

# Implications of the CBAM for the iron and steel sector

September 2023



## Executive summary

- The Carbon Border Adjustment Mechanism (CBAM) is an environmental policy measure implemented by the European Union, to address the issue of carbon leakage and encourage decarbonisation practices globally.
- The CBAM will start with six selected sectors, and the iron and steel sector is the largest one by import value. Iron and steel importers in the EU will start with reporting obligations from October 2023, and then face financial obligations progressively starting from 2026.
- This insight covers the implementation details of the CBAM on the iron and steel sector as well as the impact of the tax on the sector:
  - During the initial years of the CBAM payments, the carbon cost growth is moderate. Foreign producers could engage in dual practice of production or sale, and direct cleaner steel products to the EU market while keeping dirtier products for domestic consumption or non-EU markets.
  - However, as the CBAM will gradually enter into full impact by 2034 and the EU carbon price is expected to lead the rest of the world, carbon cost will be an increasingly important cost factor to consider. While it translates into stronger incentives for steel producers to decarbonise, the steel trade pattern will also be altered inevitably.
  - The cost increment will eventually be passed on to consumers, encouraging a shift in consumption patterns to low-carbon products.

# Carbon Border Adjustment Mechanism (CBAM)

CBAM aims to address carbon leakage by equalising the carbon price paid by the EU and non-EU products



Electricity	CO <sub>2</sub> : Electrical energy
Hydrogen*	CO <sub>2</sub> : Hydrogen
Cement	CO <sub>2</sub> : Cement clinkers, Portland cement, aluminous cement, etc
Fertilisers	CO <sub>2</sub> , N <sub>2</sub> O: Nitric acid, ammonia, nitrates of potassium, mineral or chemical fertilisers, etc
Aluminium*	CO <sub>2</sub> , PFCs: primary aluminium, semi-finished aluminium
Iron and steel*	CO <sub>2</sub> : Pig iron, semi-finished and finished steel, some fabricated steel products, and downstream products like screws, bolts, nuts and similar articles of iron and steel. etc

The EU will assess whether to extend to organic chemicals and polymers by the end of the transition period. The initial scope of the CBAM is mostly limited to embedded emissions in basic materials and key intermediates. They will also assess the methodology for indirect emissions and the possibility of covering more downstream products.

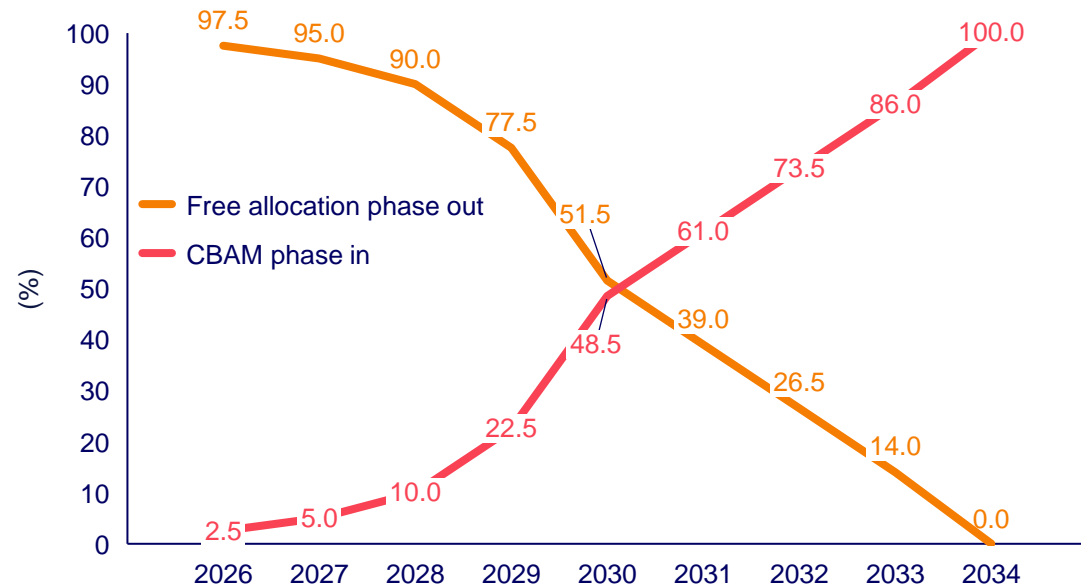
*\*only direct emissions are to be taken into account for initial financial obligations*

Source: Wood Mackenzie, European Parliament

# CBAM financial obligations will be determined by the embedded emissions of imported goods and the price of the CBAM certificate, with a phase-in period between 2026-2034

## CBAM phase in

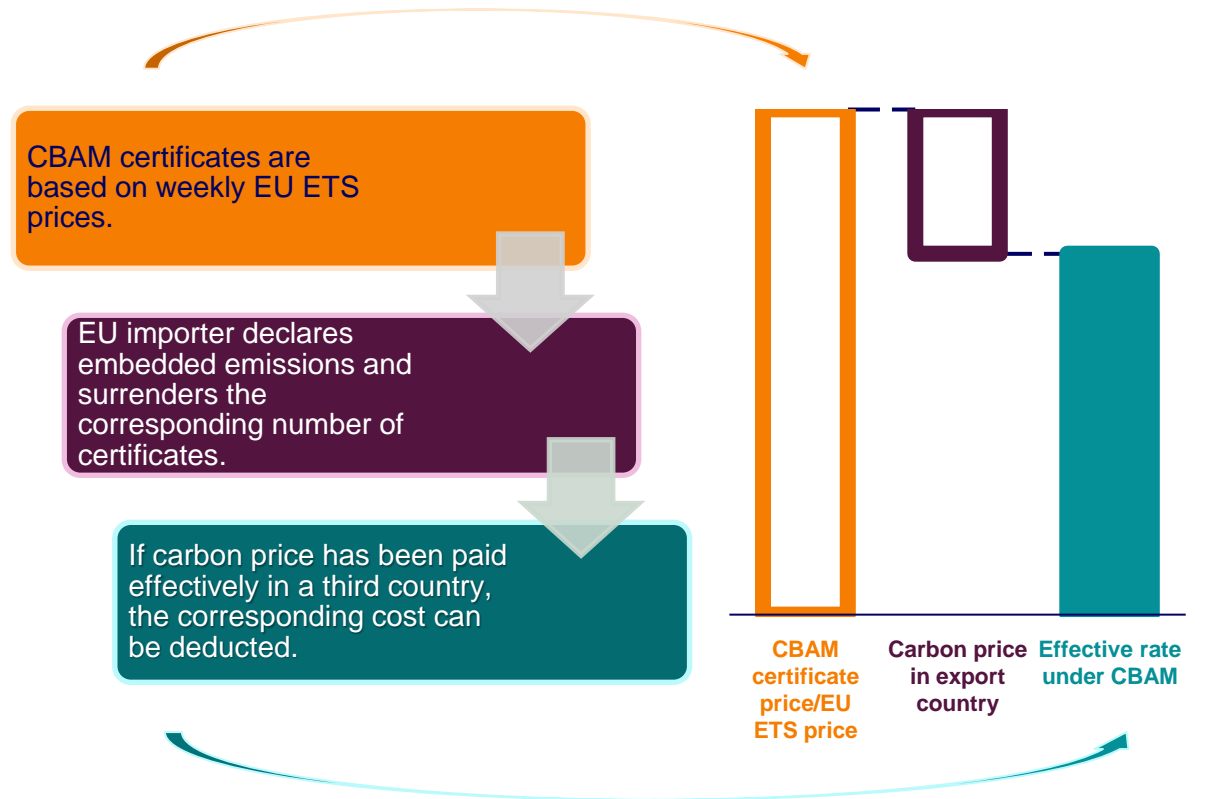
- The EU ETS is the EU's key policy tool to combat climate change and reduce emissions cost-effectively. Installations considered to be at significant risk of carbon leakage have been receiving free allowances under the EU ETS to support their competitiveness.
- CBAM will replace free allocation to mitigate the risk of carbon leakage. Free allocation will be phased out at the same speed as the CBAM will be phased in.



Source: Wood Mackenzie, European Parliament

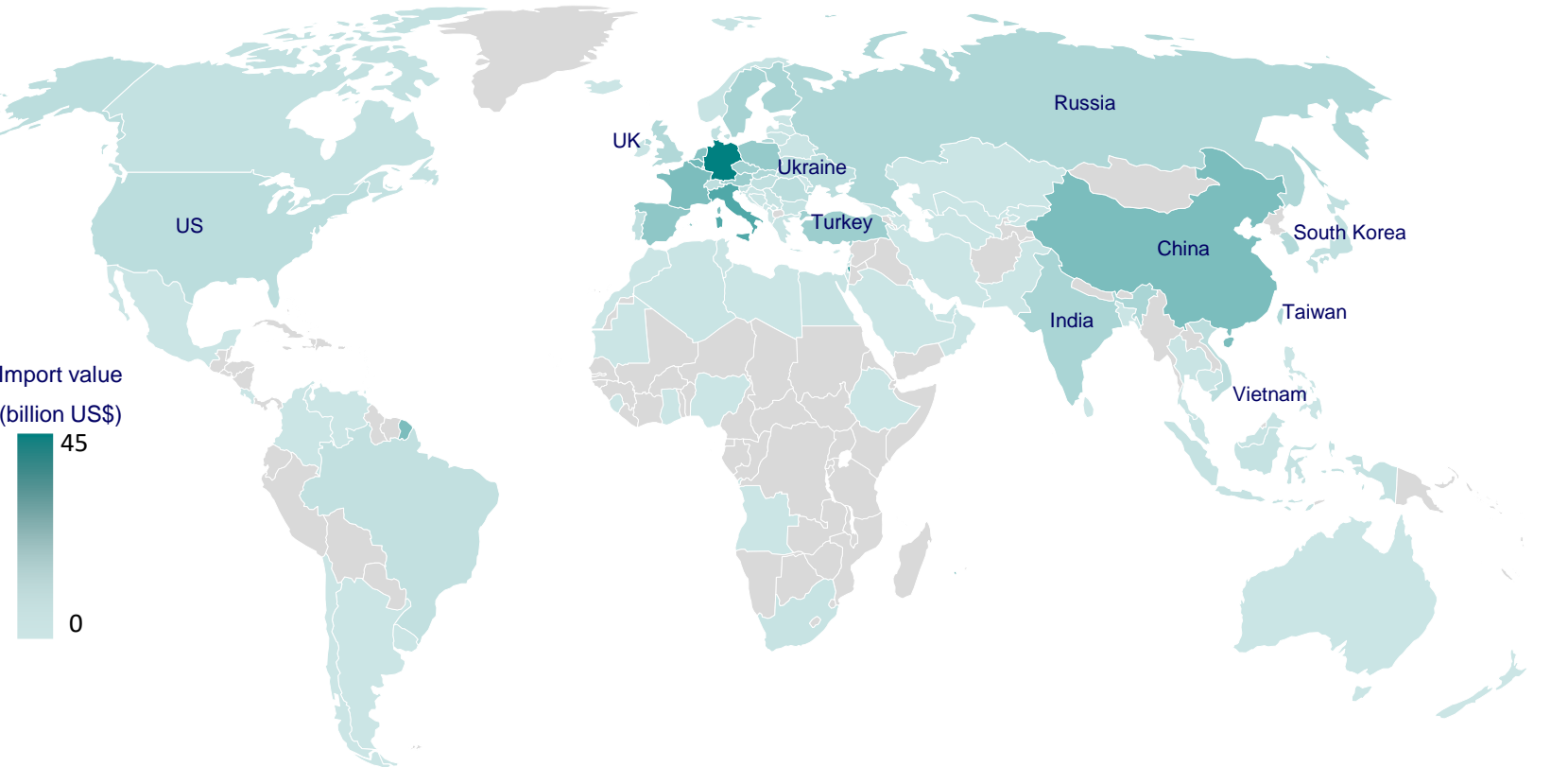
## CBAM certificate

- The price of the CBAM certificate is determined by the difference between the EU ETS price and the carbon price in the export country

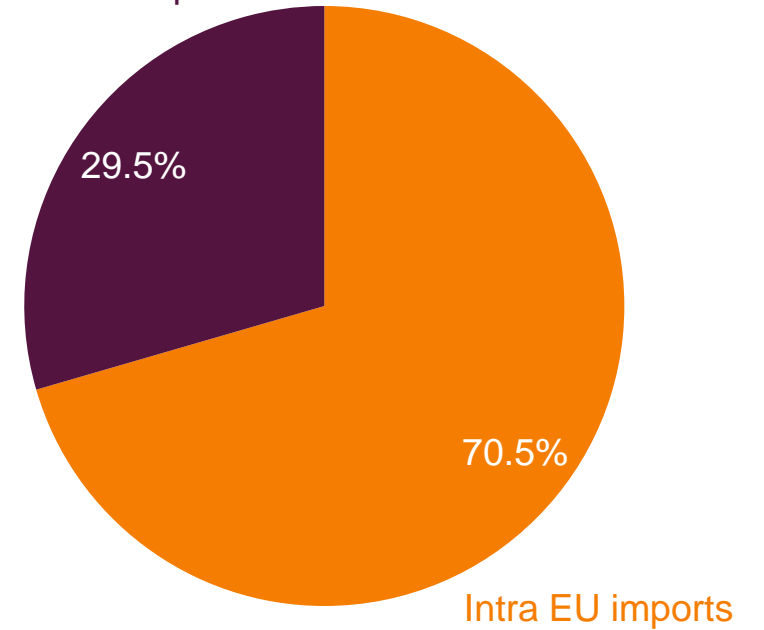


# EU producers face competition with 30% of the EU's steel basic materials and key intermediates demand met by foreign supply

## EU's CBAM-targeted steel products\* import value (2022)



Extra EU imports



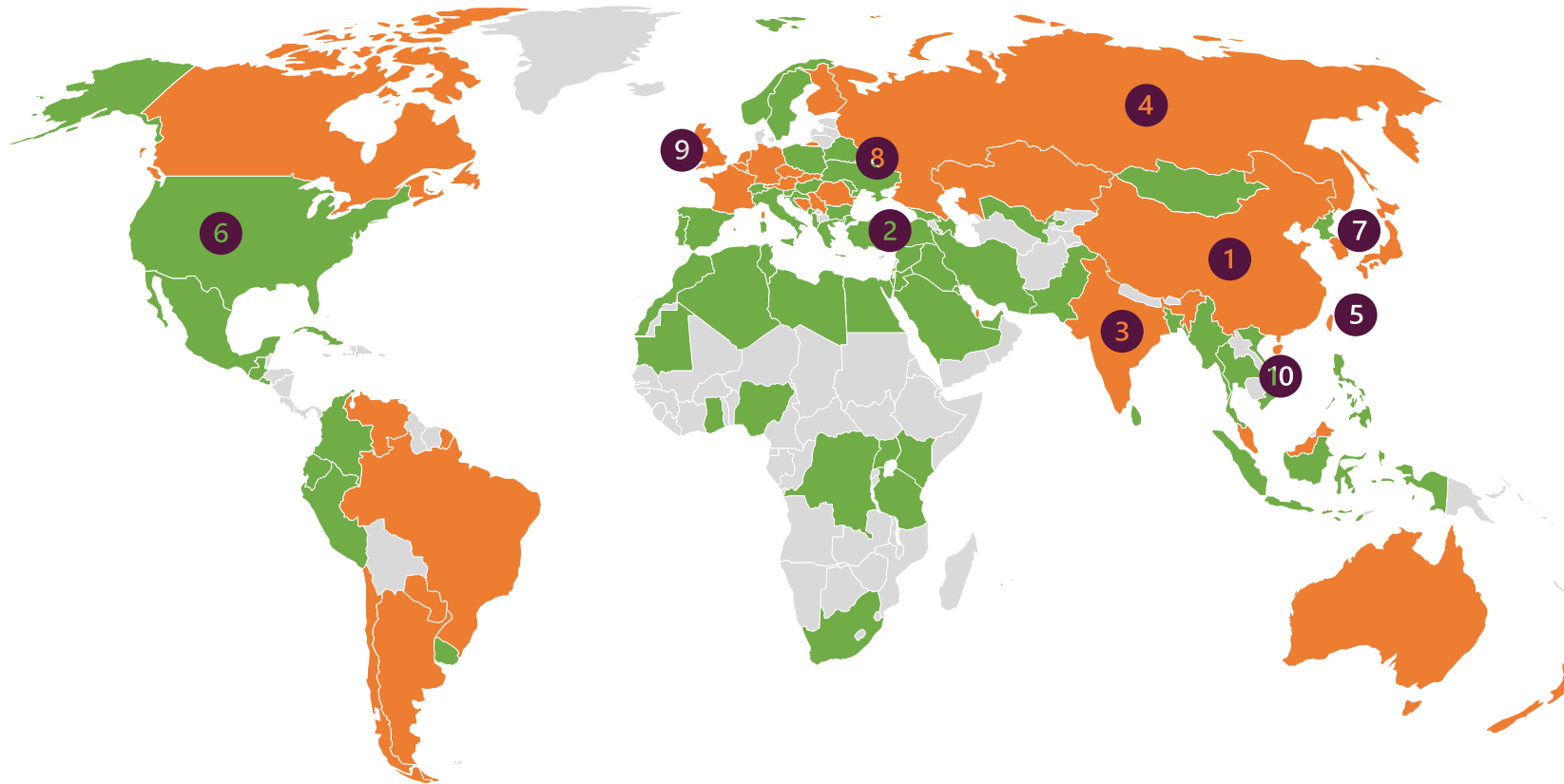
\* A more detailed CBAM-targeted steel product description is provided in [Appendix I](#) of this report.

Source: Wood Mackenzie, Global Trade Tracker

# Crude steel production in most of the EU's major steel trade partners are more emission-intensive than the EU average

But none of these countries place a carbon price as high as the EU on steel production

## Country-average crude steel production emission intensities compared to the EU average



Crude steel production emission intensity (2023, kgCO2/t crude steel)	
Global average	1352
EU average	1693

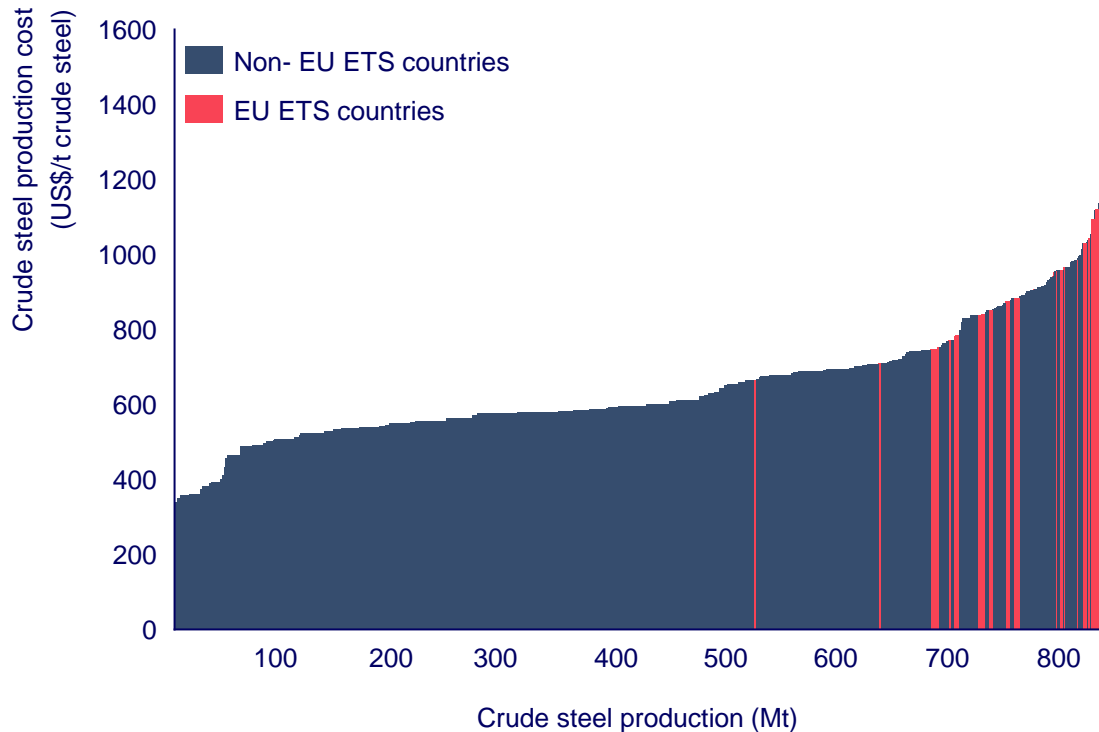
- Crude steel production is more emission-intensive than the EU average
- Crude steel production is less emission-intensive than the EU average
- Ranking of extra-EU trade partners by steel import value in 2022

1	China	6	US
2	Turkey	7	South Korea
3	India	8	Ukraine
4	Russia	9	UK
5	Taiwan	10	Vietnam

Source: Wood Mackenzie

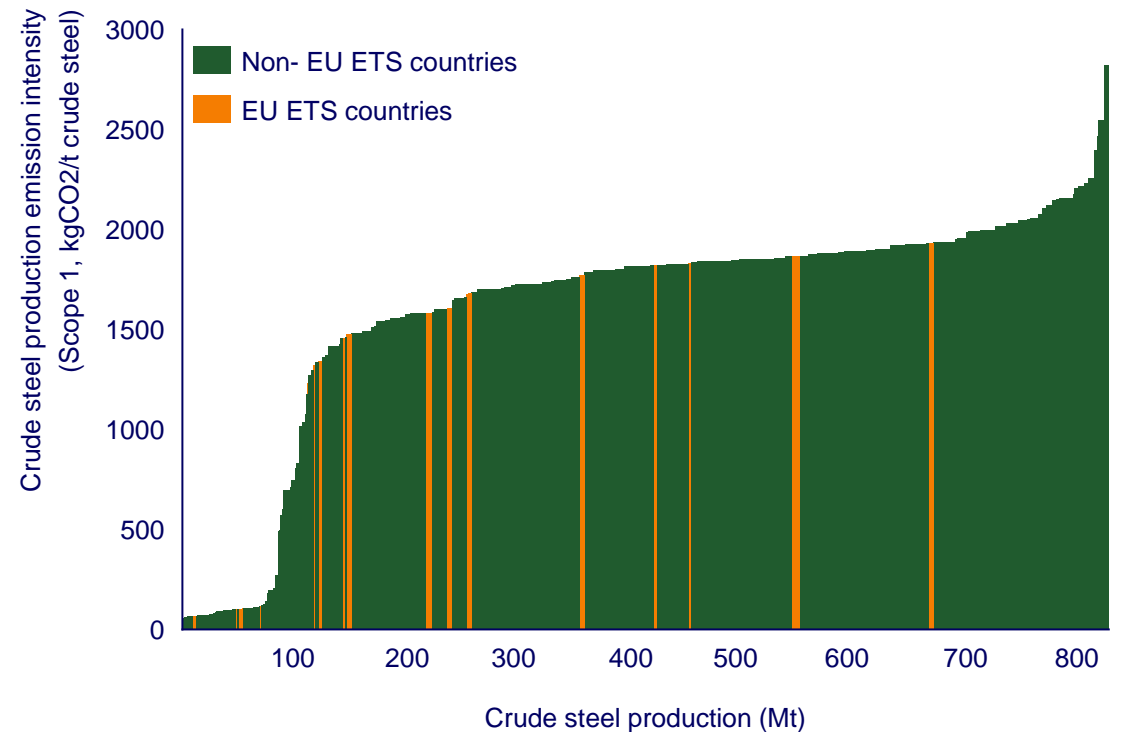
EU steel producers have relatively higher production costs, and higher carbon prices in the EU will further corrode their cost competitiveness  
Free allowance allocation has been used as a measure to protect the EU industry, which is going to be replaced by the CBAM soon

### Crude steel production cost



Source: Wood Mackenzie Steel Cost Tool

### Crude steel production emission intensity

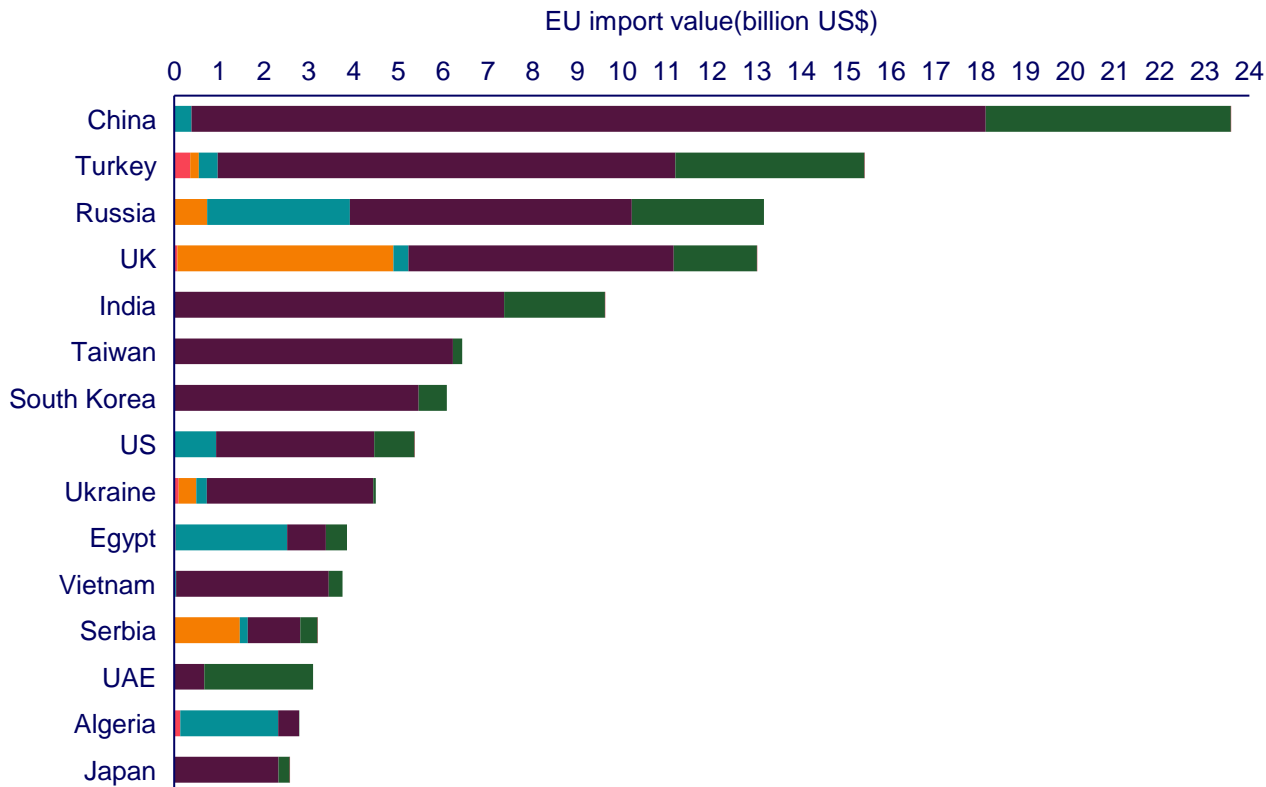


Source: Wood Mackenzie Emissions Benchmarking Tool

## Being both trade-exposed and emission-intensive, the iron and steel sector is the top candidate to be covered by the CBAM

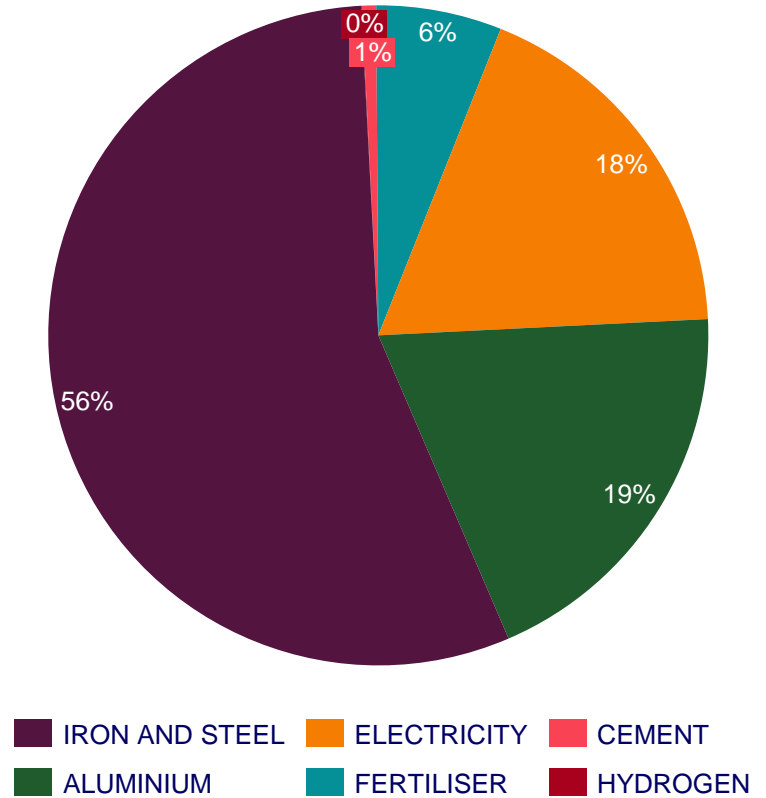
Steel is the largest sector by EU import value among the initial scope of the CBAM. Top countries most impacted by the CBAM almost all face significant exposure for their steel exports

### Top economies by CBAM exposure (by the EU import value in 2022)



Source: Wood Mackenzie, Global Trade Tracker

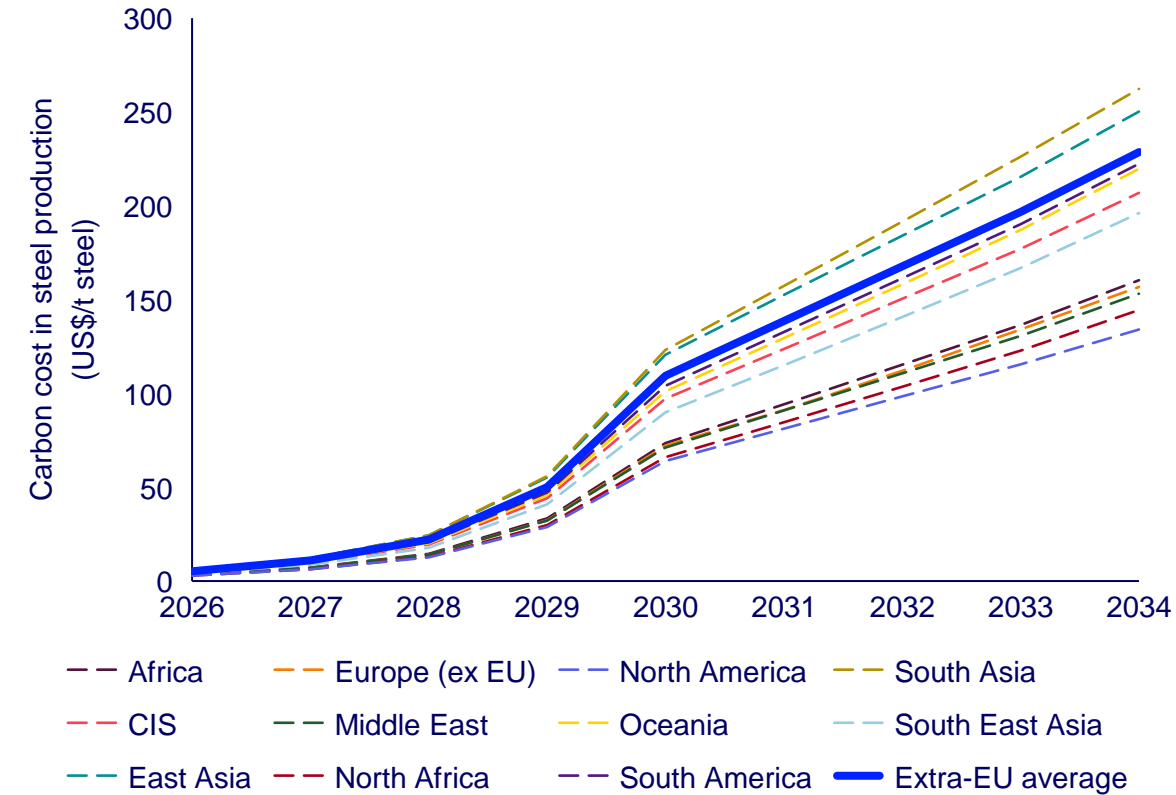
### CBAM-targeted sectors by the EU import value (2022)





The cost growth is moderate in the initial years of the CBAM payment. Exporters could reorganise their production/sale and direct lower-emissions steel to the European market as a short-term circumvention. Meanwhile, the EU producers will start to face higher carbon costs due to the synchronised free allocation phase-out.

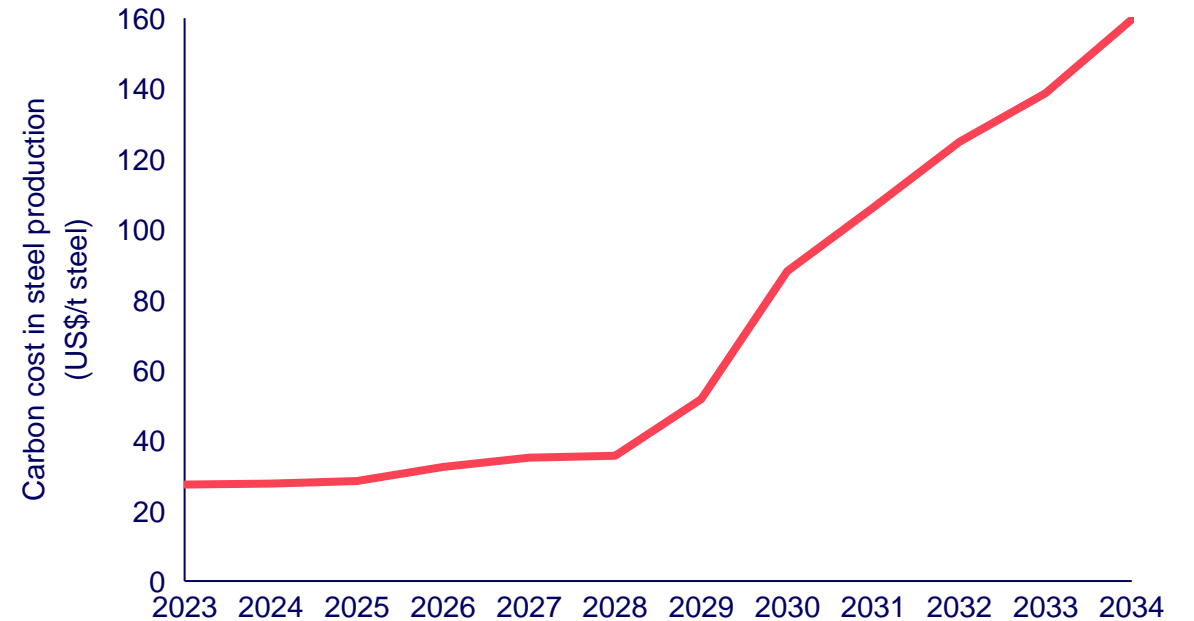
**Average carbon cost in steel production by region**



\*Both domestic carbon price and the CBAM are considered for carbon cost assessment.

\*\* Only direct emissions are considered for carbon cost assessment

**Average carbon cost in steel production in the EU**



\*\*\* EU ETS benchmark values for the 2021-2025 period are used to assess free allowance allocation in the transitional period.

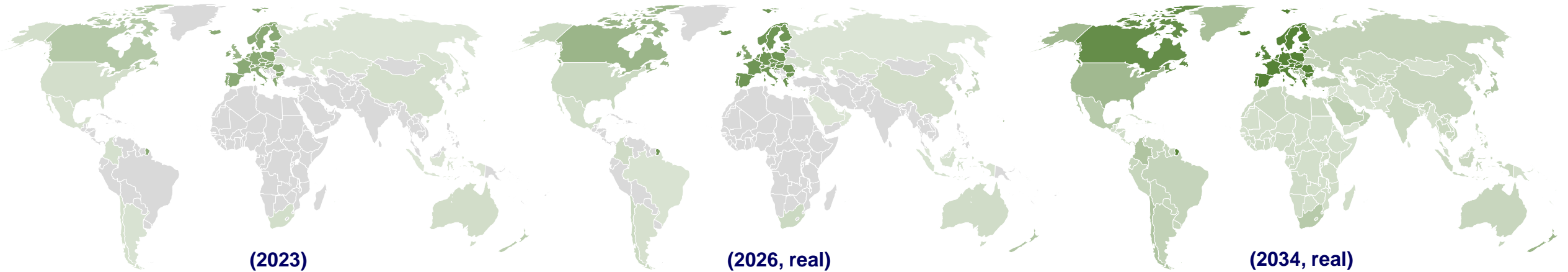
Source: Wood Mackenzie

## Concerns for carbon revenue leakage to the EU amid the CBAM will incentivise other governments to put in place domestic carbon prices

So the EU's trade partners could keep part of the carbon revenue collected that would otherwise taken by the CBAM

### Wood Mackenzie global carbon price forecast (US\$/tCO<sub>2</sub>e)

0  160



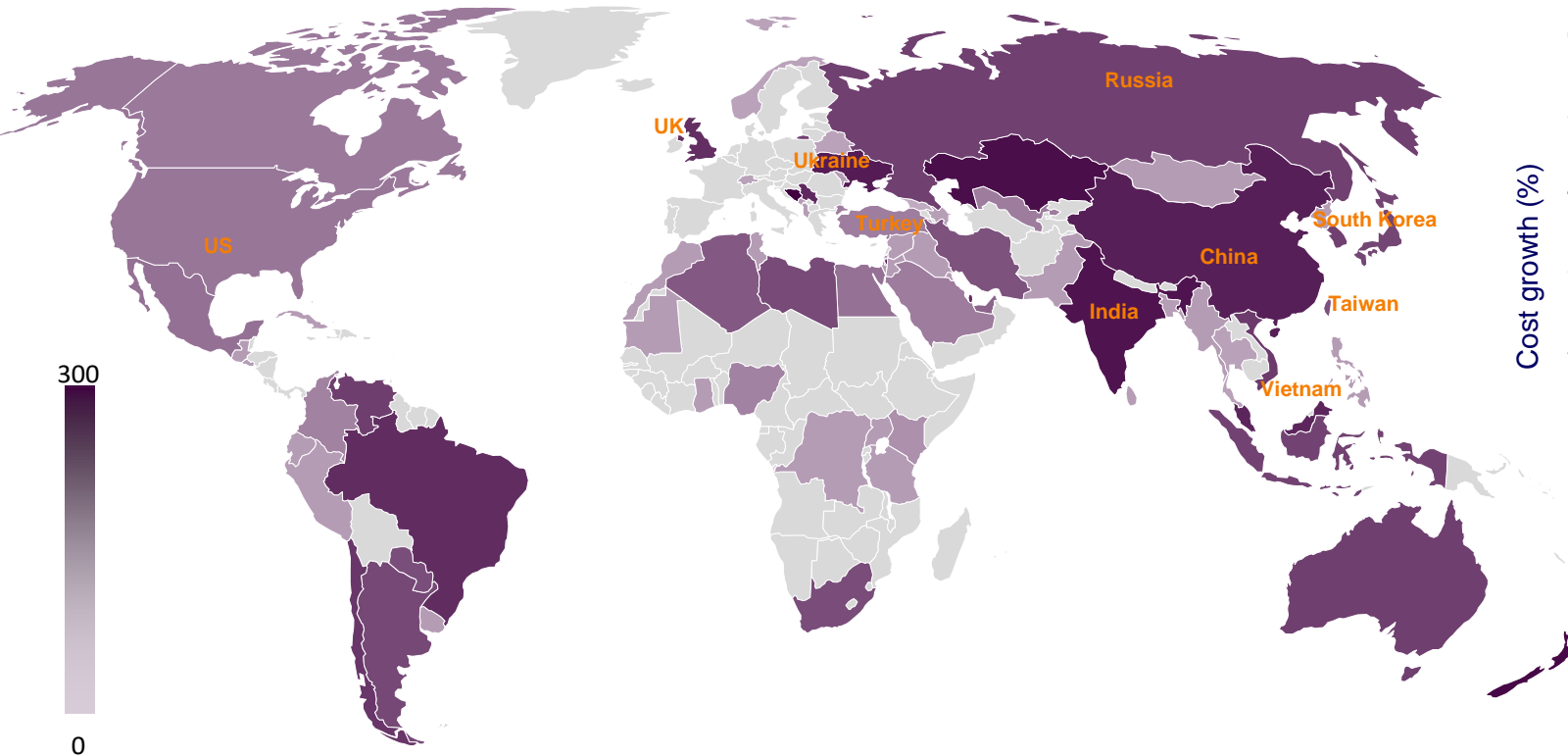
- As the CBAM rate is determined by the gap between the EU ETS price and the exporting country's carbon price, the EU's trade partners are incentivised to introduce or raise their domestic carbon prices, to prevent revenue leakage.
- That said, domestic carbon prices in non-EU countries will likely remain structurally weaker than that of the EU.
- We expect the EU ETS price to approach US 120 /tCO<sub>2</sub>e by 2026, when the CBAM financial obligations start to phase in. And reach US\$ 155/tCO<sub>2</sub>e by 2034, when financial obligations are fully implemented.

Source: Wood Mackenzie

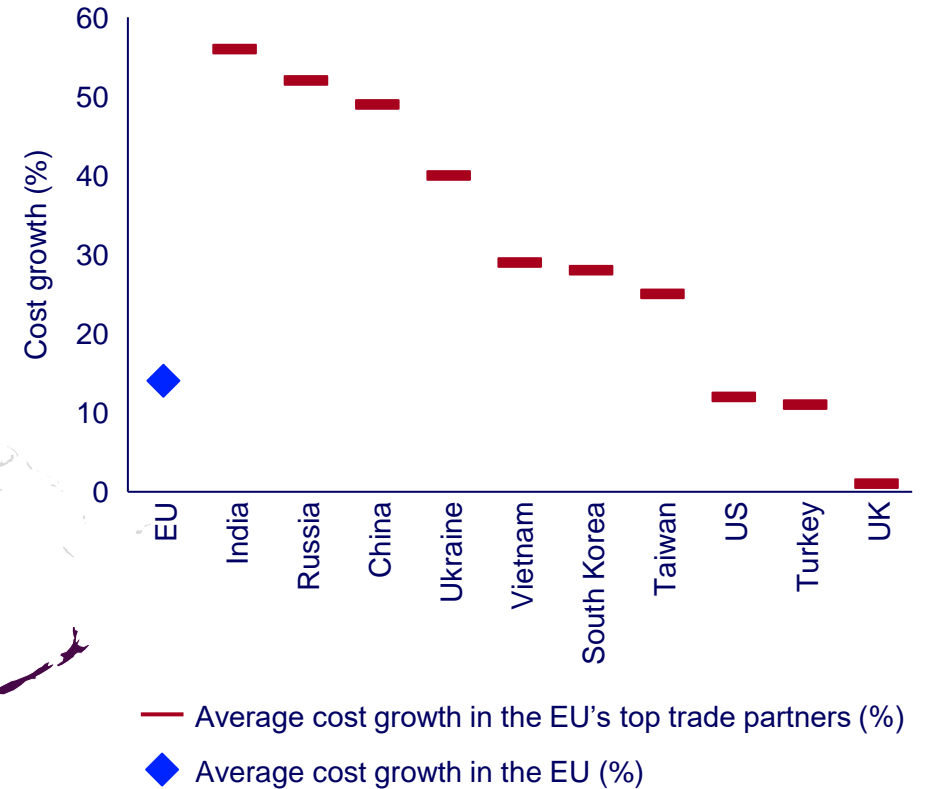
As the CBAM financial obligations will progressively phase-in, carbon will be an increasingly important cost component to consider in international steel trade in a decade's time.

Economies who retain steel trade with the EU will face significant carbon cost growth by the end of the CBAM transitional period

**Carbon cost\* growth in EU's steel trade partners (2034 vs 2026) (US\$/t steel)**



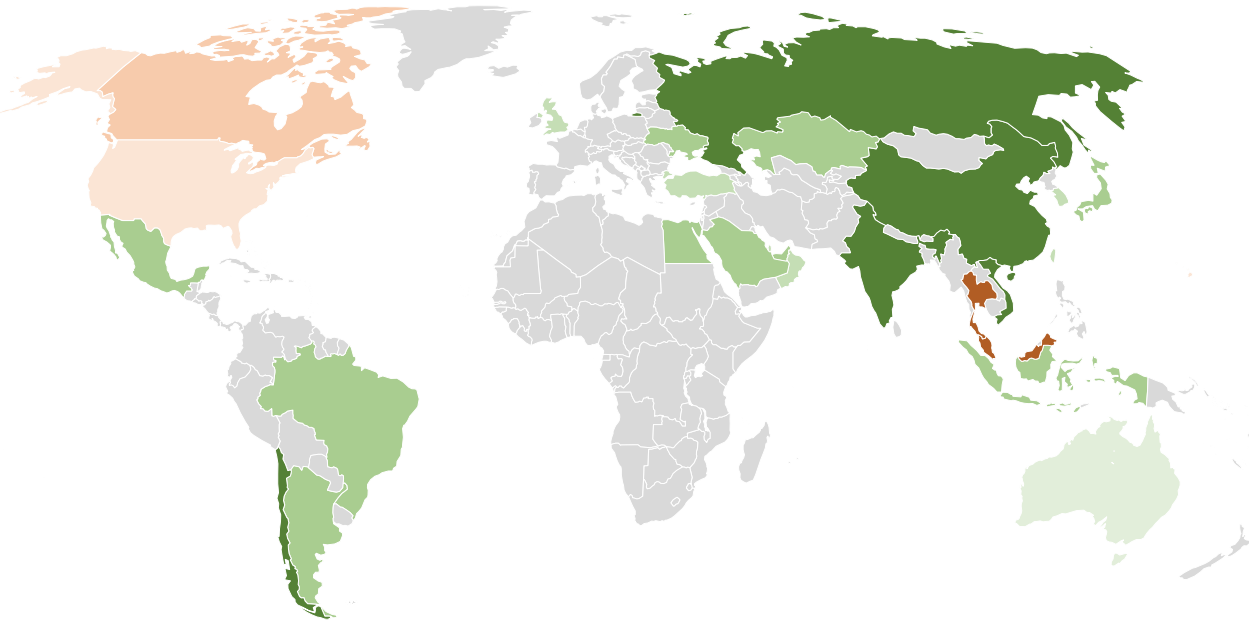
**Cost growth (2034 vs 2026) (US\$/t steel)**  
*(Production cost and carbon cost\* are considered)*



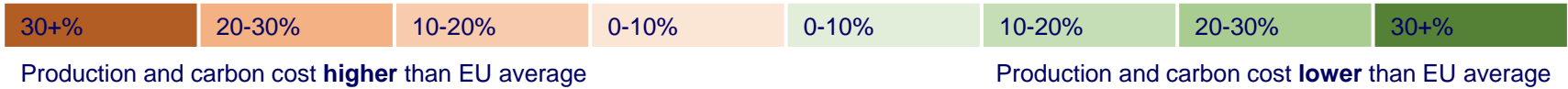
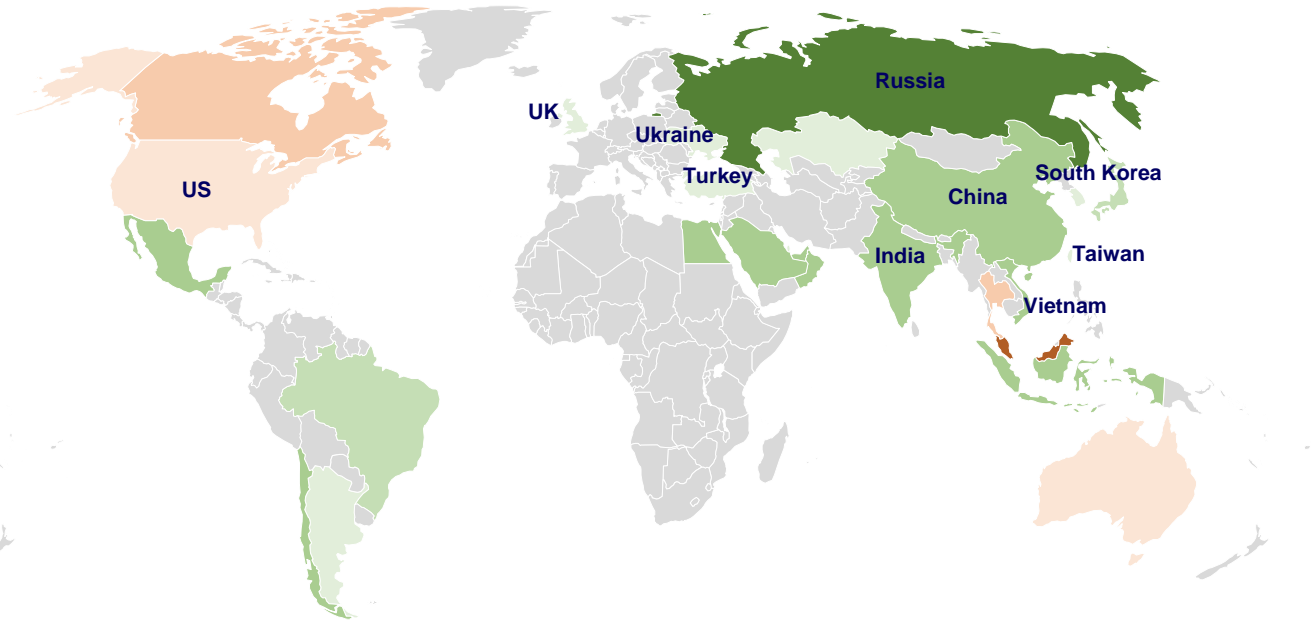
*\*Domestic carbon cost and the CBAM are considered in the cost assessment.*

With CBAM-induced increase in the cost, the cost advantages of the EU's steel trade partners will gradually diminish throughout the transitional period

Production and carbon cost vs. EU average (2026)

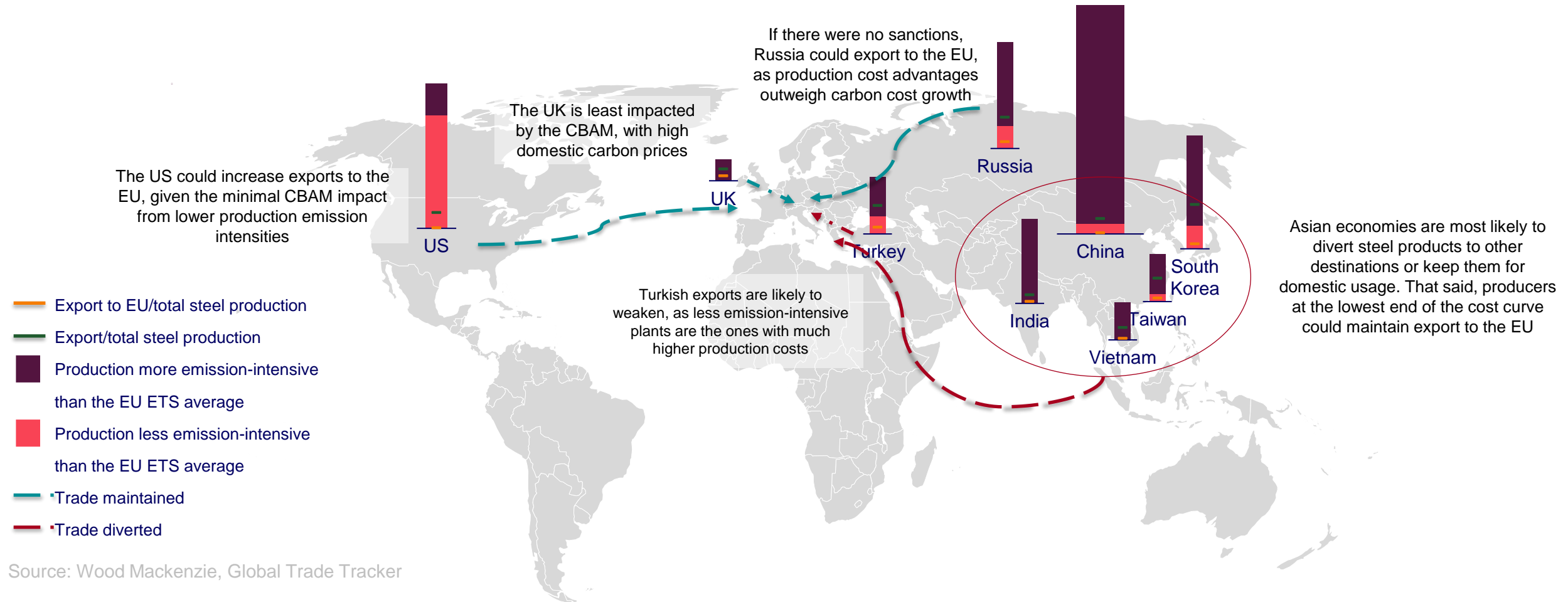


Production and carbon cost vs. EU average (2034)



Source: Wood Mackenzie

# Raising carbon cost will eventually impact steel trade pattern while increase the incentive for exporter to invest in emission reduction technology



Source: Wood Mackenzie, Global Trade Tracker

## The CBAM could lead to global decarbonisation in the sector and downstream consumption, but collateral damage should also be expected



Low-cost, but more emission-intensive producers will try to avoid high penalties of entering the EU market, creating a short steel supply in Europe.

Non-EU exporters who want to retain access to the EU market should decarbonise their operations, in order to mitigate high CBAM costs.

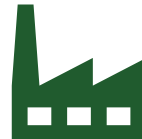


EU steel producers might face less competition from foreign products. But they will also face higher costs due to the ending of free allowances under the EU ETS.

The incentives for decarbonisation investment will increase over time.



Steel products are widely used in the energy sector, including the low-carbon technology options such as wind turbines and electric vehicles. The higher prices and additional strains on steel supply chains could make energy transition more expensive in Europe than elsewhere.



Curtailed steel supply and increased steel raw materials and simple goods prices will impact downstream manufacturing and end users industries. There could be loss of employment in such industries.



Higher carbon costs will support price growths for both domestic and foreign steel products, where the European consumers will eventually have to pay the cost of emissions for their consumption.

As non-EU governments will have a strong incentive to put in place domestic carbon prices, global consumers may also experience higher prices, albeit to a less extent.

Consumers are more economically encouraged to switch to lower-carbon technologies and products to avoid higher prices. Change in consumption preference will push producers to decarbonize as well.

That said, an additional cost could result in political backlash in a high-price environments.

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