

# Climate change and trade risk: South Africa's trade with South Korea

## SUMMARY

South Africa's top exports to South Korea are iron ore, coal, ferroalloys and vehicles. Exports to South Korea accounted for about 2% of South Africa's exports over the 2010 to 2019 period. South Korea has committed to a low-carbon energy policy and has set greenhouse gas (GHG) emissions reduction targets of 37% below business as usual (BAU) by 2030. South Africa's largest exports are at risk as the country's mining exports are relatively carbon intensive and South Korea's low-carbon energy transition intends to drastically reduce coal-powered energy generation and coal imports. This brief is based on a comprehensive review of South Korea'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](#).

Trade & Industrial Policy Strategies (TIPS) is a research organisation that facilitates policy development and dialogue across three focus areas: trade and industrial policy, inequality and economic inclusion, and sustainable growth

## SOUTH AFRICA'S EXPORT BASKET TO SOUTH KOREA

South Africa's top exports to South Korea are iron ore, coal, ferroalloys, platinum and motor vehicles. Combined, these exports amounted to 75% of South Africa's exports to South Korea in 2019. Exports to South Korea, as a share of total South Africa exports, ranged between 1.3% and 2% between 2010 and 2019, peaking at 2.1% in 2017 and declining to 1.6% in 2019.

Ferroalloy and coal exports declined in value and in volume over the period, from

US\$394 million (374 158 tonnes) in 2010 to US\$199 million (250 834 tonnes) in 2019 for ferroalloys and US\$612 million (8.3 million tonnes) in 2017 to US\$251 million (3.9 million tonnes) for coal. Motor vehicles and platinum exports have fluctuated over the period, reaching their lowest values between 2012 and 2015. Iron ore exports also evolved over the period, reaching a low of US\$28 million (3.6 million tonnes) in 2015 and increasing to US\$40 million (4.3 million tonnes) in 2019.

Mining products dominate South African exports to South Korea. South African

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

Figure 2: Mining export per country per carbon intensity, share of exports and export value (right)

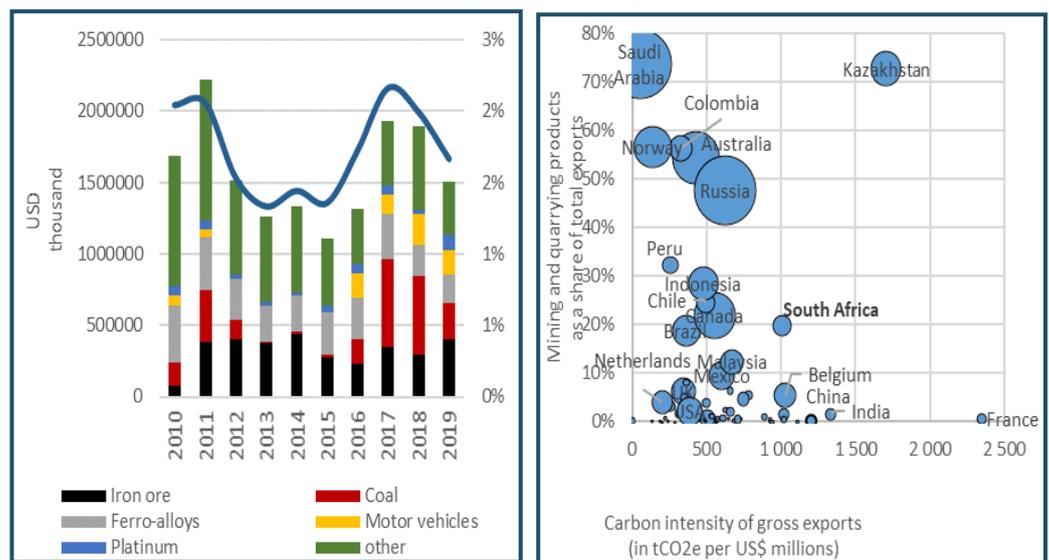


Figure 1 source: Author, based on data from Trade Map, dataset on bilateral trade between South Africa and South Korea, downloaded from <https://www.trademap.org> in June 2020.

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' mining and quarrying export in US\$.

info@tips.org.za  
+27 12 433 9340  
www.tips.org.za

Country Brief by  
Lerato Monaisa  
TIPS Economist:  
Sustainable Growth

***South Korea has set a target to reduce greenhouse gas emissions by 37% below business as usual by 2030 – 25.7% of the below business as usual reduction will be achieved domestically and a further 11.3% reduction will be achieved by international market mechanisms.***

exports are relatively carbon intensive due to South Africa’s coal-based electricity generation and energy intensive mining value chains (Montmasson-Clair, 2016).

For mining products, South Africa forms part of a group of high carbon-intensity countries with an emissions carbon intensity of about 1 000 tCO<sub>2</sub>e per US\$ millions of exports.

### **INDUSTRY-RELATED CLIMATE CHANGE LEGISLATION IN SOUTH KOREA**

South Korea’s climate change policy framework for industry can be described as balanced.

South Korea has set a target to reduce GHG emissions by 37% below BAU by 2030 (25.7% of the reduction below BAU will be achieved domestically and a further 11.3% reduction will be achieved by international market mechanisms) (Ha et al., 2019; Lim, 2018). To achieve this, South Korea uses a combination of carbon pricing, sectoral reduction strategies, financial support and investment in the renewable energy sector.

The 2050 National Strategy for Low-Carbon Green Growth is the long-term policy framework for the country’s transition. It is complemented by the 2030 National Greenhouse Gas Reduction Roadmap, which provides the medium-term government action plans to implement the national climate change strategies. The National Roadmap sets sector-specific strategies

for the building, transport, industry, energy, agriculture and waste management sectors (Ministry of Environment, 2020). The Korean Emissions Trading Scheme (K-ETS) is the key policy instrument to reach emissions reduction targets.

The K-ETS is the main cross-sectional, mandatory policy instrument for mitigation. It is enforced through the Act on the Allocation and Trading of Greenhouse Gas Emissions Rights (International Carbon Action Partnership, 2020).

The K-ETS covers five sectors: power, buildings, industry, waste and transport. The scheme applies to companies with more than 125 000 t/CO<sub>2</sub> a year and covers both direct and indirect emissions.

The K-ETS allocated free allowances of 100% for most sectors in its first phase. This will be reduced to 90% in Phase 3, except for trade-exposed subsectors, such as iron and steel, which will receive 100% free allowances in all phases. Borrowing and banking between years are allowed within the same phase. Offsets are allowed at a maximum of 10% of total permits and international offsets will be allowed in Phase 3.

The Korean Development Bank and the Industrial Bank of Korea are the designated market makers, and the Korean Exchange is the trading market. Over time, the carbon price has increased significantly, from US\$9.1 per tCO<sub>2</sub>e in 2015 to US\$25.6 per tCO<sub>2</sub>e in 2019 (International Carbon Action Partnership, 2020).

**Table 1: South Korea’s key climate change policy instruments in relation to industries**

POLICY NAME	CORE GOAL(S) OF THE POLICY	IMPLEMENTATION MEASURES	COSTS/BENEFITS/ PENALTIES OF POLICY
<b>K-ETS</b>	K-ETS is a cap-and-trade scheme, central to South Korea’s carbon mitigation response. The scheme is intended to play a role in meeting the national   emissions reductions targets.	Phase-specific cap of 1 686 MtCO <sub>2</sub> e phase 1 (2015- 2017) and 1 796 MtCO <sub>2</sub> e for phase 2 (2018-2020). Phase 3 (2021- 2025) has not been announced.  Compliance requires annual emissions reports verified by a third-party verifier.	Penalty for non-compliance is proportionate to volume of GHG emissions exceeding the cap. but may not exceed three times the average market price or ₩100 000 (US\$85.8) per tonne.

Source: Author, based on International Carbon Action Partnership, 2020.

*Risk for South Africa's exports is moderate to high. The highest risk exposure is with coal exports – 5% of South Africa's coal exports go to South Korea.*

## **SOUTH KOREA'S TRANSITION TO A LOW-CARBON ENERGY SECTION**

South Korea is pursuing an aggressive low-carbon energy policy. The Energy Master Plan aims to achieve an 18% reduction in energy imports; a 50% reduction in coal-based power generation; the phasing-out of nuclear energy; and an increase in renewable energy by 30%-35% by 2040 up, from 8% in 2019 (Ministry of Trade, Industry and Energy, 2020; Nicholas and Buckley, 2019).

The South Korean government aims to drastically reduce coal imports. The Institute for Energy Economics and Financial Analysis estimates this will result in a 50% reduction in imports to about 60 million tonnes of oil equivalent (Mtoe) by 2040, from the 131.1 Mtoe in 2018. This should be achieved by closing ageing coal plants; placing a cap on output for remaining plants; and further increasing the coal import tax (which had already increased from US\$21.36/t in 2015 when it was introduced to US\$40/t in 2019) (Nicholas and Buckley, 2019).

## **RISKS FOR SOUTH AFRICA'S EXPORTS TO SOUTH KOREA**

Risk for South Africa's exports is moderate to high. The highest risk exposure is with coal exports (5% of South Africa's coal exports go to South Korea). As South Korea transitions to a low-carbon energy sector, coal imports are expected to decline significantly. South Korea's emissions reductions policies and the implementation of stricter K-ETS regulation should expose other exports to risk.

## **REFERENCES**

Ha, S., Tae, S. and Kim, R. 2019. A Study on the Limitations of South Korea's National Roadmap for Greenhouse Gas Reduction by 2030 and Suggestions for Improvement. *Sustainability* 11, 1–18.

International Carbon Action Partnership, 2020. Korea Emissions Trading Scheme. International Carbon Action Partnership.

Lim, E. 2018. A New Amendment to the National Roadmap for Reducing Emissions Relies on Overseas Credits. *Clim. Scorec*. Available at: <https://www.climatecard.org/2018/09/a-new-amendment-to-the-national-roadmap-for-reducing-emissions-relies-on-overseas-credits/>. (Accessed 30 July 2020).

Ministry of Environment. 2020. Report and explanation – 2030 Greenhouse Gas Reduction Roadmap Amendment and 2018-2020 Emissions allocation plan confirmed. Available at: <http://www.me.go.kr/home/web/board/read.do?pagerOffset=0&maxPageItems=10&maxIndexPages=10&searchKey=&searchValue=&menuId=286&orgCd=&boardId=886420&boardMasterId=1&boardCategoryId=&decorator>. (Accessed 30 July 2020).

Ministry of Trade, Industry and Energy. 2020. Korea Energy Master Plan: Outlook and policies for 2035.

Montmasson-Clair, G. 2016. Mining, energy and low-carbon economy in South Africa: A platinum case study. Presented at the TIPS Annual Forum 2016. Pretoria: Trade & Industrial Policy Strategies.

Montmasson-Clair, G. 2020. The global climate change regime and its impacts on South Africa's trade and competitiveness: A data note on South Africa's exports: Pretoria: Trade & Industrial Policy Strategies. Available at: <https://bit.ly/2TgVAHi>.

Nicholas, S. and Buckley, T. 2019. Briefing Note: South Korea Shifting Further Away from Coal. Significant Implications for Australian Coal Exports. Institute for Energy Economics And Financial Analysis.

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 (see link).

[Climate change and trade risks](#)