | 0.05 | - | - | 0.01 | 0.03 | 0.13 | 19 |
| Spain | 1.58 | - | 0.02 | - | 0.01 | - | 0.21 | 0.01 | 1.36 | 0.02 | 0.48 | 3.69 | 3 |
| Sweden | - | - | 0.07 | - | 0.00 | - | - | - | 1.38 | 0.09 | 0.03 | 1.57 | 8 |
| Total | 9.86 | - | 1.68 | - | 0.08 | - | 3.24 | 0.05 | 18.07 | 1.87 | 4.15 | 39.00 | |
| Rank | 2 | - | 6 | - | 7 | - | 4 | 8 | 1 | 5 | 3 | | |

*Source: Trade Research Advisory*

Most of the shorter-term product sectors identified related to large production capabilities like automotive catalytic converters and aluminium: casks, drums, cans, boxes and the like. The exception is HS630510 Sacks and bags: of a kind used for the packing of goods, of jute or of other

textile based fibres of heading no. 5303. This particular group of products may offer potential to smaller exporters.

The largest potential (more than R 1 billion – dark green in Table 19) for the CLEG-E group of products aggregated by market are associated with Germany, France, Spain, Italy, Netherlands, Poland, Hungary, Sweden, Czech Republic and Romania. Smaller opportunities (in value terms) but still significant, especially for smaller exporters, (R 0.1 billion to R 1 billion – lighter green in Table 19) are associated with countries such as Austria, Slovakia, Belgium-Luxembourg, Portugal, Greece, Lithuania, Finland, Denmark and Slovenia. The smallest potential (less than R0.1 billion – lightest green in Tabel 19) is associated with Bulgaria, Ireland, Croatia, Latvia, Malta, Cyprus and Estonia.

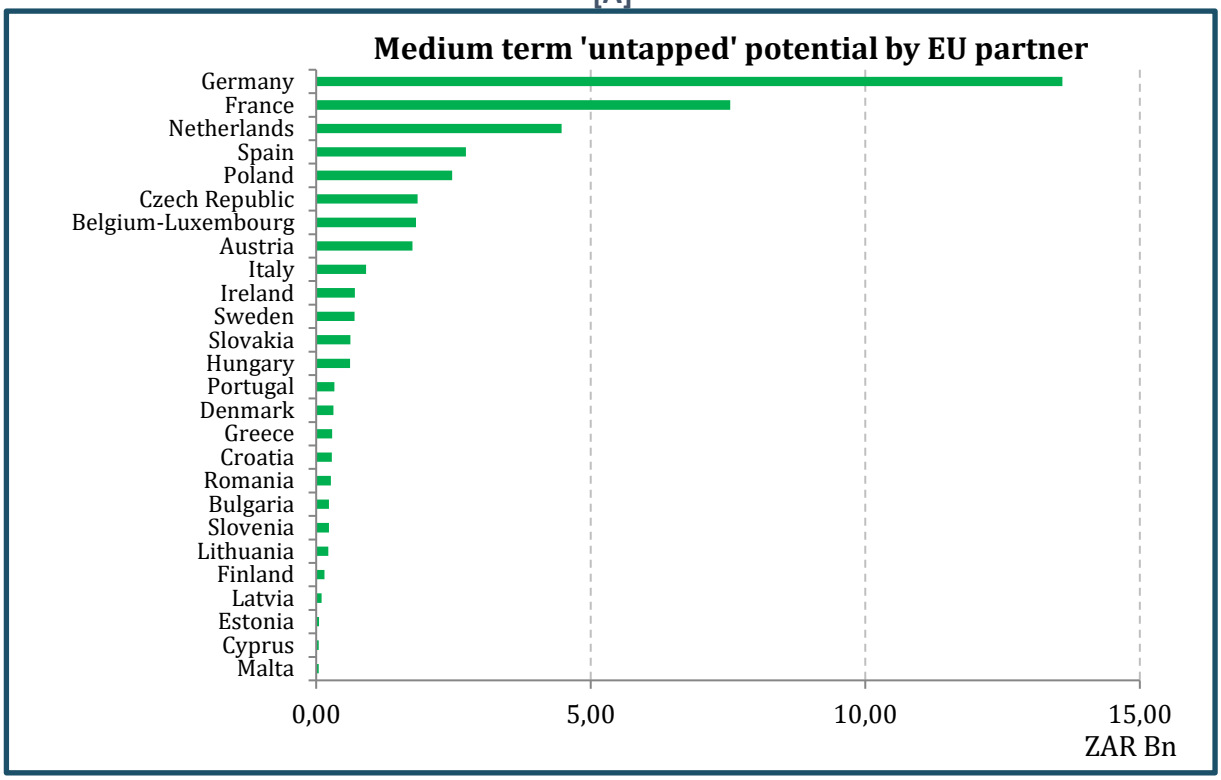
The largest "untapped" potential in terms of CLEG-E group is associated with the *Noise and vibration abatement* group of products (single largest markets are Germany, France and Italy). The next largest group is the *Air pollution control* group, with Germany the single largest market followed by Spain. *Wastewater management and portable water treatment* forms the third largest group, followed by *Management of solid and hazardous waste and recycling systems, Renewable energy plant* and *Cleaner or more resource efficient technologies and products*.

## Medium-term opportunities

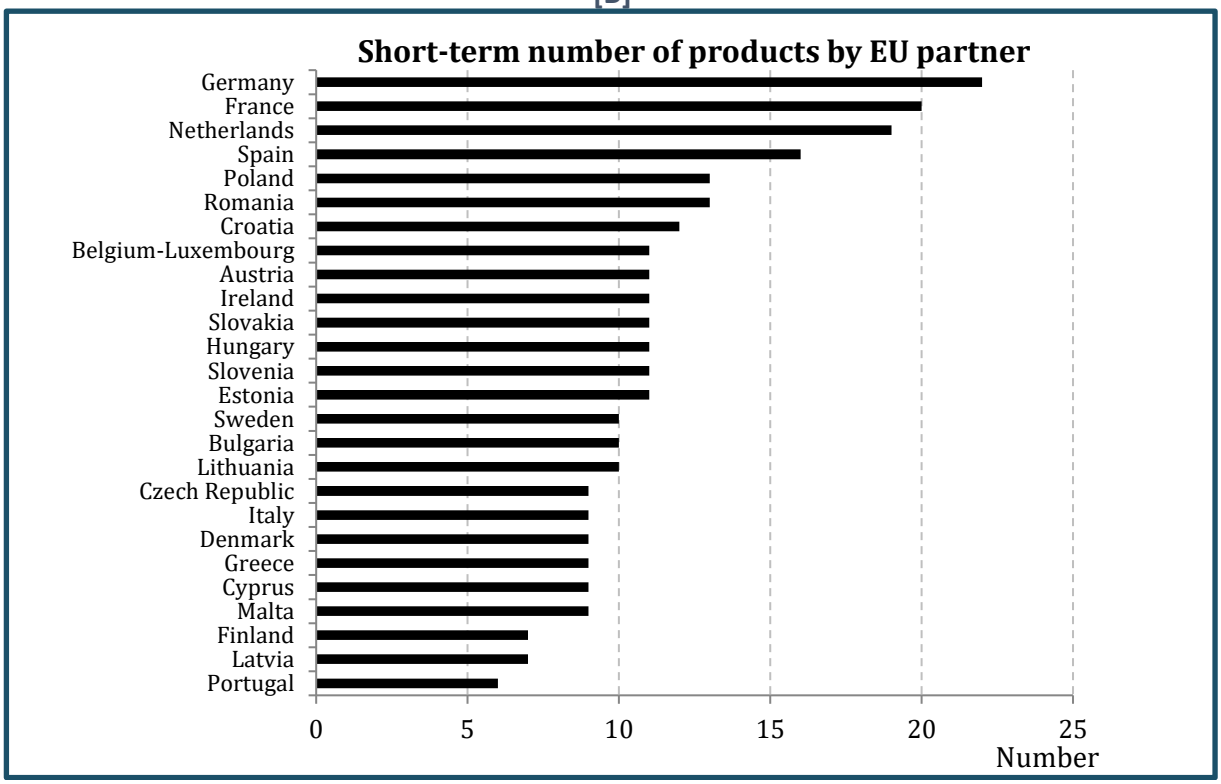
These opportunities are classified as "medium-term" opportunities since the relative "maturity" of South African exports (relative to the world average) is lower but, according to the product space approach, these products are also relatively strongly related to the more mature group associated with the short-term opportunities. However, to become comparatively large, exports in the basket of South African export goods may require various interventions that are not clear at this level of aggregation. The expectation is that some export development may be required to increase the production and sales capabilities of such products to the point where (in RCA terms) these products would be "mature". The nature of these interventions could be different by product and market and hence requires more in-depth analysis for each to understand to the point of developing relevant action plans, which is beyond the scope of this study. Overall, it could be as simple as just marketing and selling more to a potential target market; however, it may also require, for example,. interventions in the form of adherence to certain standards, specification and accreditation requirements and could therefore take time and resources. By inference therefore this group of products are expected to take longer to realise some of the "untapped" potential and are grouped as "medium-term" opportunities.

**Figure 19: EU relative 'realistic' export potential for OECD CLEG-E 'medium term' opportunities**

[A]




[B]




*Source: Trade Research Advisory*

## Table 20: Medium-term 'untapped' potential summarised (CLEG-E and EU partner)

| EU-27 partner | CLEG-E Group: Air pollution control | Clean up or remediation of soil and water | Cleaner or more resource efficient technologies and products | Environmental monitoring, analysis and assessment equipment | Environmentally preferable products based on end use or disposal characteristics | Heat and energy management | Management of solid and hazardous waste and recycling systems | Natural resources protection | Noise and vibration abatement | Renewable energy plant | Waste water management and portable water treatment | Total | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | - | 0.00 | 0.28 | - | - | - | 0.03 | - | - | 1.38 | 0.07 | 1.75 | 8 |
| Belgium-Luxembourg | - | - | 0.05 | - | - | - | 0.04 | - | - | 1.33 | 0.40 | 1.82 | 7 |
| Bulgaria | - | 0.00 | 0.01 | - | - | - | - | - | - | 0.05 | 0.18 | 0.23 | 19 |
| Croatia | - | 0.00 | 0.00 | - | - | - | 0.00 | - | - | 0.26 | 0.01 | 0.29 | 17 |
| Cyprus | - | - | - | - | - | - | 0.00 | - | - | 0.04 | 0.01 | 0.05 | 25 |
| Czech Republic | - | - | - | - | - | - | 0.03 | - | - | 0.16 | 1.65 | 1.84 | 6 |
| Denmark | - | - | 0.09 | - | - | - | 0.03 | - | - | 0.12 | 0.07 | 0.31 | 15 |
| Estonia | - | - | 0.01 | - | - | - | 0.00 | - | - | 0.02 | 0.01 | 0.05 | 24 |
| Finland | - | - | 0.00 | - | - | - | 0.01 | - | - | 0.10 | 0.03 | 0.15 | 22 |
| France | - | 0.03 | 0.42 | - | - | - | 0.13 | - | - | 3.57 | 3.39 | 7.54 | 2 |
| Germany | - | - | 0.65 | - | 0.00 | - | 0.23 | - | - | 6.33 | 6.38 | 13.59 | 1 |
| Greece | - | - | 0.00 | - | - | - | - | - | - | 0.13 | 0.16 | 0.29 | 16 |
| Hungary | - | 0.00 | 0.01 | - | 0.00 | - | 0.01 | - | - | 0.54 | 0.05 | 0.62 | 13 |
| Ireland | - | 0.00 | 0.01 | - | - | - | 0.02 | - | - | 0.41 | 0.27 | 0.71 | 10 |
| Italy | - | - | - | - | - | - | 0.10 | - | - | 0.73 | 0.09 | 0.91 | 9 |
| Latvia | - | 0.00 | 0.02 | - | 0.00 | - | - | - | - | 0.00 | 0.08 | 0.10 | 23 |
| Lithuania | - | - | 0.01 | - | 0.00 | - | 0.02 | - | - | 0.06 | 0.14 | 0.22 | 21 |
| Malta | - | - | - | - | - | - | 0.00 | - | - | 0.05 | 0.00 | 0.05 | 26 |
| Netherlands | - | 0.03 | 0.01 | - | 0.01 | - | 0.10 | - | - | 2.41 | 1.91 | 4.47 | 3 |
| Poland | - | - | 0.18 | - | - | - | - | - | - | 0.50 | 1.79 | 2.47 | 5 |
| Portugal | - | 0.00 | - | - | - | - | 0.02 | - | - | 0.32 | - | 0.33 | 14 |
| Romania | - | - | 0.09 | - | 0.00 | - | 0.03 | - | - | 0.09 | 0.06 | 0.27 | 18 |
| Slovakia | - | - | 0.15 | - | - | - | 0.03 | - | - | 0.40 | 0.05 | 0.62 | 12 |
| Slovenia | - | - | 0.00 | - | 0.00 | - | 0.01 | - | - | 0.03 | 0.19 | 0.23 | 20 |
| Spain | - | 0.01 | 0.10 | - | - | - | 0.09 | - | - | 0.97 | 1.55 | 2.73 | 4 |
| Sweden | - | - | 0.08 | - | 0.00 | - | - | - | - | 0.60 | 0.03 | 0.70 | 11 |
| Total | - | 0.09 | 2.16 | - | 0.01 | - | 0.92 | - | - | 20.61 | 18.55 | 42.34 | |
| Rank | - | 5 | 3 | - | 6 | - | 4 | - | - | 1 | 2 | | |

*Source: Trade Research Advisory*

The largest potential (more than R 1 billion – dark green in Table 20) for the aggregate "medium-term" opportunities in the CLEG-E group of products are associated with Germany, France, Netherlands, Spain, Poland, Czech Republic, Belgium-Luxembourg and Austria. Smaller opportunities (in value terms) but still significant, especially for smaller exporters, (R 0.1 billion to ZAR 1 billion – lighter green in Table 20) are associated with countries such as Italy, Ireland, Sweden, Slovakia, Hungary, Portugal, Denmark, Greece, Croatia, Romania, Bulgaria, Slovenia, Lithuania and Finland.

The smallest potential (less than R 0.1 billion – lightest green in Table 20) is associated with Latvia, Estonia, Cyprus and Malta only.

The largest "untapped" potential for medium term opportunities in terms of CLEG-E group is associated with the *Renewable energy plant* group of products (single largest markets are Germany, France, Netherlands, Austria and Belgium-Luxembourg). The next largest group is the *Wastewater management and portable water treatment* group, with Germany again the single largest market followed by France. *Cleaner or more resource efficient technologies and products* forms the third largest group, followed by *Management of solid and hazardous waste and recycling systems, Clean up or remediation of soil and water* and *Environmentally preferable products based on end use or disposal characteristics*.

In this category, currently no opportunities are identified for *Air pollution control*, *Environmental monitoring, analysis and assessment equipment, Heat and energy management*, *Natural resources protection* and *Noise and vibration abatement* products.

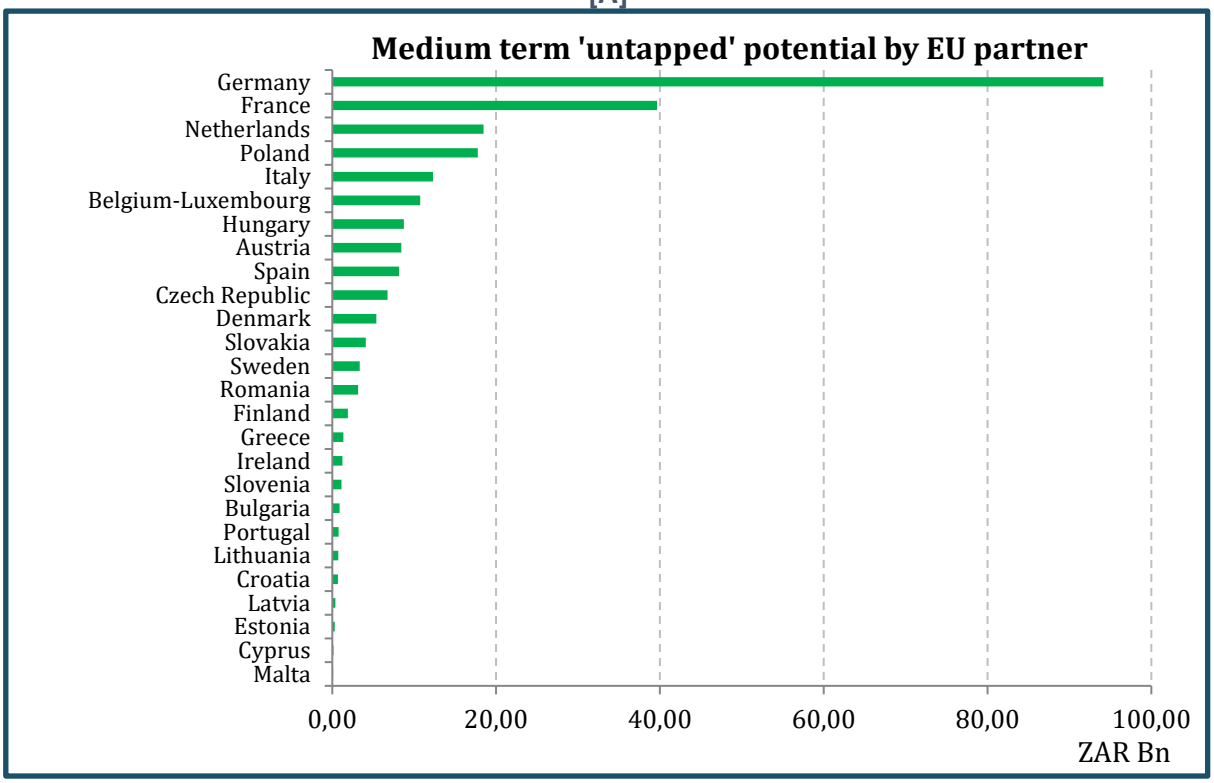
Most of the longer-term product sectors based on existing capabilities these relate to larger and more capital intensive production capabilities. Potential products that could be of interest to SME operators could include e.g. HS560721 Twine: binder or baler twine, of sisal or other textile fibres of the genus agave.

### Longer-term opportunities

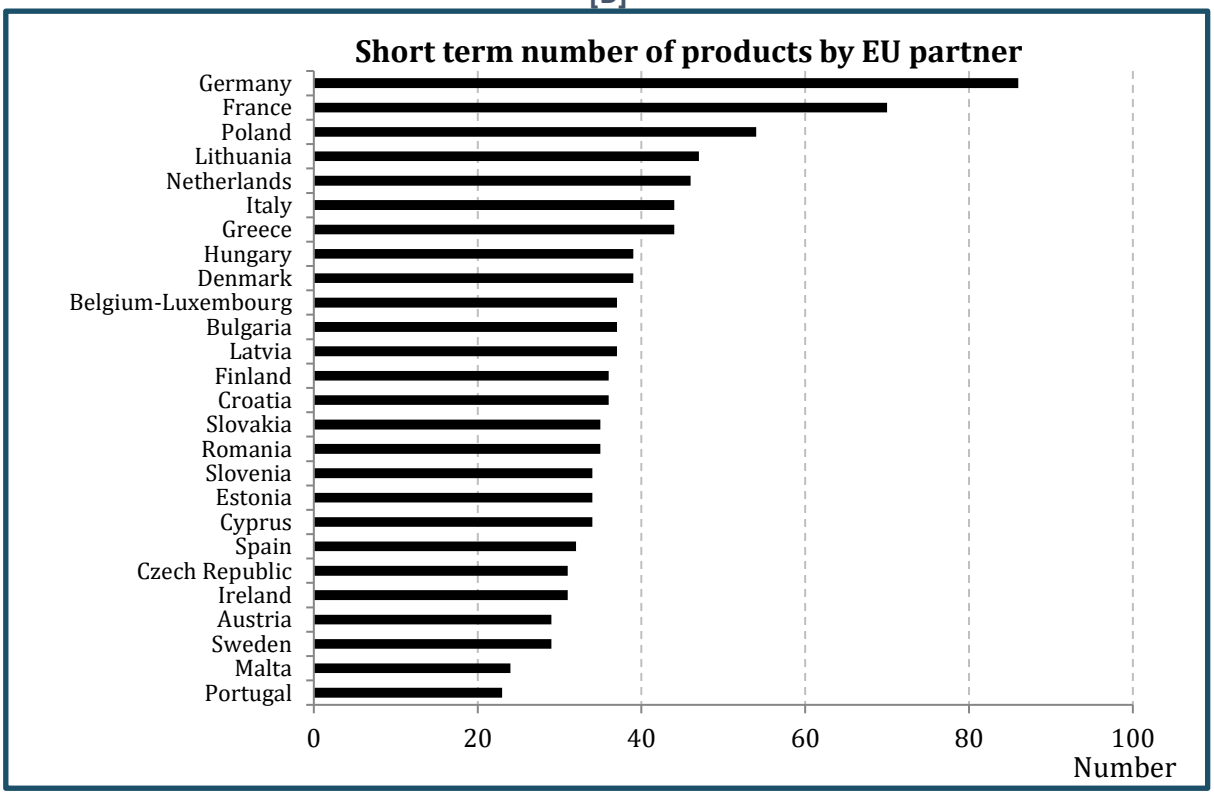
Longer-term opportunities are classified as such, since the relative "maturity" of South African exports (relative to the world average) is comparatively low to non-existent for these products. However, according to the product space approach these products to have a demonstrated link with the products in the short-term outcomes for which South Africa does exhibit RCAs > 1. While these opportunities are realistic from the perspective of target market demand, South African production and exporting capabilities may need significant policy support and fixed investment to realise such opportunities. Hence, the expectation is that it may require significant lead time before these opportunities may be realised (if pursued). However, there are always exceptions as demonstrated by the relative quick start-up time associated with the renewables example discussed earlier in this section.

**Figure 20: EU relative 'realistic' export potential for OECD CLEG-E 'long term' opportunities**

[A]




[B]




*Source: Trade Research Advisory*

## Table 21: Long-term 'untapped' potential summarised (CLEG-E and EU partner)

| | CLEG-E Group | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU-27 partner | Air pollution control | Clean up or remediation of soil and water | Cleaner or more resource efficient technologies and products | Environmental monitoring, analysis and assessment equipment | Environmentally preferable products based on end use or disposal characteristics | Heat and energy management | Management of solid and hazardous waste and recycling systems | Natural resources protection | Noise and vibration abatement | Renewable energy plant | Waste water management and portable water treatment | Total | Rank |
| Austria | 1.03 | - | 0.37 | 0.70 | - | 0.13 | 0.02 | - | 2.26 | 3.63 | 0.29 | 8.43 | 8 |
| Belgium-Luxembourg | 1.25 | - | 0.08 | 0.47 | - | 0.44 | 0.22 | - | 0.01 | 6.07 | 2.19 | 10.72 | 6 |
| Bulgaria | 0.05 | 0.01 | 0.05 | 0.11 | - | - | 0.01 | - | 0.00 | 0.34 | 0.32 | 0.90 | 19 |
| Croatia | 0.05 | 0.01 | 0.04 | 0.08 | - | 0.08 | 0.03 | - | - | 0.23 | 0.16 | 0.68 | 22 |
| Cyprus | 0.00 | 0.00 | 0.00 | 0.01 | - | - | 0.00 | - | - | 0.06 | 0.06 | 0.13 | 25 |
| Czech Republic | 0.85 | 0.02 | 0.32 | 0.61 | - | - | 0.23 | - | - | 4.66 | 0.05 | 6.74 | 10 |
| Denmark | 0.45 | 0.13 | 0.05 | 0.23 | - | 0.21 | 0.04 | - | - | 3.28 | 0.98 | 5.37 | 11 |
| Estonia | 0.03 | 0.00 | 0.02 | 0.03 | - | 0.01 | 0.03 | - | 0.01 | 0.06 | 0.10 | 0.30 | 24 |
| Finland | 0.20 | - | 0.04 | 0.29 | - | 0.04 | 0.04 | - | - | 1.09 | 0.20 | 1.90 | 15 |
| France | 3.03 | 0.07 | 1.35 | 3.73 | - | 1.24 | 0.76 | - | 0.03 | 23.48 | 5.97 | 39.65 | 2 |
| Germany | 6.74 | 0.21 | 4.46 | 9.85 | - | 1.96 | 1.28 | - | 4.21 | 55.56 | 9.88 | 94.14 | 1 |
| Greece | 0.05 | - | 0.02 | 0.11 | - | 0.04 | 0.03 | - | 0.00 | 0.65 | 0.43 | 1.34 | 16 |
| Hungary | - | - | 0.24 | 0.60 | - | 0.08 | 0.14 | - | 2.34 | 5.06 | 0.27 | 8.74 | 7 |
| Ireland | 0.06 | 0.02 | 0.02 | 0.22 | - | 0.03 | 0.02 | - | - | 0.60 | 0.27 | 1.23 | 17 |
| Italy | 0.80 | 0.18 | 1.50 | 1.72 | - | 0.08 | 0.18 | - | 0.02 | 7.25 | 0.58 | 12.31 | 5 |
| Latvia | 0.02 | 0.00 | 0.03 | 0.04 | - | 0.01 | 0.02 | - | 0.01 | 0.21 | 0.03 | 0.37 | 23 |
| Lithuania | - | - | 0.02 | 0.08 | - | 0.06 | 0.05 | - | 0.00 | 0.32 | 0.20 | 0.74 | 21 |
| Malta | 0.01 | 0.00 | 0.01 | 0.01 | - | 0.00 | 0.00 | - | 0.00 | 0.05 | 0.02 | 0.09 | 26 |
| Netherlands | 0.71 | 0.16 | 0.53 | 1.26 | - | 0.70 | 0.22 | - | 0.33 | 11.44 | 3.12 | 18.47 | 3 |
| Poland | 1.62 | 0.10 | 0.97 | 1.81 | - | 0.63 | 0.19 | - | 1.18 | 8.66 | 2.62 | 17.78 | 4 |
| Portugal | 0.14 | 0.02 | 0.03 | 0.12 | - | - | 0.09 | - | - | 0.35 | 0.04 | 0.79 | 20 |
| Romania | 0.27 | - | 0.18 | 0.63 | - | 0.15 | 0.18 | - | 0.01 | 1.67 | 0.06 | 3.15 | 14 |
| Slovakia | 0.73 | 0.01 | 0.19 | 0.43 | - | 0.05 | 0.11 | - | 0.62 | 1.81 | 0.13 | 4.08 | 12 |
| Slovenia | 0.01 | - | 0.03 | 0.04 | - | 0.12 | 0.03 | - | 0.01 | 0.60 | 0.27 | 1.12 | 18 |
| Spain | 0.16 | - | 0.51 | 0.44 | - | 0.29 | 0.30 | - | 0.97 | 3.70 | 1.76 | 8.14 | 9 |
| Sweden | 0.00 | - | 0.17 | 0.20 | - | 0.06 | 0.08 | - | - | 2.00 | 0.81 | 3.34 | 13 |
| Total | 18.25 | 0.95 | 11.24 | 23.83 | - | 6.41 | 4.31 | - | 12.02 | 142.82 | 30.81 | 250.64 | |
| Rank | 4 | 9 | 6 | 3 | - | 7 | 8 | - | 5 | 1 | 2 | | |

*Source: Trade Research Advisory*

The largest potential (more than R1 billion – dark green in Table 21) for the aggregate long-term" opportunities in the CLEG-E group of products are associated with 18 of the countries including the major markets of Germany, France, Netherlands, Poland, Italy, Belgium-Luxembourg and Hungary. Smaller opportunities (in value terms) but still significant, especially for smaller exporters, (R0.1 billion to R1 billion – lighter green in Table 21) are associated with countries such Bulgaria, Portugal, Lithuania, Croatia, Latvia, Estonia and Cyprus. The smallest potential (less than R0.1 billion – lightest green in Table 21) is associated with Malta only.

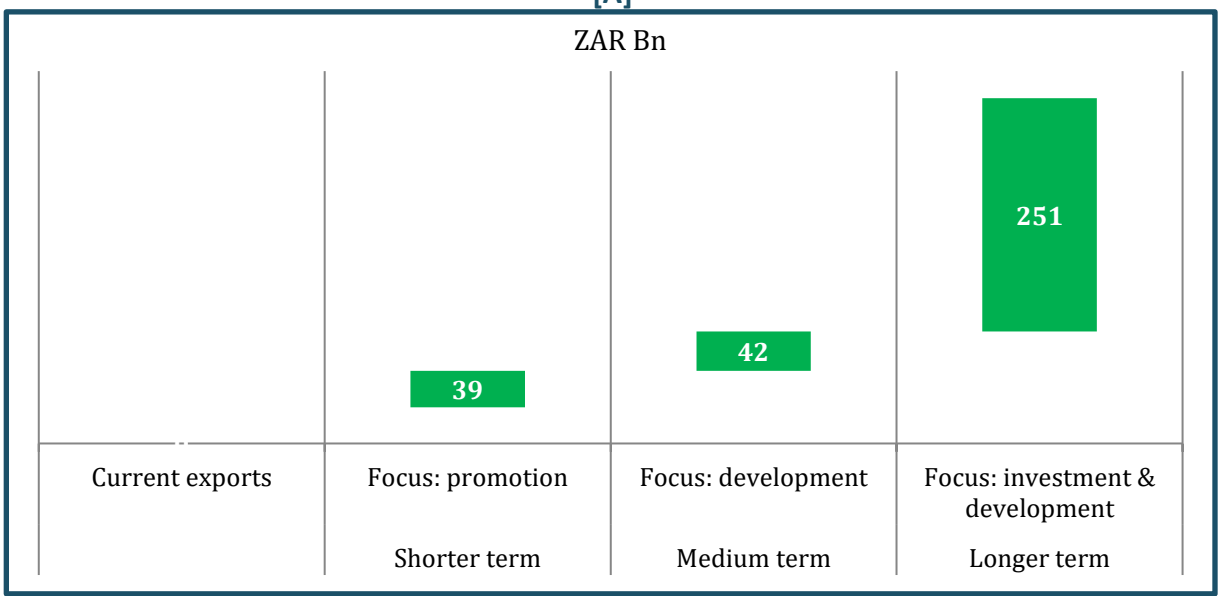
When comparing over the CLEG-E groups, the largest "untapped" potential for long-term opportunities is associated with the *Renewable energy plant* group of products (single largest markets are Germany, France, Netherlands, Poland, Belgium-Luxembourg, Hungary, Czech Republic, Spain, Austria, Denmark, Slovakia, Sweden, Slovakia, Romania and Finland). The next largest group is still the *Wastewater management and portable water treatment* group, with Germany again the single largest market followed by France and Netherlands. *Environmental monitoring, analysis and assessment equipment* forms the third largest group, followed by *Air pollution control, Noise and vibration abatement*, *Cleaner or more resource efficient technologies and products, Heat and energy management, Management of solid and hazardous waste and recycling systems* and *Clean up or remediation of soil and water*.

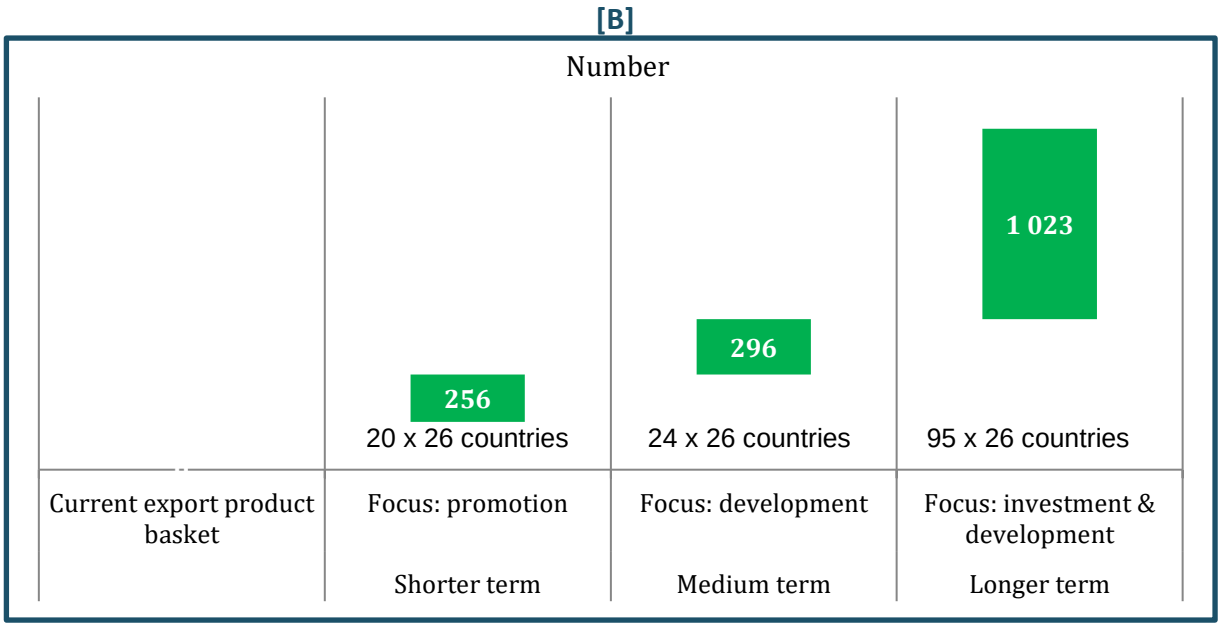
In this longer-term category, no opportunities are currently identified for *Environmentally preferable products based on end use or disposal characteristics and Natural resources protection* products.

## Opportunities in summary

The "untapped" value of opportunities as well as number of opportunities spread across the EU partner countries and CLEG-E group of products aggregate opportunities, as discussed in the preceding sections, can by summarised as shown in Figure 21.

**Figure 21: Aggregate EU relative 'realistic' export potential for OECD CLEG-E opportunities [A]**






*Source: Trade Research Advisory*

The analysis demonstrates that, evaluated from the perspective of export "maturity" while a large pool of potential is associated with the short- and medium term opportunities, the 'untapped' potential in the longer term is more than three times the short or medium term.

However, in the short term there are 20 products that can be viewed as "export ready", and some of these products are already exported to some of the EU markets. Hence such opportunities could potential be unlocked in the shorter term with focused interventions. Note, however, that one of these (significant) opportunities related to automotive catalytic converters (Air pollution control CLEG-E group) and other parts and accessories (Noise and vibration abatement CLEG-E group). For these types of products, market supply decisions are typically made by large multinationals. South Africa may therefore not necessarily have as much potential as associated with this particular product group.

For the medium-term group, 24 products exhibit potential, but may require some intervention to expand into the EU market, while many more products (95) exhibit potential and are linked to some degree with the 20 products associated with the short-term realistic opportunities.

However, the challenge is that the specific combinations (of individual products and markets) exhibit their own nuances and each combination needs to be analysed in more detail before a decision can be taken about which of these are worth prioritising for further analysis and potential policy, industry and company level engagements.

However, this analysis demonstrates that there exists a significant pool of potential into the EU markets for these products, and the basket of potential products could also logically be expanded to supply an even more diverse set of products into the EU market.

# SUMMARY AND POLICY RECOMMENDATIONS

The EGD looks to set to accelerate the already rapid pace of change in the European economy. South African exporters to the EU will need to adapt to this change, to assure their long-term competitiveness in a changing market. This study provided an initial look at the EGD and its potential implications for South African trade with the EU. The particular proposed headline initiative of the EGD in the form of the CBAM was unpacked more specifically, while an analysis of potential risks and opportunities to expand trade with the EU associated broader "environmental goods" products were also highlighted.

The following policy recommendations are proposed:

## Pro-active risk management required

Many of the risks highlighted by the EGD represent trends that South African exporters would have had to adapt to, regardless of specific policy action by the EU. The rise of sustainable production technologies, the activism of an increasingly environmentally conscious consumer market, and a regulatory environment that is shifting to adjust to these changes are all trends well under way around the world – but which will be accelerated by the EGD. The risks posed by the EGD are risks that would have been posed by the broader transition to sustainable trade.

However, the accelerated timeline of the EGD, along with the relatively underdeveloped nature of the green transition in South Africa, mean that many small firms are still at risk of being left behind. Small firms in particular will struggle to adapt to these significant changes in the expectations of consumers and regulators, and will need state support to remain competitive. This support is generally a good investment, provided it allows South African exporters to position themselves as suppliers that are ready for the new reality of trade with the EU, and the expected opportunities of other regions adopting similar initiatives.

The challenge for policymakers is the scale and complexity of the shifts expected under the EGD, which will require careful monitoring of emerging risks, and early and aggressive planning of support to address priority concerns. Tabel 22 summarises the core risks identified during this research project. Given that the EGD is a new and rapidly developing initiative, the risk registry below should be considered a starting point for ongoing monitoring of risks, rather than the final word on what risks to expect in the coming years.

**Table 22: Risks for South African exporters resulting from the EGD**

| INDUSTRY | RISK CATEGORY | RISK | KEY DOCUMENT/INITIATIVE | SME EXPOSURE | | EU TRADE EXPOSURE |
|---|---|---|---|---|---|---|
| | | | | *Firms* | *Earnings* | |
| **Agriculture, forestry and fishing** | Technology | Inadequate standards and control mechanisms stifle farmers' ability to supply an expanding EU bioeconomy, as demand surges for inputs to sectors like biochemicals and bioplastics. | Farm to Fork strategy | 31,8% | 8,9% | 7,1% |
| **Agriculture, forestry and fishing** | Market | Reductions in tolerances and increases in MRL pesticide standards further reduce the ability of small farmers to export to the EU. | Farm to Fork strategy | 31,8% | 8,9% | 7,1% |
| **Agriculture, forestry and fishing** | Market | More stringent organic certification requirements expose the lack of formal standards in South Africa, and impact exporters' capacity to compete in the organic space. | Farm to Fork strategy | 31,8% | 8,9% | 7,1% |
| **Automotive** | Technology | Compression of EU automotive value chain resulting from the transition from mechanical to electrical components leads to a decline in auto component exports. | Domestic EV regulations, Fit for 55 | 46,1% | 3,0% | 34,8% |
| **Automotive** | Market | Accelerated timeline for automotive emissions reductions results in EU auto demand shifting before South African producers have adapted manufacturing capacity. | Fit for 55, Amendments to regulation 2019/631 | 46,1% | 3,0% | 34,8% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Chemicals, plastics and rubber** | Technology | Poor biowaste management practises and a lack of biorefinery infrastructure stifles the transition to bio-based chemical production, while collapsing petroleum production leads to surging prices for traditional inputs. | Molecule Managers | 35,1% | 3,9% | 5,5% |
| **Chemicals, plastics and rubber** | Market | Tightening REACH and CLP standards displace some chemicals exports, reducing the viability of a petrochemical sector already strained by falling petroleum demand. | Chemicals Strategy for Sustainability | 35,1% | 3,9% | 5,5% |
| **Coal and petroleum products** | Market | Declining petroleum production leads to sharp price increases in traditionally cheap by-products like paraffin wax and petroleum jelly, undermining South African petroleum products exports to the EU (and the production of downstream cosmetics) | Fit for 55 | 15,6% | 0,6% | 3,9% |
| **CTFL** | Market | Consumer backlash against the environmental impact of leather undermines the development of a fragile emergent sector. | Consumer trends | 53,7% | 12,3% | 1,6% |
| **Food and beverages** | Market | Increased attention to the carbon embodied in freight and packaging results in pressure for the bulk shipment of wine, displacing bottled wine exports and reducing margins | | 41,1% | 2,5% | 2,1% |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | for smaller producers. | | | | |
| **Food and beverages** | Technology | Domestic glass producers do not reap the benefits of industry's rollout of electrical furnaces, due to a dirty energy grid, undermining the broader export of pre-packaged food products. | Furnace for the Future | 41,1% | 2,5% | 2,1% |
| **Machinery** | Technology | Mismatch in ambition in the domestic rollout of renewable energy undermines South Africa's capacity to manufacture renewable energy components for export. | | 41,8% | 5,6% | 0,9% |
| **Metals** | Technology | Persistent underinvestment by a strained steel industry harms competitiveness, as EU firms rollout technologies like improved heat recycling. | Masterplan for a Competitive Transformation of EU Energy-Intensive Industries | 40,2% | 5,6% | 10,5% |
| **Metals** | Market | Limits on the export of scrap metal worsen global shortages, harming marginal steel producers like South Africa. | Circular Economy Action Plan, Amendments to regulation 1013/2006 | 40,2% | 5,6% | 10,5% |
| **Metals** | Technology | Inadequate state investment in carbon capture infrastructure limits the uptake of capture technologies among heavy emitter industries, and unduly punishes South African producers. | Cementing the European Green Deal | 40,2% | 5,6% | 10,5% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Metals** | Technology | High upfront costs for adopting sustainable technologies in hard to abate sectors results in lobbying for trade protectionism as a means to offset costs for early adopters. | A green deal on steel | 40,2% | 5,6% | 10,5% |
| **Mining and quarrying** | Market | Declines in combustion engine production supresses demand for PGMs, worsening existing price volatility and impacting marginal mines. | Fit for 55, Amendments to regulation 2019/631 | 22,4% | 0,4% | 15,9% |
| **Mining and quarrying** | Market | Changing demand for end-use products leads to declines in demand for some mineral exports, potentially including zirconium and manganese. | Chemicals Strategy for Sustainability, Farm to Fork | 22,4% | 0,4% | 15,9% |
| **Pulp, paper and wood products** | Technology | South African paper mills lag behind in the transition to multi-output biorefineries, eroding global export competitiveness. | 4evergreen | 48,4% | 7,9% | 0,9% |

*Source: Author's compilation*

With a few exceptions, all of the risks listed in Table 26 are manageable, and addressing risks brings significant benefits to both the sustainability of South Africa's production processes, and the long-term export potential of the impacted sectors – provided that firms are adequately supported to adjust to the new reality of trade under the EGD. A wide range of initiatives are possible, with a few potential interventions summarised in Table 23. Again, these should be considered a starting point for further exploration, and should be expanded and iterated on as the EGD evolves and new risks are identified.

**Table 23: Potential interventions to address identified risks**

| SECTION | SECTOR | RISK | MEASURES |
|---|---|---|---|
| **Market** | Cross-cutting | Diversity of expected market risks | Support the hiring of a Transition Champion in sector bodies and/or export councils facing high risks |
| **Market** | Automotive | Transition to EVs and low-emission technologies | Rollout of support to South African auto trim and fitting component manufacturers – for example, support for a Green Auto Leather initiative or to the Composites Cluster |
| **Market** | Agriculture, forestry and fishing | Farm to Fork pesticide standards | Expanded support to small firms' compliance with maximum residual levels of pesticides |
| **Market** | Food, drink and tobacco | Increasing bulk exports of wine | Export promotion support to boost small wine producers brand recognition, including cooperative brand clustering for small producers. |
| **Market** | CTFL | High emissions footprint of leather | Support to a national Green Leather initiative |
| **Technology** | Automotive | Transition to EVs and low-emission technologies | Urgent completion of national EV strategy. |
| **Technology** | Machinery | Market impact of policy divergence in SA/EU renewables rollout | Urgent revitalisation of national renewable energy procurement. |
| **Technology** | Cross-cutting | Inherent uncertainty of existing technology rollout plans for hard-to-abate sectors | Establishing an Observatory of Sustainable Technology, to assist with monitoring of changing standards in key export markets. |
| **Technology** | Agriculture, forestry and fishing | Transition to bio-based inputs for traditional sectors (like chemicals) | Support to develop biowaste classification systems among green agri-SMEs. |

*Source: Author's compilation*

Many of the most serious risks facing South Africa's exports to the EU will primarily impact large, capital-intensive sectors like metals, mining and automotive. The scale of challenges facing these large sectors will likely require large national-level policy interventions, and only fundamental changes to the operating conditions of these companies will suffice. However, given the focus in this research on practical interventions to support small enterprises, the focus has been placed on smaller scale interventions, that can have significant impacts on the capacity of the most vulnerable export firms to adapt and thrive under the new conditions of the EGD. This should not detract from the need for large-scale policy interventions, but should reinforce the capacity of practical support to help firms protect and expand their existing trade opportunities.

## Focus required to realise potential export opportunities

A large body of literature has empirically demonstrated that the export-led growth hypothesis is valid. This is, however, a two-way street – economic growth and development can also lead to countries exporting more by, for instance, enabling them to produce a greater variety and better quality of products. International trade (both exporting and importing) facilitates the accumulation of know-how and tacit knowledge by countries through, for example, the sharing of ideas, obtaining scale economies for innovations, and by directly sourcing technologically embodied products. Exporting firms also tend to be more productive than non-exporters. Moreover, expanding exports on the extensive margin (so diversifying markets for existing exports) can help reduce risk from volatility in demand and distribute risk – a key aspect highlighted by the ongoing COVID-19 pandemic. This is true, not only for South Africa, but for the global economy.

### Parallel processing: leveraging short-term opportunities while building long-term vision

The analysis pointed to some major opportunities for "existing" products produced and already exported from South Africa. Focus should be placed on further understanding these opportunities and developing a strategy for realising the most feasible. In the current constrained (from a resources perspective) environment it is increasingly important to focus and allocate resources to those opportunities with the most potential return on investment.

While the implications of the COVID-19 pandemic are not explicitly addressed in this analysis, there are sufficient opportunities that a pragmatic strategy can aim to unlock. However, in the interim, leveraging the short-term opportunities in a smart way will contribute to the shorter-term economic recovery efforts of the country and potentially open opportunities for SMEs as well.

Most of the shorter-term product sectors identified related to large production capabilities such as automotive catalytic converters and aluminium: casks, drums, cans, boxes and the like. The exception is HS630510 Sacks and bags: of a kind used for the packing of goods, of jute or of other textile based fibres of heading no. 5303. This particular group of products may offer potential for smaller exporters.

The degree of success in realising these opportunities will depend on relevant and focused export promotion and marketing, as well as realistic timelines. To this effect it should also be noted that the adequate resourcing of trade and investment promotion agencies is key.

### Leverage the domestic market as a kick-starter for 'future' export opportunities

In most economies, very few activities are solely focused on the export market. The products and sectors with medium- and longer-term opportunities require the development of domestic production capabilities. The aim is to initially supply the local market, but to ultimately venture into export markets. Further understanding of these potential products (sectors) needs to be developed for domestic demand and the localisation or import substitution potential. Feasibility

for such opportunities needs to be contextualised with the requirements around skills and technology as well as related infrastructure dependencies. When opportunities for further development are identified, related policy spheres and strategies need to be aligned to support the development of such future activities (e.g. energy, water, digital communication, human capital and labour regulations).

**Unblocking critical infrastructure and logistics constraints**

Trade-enabling infrastructure is key to realising export-led growth for an economy. It is crucial to have a clear understanding of how current infrastructure and logistics in South Africa impacts on exports and what changes are needed to support the realisation of the future environmental product export context. Without the existence of (and access to) effectively functioning infrastructure (whether it be road, air, maritime, water or energy) the future growth of the economy will not be possible. To this effect, further in-depth understanding of the value chains associated with key selected products (or sectors) that will make up the future economy of South African in relation to these products needs to be developed. Bottlenecks and constraints must be identified, and action plans developed to remove such constraints. Some of these may simply be administrative and therefore fixable in the short term. However, others may point to real-world physical constraints that will take longer to resolve and need to be considered in the formulation of an export strategy.

Government should therefore focus on resolving potential trade "connectivity" issues. Once there is a clear understanding of the dependency of different focus products and the relevant export transport modes, it could be beneficial to establish a cargo team that is focused on facilitating and improving export infrastructure to increase export promotion capacity in an effort to capitalise on the low-hanging fruit already in existence. Collaboration between private and public sector key stakeholders will be crucial.

## Longer-term strategic considerations

The longer-term opportunities require parallel focus but will require local private sector or foreign investment. In the longer term, a human capital development strategy that is aligned with the prioritised key sectors will be critical, as new developments require new and different skill sets. Mechanisms that may potentially contribute to focused and relevant skills development could include, for example, an alternative approach to the application of the Skills Development Levy (SDL) − by developing and applying a 'preferential' SDL focused on export-oriented sectors – as opposed to 'simply' generalised training. Other mechanisms could include, for example, a 'Young exporters programme" aimed at fast-tracking some of the 'new' unusual opportunities.

## Proactive EU policy monitoring and engagement required

### Continued active monitoring of the EU policy and legislative processes required

The EGD is still very much a work-in-progress. It is important to monitor the policy and legislative processes in the EU carefully to assess the potential impact and implications for production and trade. Access to information is particularly important for SMEs, as the impact on them may well be through their participation in values that are driven by larger firms.

### Proactive leveraging of the EU-SADC EPA presents an opportunity

The EU-SADC EPA governs trade between the EU, and South Africa and the other SADC EPA countries. The Agreement recognises the right to introduce domestic regulations to protect human, plant and animal health and the environment, and includes standards applicable to food trade (sanitary and phytosanitary measures) and matters such as packaging and labelling (technical barriers to trade).

This Agreement is due for review at the end of 2021. This provides an opportunity for South Africa and the other SADC EPA countries to raise matters pertaining to the EGD and its impact on their agricultural and industrial development plans and exports to the EU. The SADC EPA also provides for development assistance. The review is an opportunity to discuss the possibility of support for green transition and transformation of production processes, linking this support to their productive capacity development strategies. The constructive link between trade and industrial development is key to green transition and sustainable development.

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