

Climate change and trade risk: South Africa's trade with the United States of America

SUMMARY

The United States of America (USA) is South Africa's second largest single trade partner after China, having imported US\$13 billion (about R192 billion) worth of goods in 2021. South Africa's top five exports to the USA are platinum, motor vehicles, miscellaneous chemical products (some chemicals are used to create monomers and polymers for plastics), ferro-alloys, and unwrought aluminum. The USA, since the Biden administration, has adopted a sound approach to climate change and reducing greenhouse gas (GHG) emissions. Due to climate change policies in the USA, South African exports, such as chemicals and vehicles, face potential risks due to their carbon intensive nature and the move to e-mobility. This brief is based on a comprehensive review of the USA's climate change policy framework in relation to industries, [available here](#), as well as a review of South Africa's climate and trade risks, [available here](#).

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Country Brief by
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SOUTH AFRICA'S EXPORT BASKET TO THE USA

In 2021, South African exports to the USA accounted for 11% of total South Africa exports. South Africa's top exports to the USA in 2021 were platinum, motor vehicles, miscellaneous chemical products (used for monomers and polymers), ferro-alloys, unwrought aluminum, nuclear materials, diamonds, aluminum plates, iron and steel, and articles of jewellery. Platinum is the leading export to the USA (in value terms) accounting for approximately 52% of total South African exports to the USA.

Exports to the USA started rising (in value terms) from 2019, with the value of exported platinum leading the spike. Platinum exports to the USA more than tripled from 2012 to 2021. This is linked to increased global demand (including in the USA) for platinum as a substitute for palladium in the automotive sector for catalytic converters, as well as the increase in the price of platinum. While platinum exports could be impacted in the long term by the phasing out of internal combustion engines (ICE), and therefore catalytic converters, this could be counterbalanced by new demand streams such as fuel cells.

Miscellaneous chemical products, motor vehicles, ferro-alloys, and unwrought aluminum are other key South African exports to the USA, accounting for 13.7% of total South African exports to the USA.

These sectors are at risk of US climate change policies. Chemical products from South Africa face a high risk due to their high carbon intensity. South Africa forms part of a group of highly carbon-intensive countries (including, India, China and Russia). South Africa's exports of chemical products are more carbon-intensive than most other countries (see Figure 2 on page 2). South Africa is among the outliers with a carbon intensity of 1 159 tonnes of carbon dioxide equivalent (tCO₂e) per US\$ million (Montmasson-Clair, 2020).

Motor vehicles exports to the USA also remain highly exposed to US climate change policies due to rapid shifts from ICE to electric vehicles.

In the transport sector, South Africa is also an outlier with a carbon intensity of 1 100 tCO₂e per US\$ million, after India (1 350). Many countries are located between 200 and 800 tCO₂e per US\$ million, including leading exporters such as Germany, the USA itself, the UK, France, Japan and South Korea, which range from 150 tCO₂e to 500 tCO₂e per US\$ million. However, the risk of transport equipment/vehicles exports to the USA does not only arise from its carbon intensity – vulnerability stems primarily from the underlying shift in the transport sector to e-mobility. The US market is shifting to electric vehicles. Yet South African exports of transport equipment/vehicles are still heavily linked to petroleum-based vehicles.

Figure 1: South Africa's exports to the USA (left)

Figure 2: Chemical products export per country carbon intensity in tCO₂e per US\$ million), share of exports (in percentage of the country's total exports) and export value (relative scale) (right)

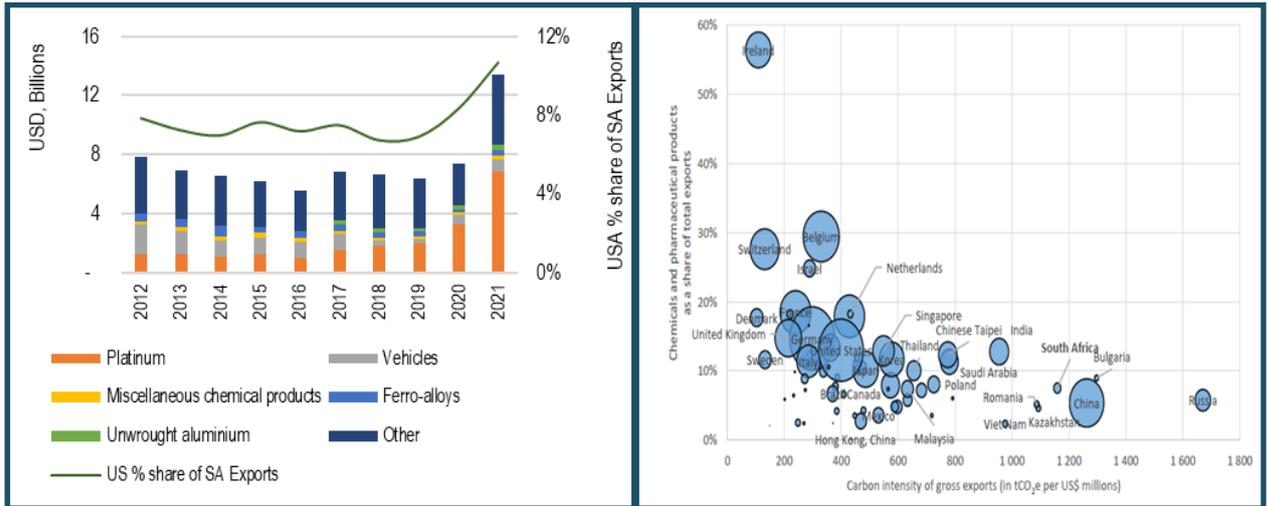


Figure 1 source: Authors, based on quantec data. Downloaded <https://www.easydata.co.za/> December 2022.

Figure 2 source: Montmasson-Clair, 2020, based on data from the OECD, dataset on carbon dioxide emissions embodied in international trade, downloaded from <https://stats.oecd.org> in March 2020. Figure 2 note: Bubbles indicate the relative value of countries' transport equipment export in USD.

INDUSTRY-RELATED CLIMATE CHANGE LEGISLATION IN THE USA

Despite being the second largest emitter of greenhouse gases (GHG) globally and the primary source of GHG emissions historically, with major GHG emission sources in the USA coming from transportation (29%), electricity generation (25%), and industrial (23%) sectors, the USA has displayed varying climate change approaches for climate action over the years with a combination of voluntary and mandatory climate policies (Lattanzio et al., 2021). Under the presidency of Barack Obama, the USA signed the Paris Agreement, committing to reducing GHG emissions by 26%-28% below 2005 levels by 2025. Subsequently, the USA left the Paris Agreement under the Trump administration.

On 19 February 2021, under President Joe Biden, the USA rejoined the Paris Agreement, revisiting climate change policies that were disbanded by the Trump administration. President Biden has announced an ambitious climate goal of doubling the emission reduction goal set by President Obama in 2015 to 50%-52% by 2030 in comparison to the 2005 levels (Lattanzio et al., 2021; Winters, 2021). Underpinning the latter, the USA under President Biden has shown a vigorous commitment to climate action. Since rejoining the Paris Agreement in 2021, more than 682 Bills in the energy space (transportation and chemicals sectors included) have been proposed to address climate change (Lattanzio et al., 2021).

In August 2022, President Biden signed into law ambitious incentive-based clean energy and climate action legislation, the Inflation Reduction Act (IRA). The IRA seeks to promote the USA as a global leader in clean energy technology, manufacturing, and

innovation, with an aim to lower energy costs, accelerate investment in clean energy solutions, and strengthen supply chains from everything to critical minerals (CleanEnergy.Gov, 2022). Coming from the Build Back Better agenda, it is set to supplement the Bipartisan Infrastructure Law (or Infrastructure Investment and Jobs Act) signed in November 2021. The Bipartisan Infrastructure Law, among other policy actions, seeks to build a nationwide network of electric vehicle chargers, strengthen the battery supply chain, expand public transit and passenger rail, invest in new clean energy and emissions reduction technologies, and clean up legacy pollution in communities across the USA (CleanEnergy.Gov, 2022). While there are other climate actions in the USA, the IRA and the Bipartisan Infrastructure Law are key policies set to drive GHG reductions in the country. The US Department of Energy estimates that the USA will achieve 40% reduction in economy-wide GHG emissions below the 2005 levels by 2030.

On the implementation front, the Environmental Protection Agency (EPA), established in 1970, is tasked with addressing environmental protection matters and has five key objectives: pollution prevention, risk assessment and reduction, research and development, regulatory development and environmental education. It serves as the main agency for climate policy control. The EPA along with the Department of Transportation is responsible for the deployment of most clean energy infrastructure and the move to clean vehicles in the USA, including through the IRA and the Bipartisan Infrastructure Law.

At present there is no national carbon pricing policy or national carbon budget in the USA (EnHelix, 2021). Nevertheless, the Energy Innovation and Carbon Dividend Act, implemented in 2019, introduced a fee

on carbon at the point of extraction to encourage market-driven innovation of clean energy technologies to reduce GHG emissions. The tax started at US\$15 per metric ton of CO₂ in 2019 and increases by US\$10 a year (Dumortier, and Elobeid, 2020). The fee is applicable to producers or importers of crude oil, coal and various other GHG emitting chemicals. Also, there is a high chance that a carbon border mechanism policy will be tabled in the 118th Congress (2023-2024) in the USA (Smith, 2023).

At a sub-national level, there are a number of key cap-and-trade initiatives. Schemes such as the Regional Greenhouse Gas Initiative (RGGI) and California's cap-and-trade allow the sub-national

governments to set an emission cap at an appropriate level, allowing GHG emissions reduction targets to be met by fixing a cap that declines over time. California is a leading US state in addressing climate change, including through the cap-and-trade system. California's cap-and trade system covers most of the state's carbon-intensive industries, including electricity production and imports, industrial facilities, transportation fuels, and natural gas distribution. Despite fluctuations of carbon prices in California, in the first quarter of 2022, the carbon price peaked at US\$29.15 per metric ton of CO₂e, which reflects nearly US\$10 per metric ton more than the minimum price for allowances (EIA, 2022).

Table 1: USA's key climate change policy instruments in relation to industries

POLICY NAME	CORE GOALS OF THE POLICY	COST OF POLICY ADAPTATIONS	PENALTIES FOR LACK OF CONFORMANCE TO POLICY
Inflation Reduction Act (2022)	The Act aims to reduce economy-wide GHG emissions to 50%-52% by 2030 compared to 2005 levels. Sectors covered include renewable energy, clean energy technologies, clean hydrogen, transportation (EVs and clean fuels), water and agriculture. Key elements of the Act include investments in climate protection (including tax credits in clean electricity, manufacturing, fuel and vehicles), incentives for individual clean energy production, investment in air pollution reduction, hazardous materials management, transportation and Infrastructure, adaptation fund for conservation, rural development, and forestry. The law also provides grants for building efficiency, electrification, transmission, and industrial infrastructure aimed at reducing carbon emissions.	Companies will receive tax credits and incentives for investing in green technologies, thus having no cost of policy adaptation.	This is an incentive-based law, which is voluntary by nature.
Bipartisan Infrastructure Law (or Infrastructure Investment and Jobs Act) (2021)	The aim of the Act is to invest US\$1.2 trillion, in infrastructure development projects including digital infrastructure, traditional infrastructure (roads, bridges, ports and airports), climate resilient infrastructure and renewable energy Infrastructure, for 10 years in the USA. The law contains a number of new programmes targeted at mitigating the impacts of climate change and increasing the resilience of the surface transportation system. Programmes include transport infrastructure electrification programmes (i.e., electrifying port, rail and road), and alternative fuel vehicles, including investing in charging and fueling Infrastructure.	It is an infrastructure investment law, thus having no cost of policy adaptation.	No violation penalties, since this is an investment programme.

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Table 1: USA’s key climate change policy instruments in relation to industries – continued

POLICY NAME	CORE GOALS OF THE POLICY	COST OF POLICY ADAPTATIONS	PENALTIES FOR LACK OF CONFORMANCE TO POLICY
Energy Innovation and Carbon Dividend Act of 2019	This Act imposes a fee on the carbon content of fuels, including crude oil, natural gas, coal, or any other product derived from those fuels, such as chemicals.	A fee is applicable to producers or importers of fuels (crude oil, coal) and various other chemicals. The fee was set at US\$15 per metric ton of CO ₂ in 2019, increasing by US\$10 per year.	State-specific penalties for non-compliance apply.
California cap and trade (2013)	A mandatory cap-and-trade programme that aims to reduce GHG emissions to 40% below the 1990 levels by 2030 and to 80% below the 1990 levels by 2050 in the state of California. Sectors covered include industry, electricity supply, transportation and fuels and natural gases.	Entities that emit over 10 000 metric tons of GHG emissions must report their emissions, and entities that emit over 25 000 metric tons are regulated by the system.	If a deadline is missed or there is a shortfall in reporting GHG emissions, four allowances must be surrendered for every metric ton not covered in time. In an attempt to corner the market, fraud, attempted fraud, or false or inaccurate reports, can result in civil or criminal penalties. Perjury statutes will apply. Also, corporates can be fined a maximum of US\$10 million, depending on level of the offence/s.
Regional Greenhouse Gas Initiative (since 2009)	A mandatory cap-and-invest initiative that aims to create a cooperative effort among 12 Eastern states to reduce CO ₂ emissions from power plants within each participating state.	Every year, regulated power plants must surrender allowances equal to one half of their CO ₂ emissions for that year. Every three years, called a control period, they must surrender allowances for all emissions from year three, plus all remaining emissions from years one and two. The three-year control period provides power plants flexibility for meeting programme requirements.	If found non-compliance, the source will be required to submit three allowances for every missing credit and surrender CO ₂ allowances equal to three times the number (tons) of the source’s excess emissions and may also be subject to state-specific penalties for non-compliance.

Source: Author based on Golden, 2022; National Conference of State Legislatures, 2021; White House, 2021; Zandi et al., 2022.

RISKS FOR SOUTH AFRICA’S EXPORTS TO THE USA

Exports of miscellaneous chemical products to the USA remain highly exposed to the US climate change policies, with about 2.3% of South African exports to the USA at risk. While the South African chemical sector is highly exposed to global climate change

policies, due to its carbon intensity, the exports of motor vehicles also remain exposed to US climate change policy risks. Underpinning the risk is the high dependency of South Africa on fossil-fuel based energy sources for the production of transport equipment for exports and the accelerated pace of the USA move towards electric vehicles, while South Africa continues to manufacture ICE-based vehicles.

Many South African industries are dependent on coal-generated electricity and the country has been warned about trade barriers due to its reliance on fossil fuels.

The Energy Innovation and Carbon Dividend Act states that importers of crude oil, coal, and various chemicals are expected to pay a tax for their GHG emissions. Miscellaneous chemical products exports are at risk and are negatively impacted by this Act. Noteworthy, a carbon border tax was proposed, unsuccessfully, during the 117th Congress (2021-2022) to reduce the risks of carbon leakage. While the policy has not yet received support, researchers believe this proposal will come back for the 118th Congress, amid the acceleration of the European Union carbon border adjustment mechanism (Smith, 2023). Carbon border taxes would also require importers to pay a tax on GHG-embedded goods imported by the USA (Friedman, 2021). Generally, this would add to the costs of exports of carbon intensive products (such as chemicals) to the USA, thereby deeming them increasingly uncompetitive.

Many South African industries are dependent on coal-generated electricity, and South Africa has been warned about facing potential trade barriers due to its high reliance on fossil fuels. To maintain trade relations with the USA, South Africa would need to reduce products embedded GHG emissions and accelerate its transition to a low-carbon economy. The Inflation Reduction Act and Bipartisan Infrastructure Law are two pieces of legislation that have accelerated the transition in the USA. The lag in South Africa to transition will negatively expose exports to the USA, specifically in the transport and chemical sectors. This might result in chemical exports, for example, being disqualified from the USA market, due to their carbon intensity (Montmasson-Clair, 2020; World Economic Forum, 2022).

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This Country Brief forms part of a research project for the Department of Trade, Industry and Competition examining the vulnerability of South African trade to evolving climate change legislation. The research comprises a main report on *The global climate change regime and its impacts on South Africa's trade and competitiveness: A data note on South Africa's exports*; case studies on various sectors; detailed briefs that explore South Africa's trade risks with different countries; and key data in Excel format. The reports, country briefs and excel sheets are available on the TIPS website: [Climate change and trade risks](#)