



The Economic Impacts of an EU Carbon Border Adjustment Mechanism (CBAM)

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ERCST

Roundtable on
Climate Change and
Sustainable Transition

The Discussion on the EU CBAM: Why?

- Climate neutrality by 2050, to be enshrined in a 'European Climate Law' (also strong push to increase 2030 target from current 40%)
- Paris Agreement → continued asymmetry of climate efforts
- **The European Green Deal**
 - *“Should differences in levels of ambition worldwide persist, as the EU increases its climate ambition, the Commission will propose a **carbon border adjustment mechanism**, for selected sectors, to reduce the risk of carbon leakage”*
- CBAM as a way to **address carbon leakage** and **level the playing field** between EU and foreign producers
 - Free allocations might become impractical towards the end of 2020s depending on the level of ambition (not enough to satisfy the needs)
 - Helping to create an EU **market for low-carbon products**
 - Generating **revenues** to help funding the Recovery Plan for Europe
- Proposal expected by **June 2021**

Main Options and Key Challenges

- Main options available
 - A **tax applied on imports** at the EU border
 - An **extension of the EU ETS** to imports
 - **Carbon tax** (e.g. excise or VAT type) at consumption level
 - The obligation to **purchase allowances from a specific pool** outside the ETS
- Key challenges
 - **Trade flow coverage:** Consider role of European exports and their competitiveness in foreign markets
 - **Free allocation:** Replacing free allocation will face considerable pushback in the EU, making a phased approach more likely
 - **Sectoral scope:** Basic goods with relatively low trade-intensity – such as cement – may offer a good piloting opportunity; also possible: steel, aluminium and electricity
 - **Emission scope:** Determination of embedded emissions
 - Avoiding **resource shuffling** and **evasion tactics** will be challenging
 - **Revenue use:** International revenue transfers face political obstacles
 - **Crediting for foreign policies:** complex but likely necessary

ERCST Work on BCAs in the EU

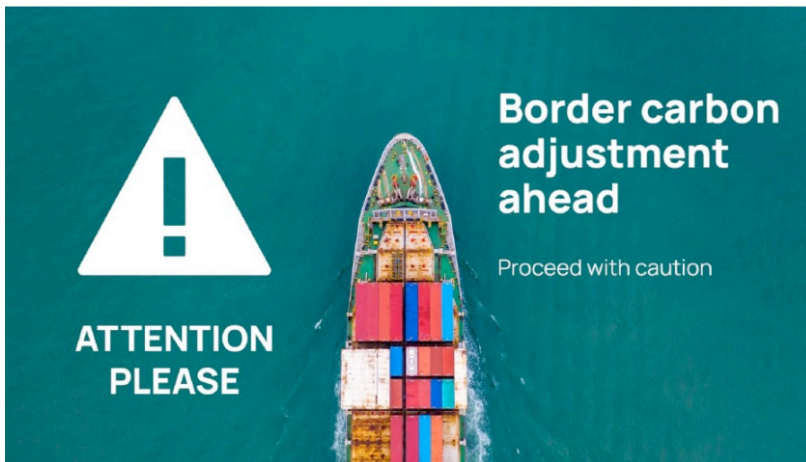
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2020

Border Carbon Adjustments in the EU

Issues and Options



Andrei Marcu Michael Mehling Aaron Cosby

- **Full report** published on 30 September 2020
 - CBAM not as a silver bullet, but part of a broad set of policy tools
- Submitted **Feedback** to Inception Impact Assessment consultation
 - Public consultation questionnaire until 28 October
- Ongoing **stakeholder engagement and convening**
- **International outreach** ('Virtual Town Halls') to EU trade partners: USA, South Korea, India, Japan, South Africa, Mexico, Russia, Ukraine
- **Quantitative assessment** of the economic costs of different EU CBAM design options

Quantitative Assessment: Focus and Objectives

- ERCST started an exercise aimed at estimating the economic costs that an EU CBAM could potentially impose – as additional tax burden – on importers (or foreign exporters) of products to the EU market
- The analysis considers different design options of the CBAM instrument, assessing how the key challenges could be addressed
 - Each scenario depicts a specific storyline influencing the design of the CBAM
 - Each design approach has consequences on the total additional costs imposed by sector/product and on the degree of legal feasibility under WTO trade law
- Elements considered:
 - Trade coverage: **Imports** to the EU27
 - Geographical scope: **Russian Federation** and **South Africa**
 - Sectoral scope: **Cement, Aluminium, Steel** and **Electricity**
 - Emissions scope: **Scope 1** and **Scope 1 & 2**
 - Context: **full or partial replacement of Free Allocations**

General Assumptions

- Significant **uncertainty remains over the design of the EU CBAM** that the European Commission will propose in 2021
- We put forward the following assumptions:
 - The most carbon-intensive and imported products would likely be affected i.e. at risk of leakage
 - The CBAM would initially cover imports of a number of selected products and would be gradually extended
 - The additional cost imposed on imports could be based on a default value e.g. the average carbon intensity of EU producers, or depend on the carbon content of imported products
 - One way to prevent carbon leakage would be to include imports under the EU ETS
 - The CBAM should be fully compliant with World Trade Organization (WTO) rules

An Overview of the Scenarios

Scenarios	Approach to calculate the tax burden	Consequences
(1)	$EUA_{CO_2 price} * EU_{CO_2 intensity}$	<ul style="list-style-type: none"> Phase-out of free allocations Full protection from leakage Creation of a level playing field in the EU market
(2)	$EUA_{CO_2 price} * non - EU_{CO_2 intensity}$	
(3)	$EUA_{CO_2 price} * \Delta_{CO_2 intensity}$	<ul style="list-style-type: none"> Leakage protection to be guaranteed with additional tools (e.g. free allocations) Signal to align to EU production standards
(4)	$\Delta_{CO_2 price} * EU_{CO_2 intensity}$	<ul style="list-style-type: none"> Crediting for foreign carbon pricing policies Full protection from leakage? Creation of a level playing field?
(5)	$\Delta_{CO_2 price} * non - EU_{CO_2 intensity}$	
(6)	$\Delta_{CO_2 price} * \Delta_{CO_2 intensity}$	<ul style="list-style-type: none"> Leakage protection to be guaranteed with additional tools (e.g. free allocations) Crediting for foreign carbon pricing policies Signal to align to EU production standards

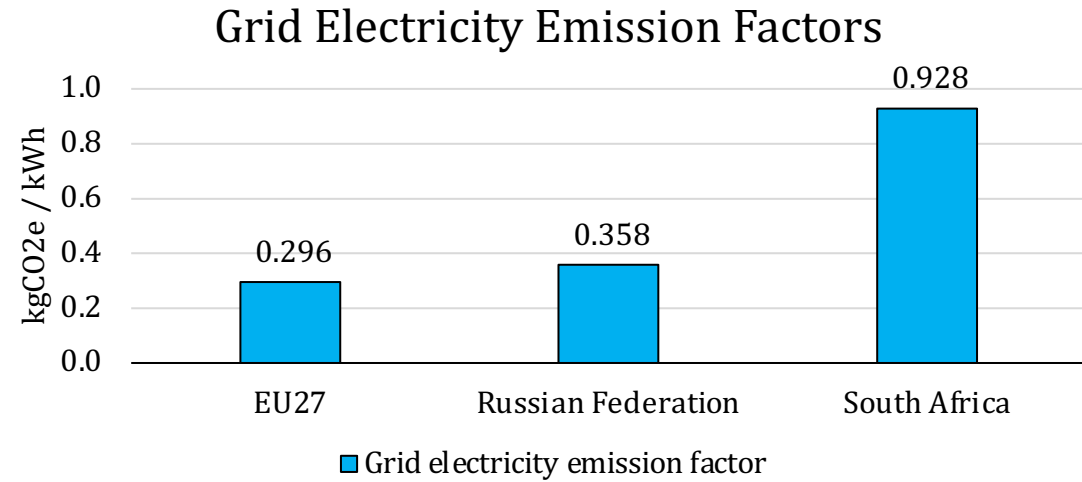
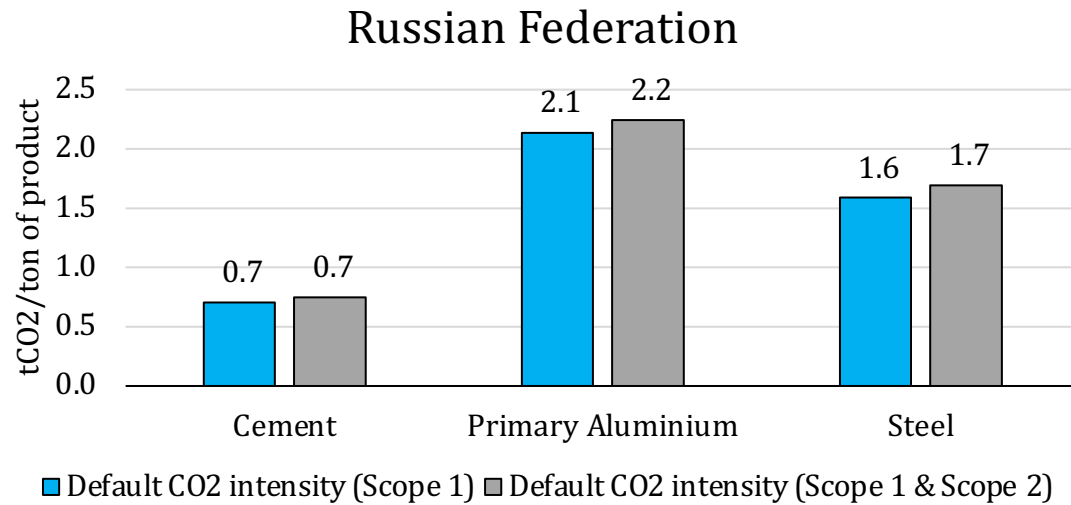
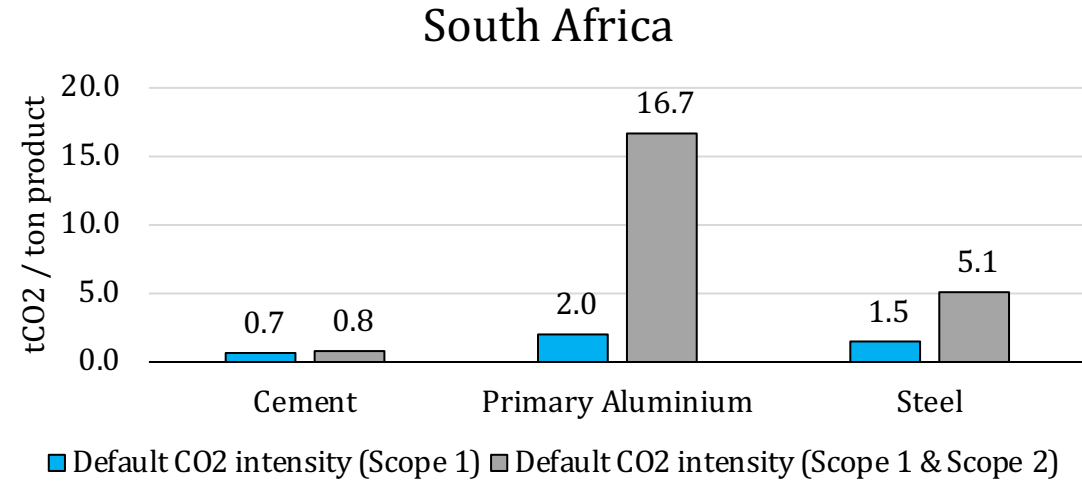
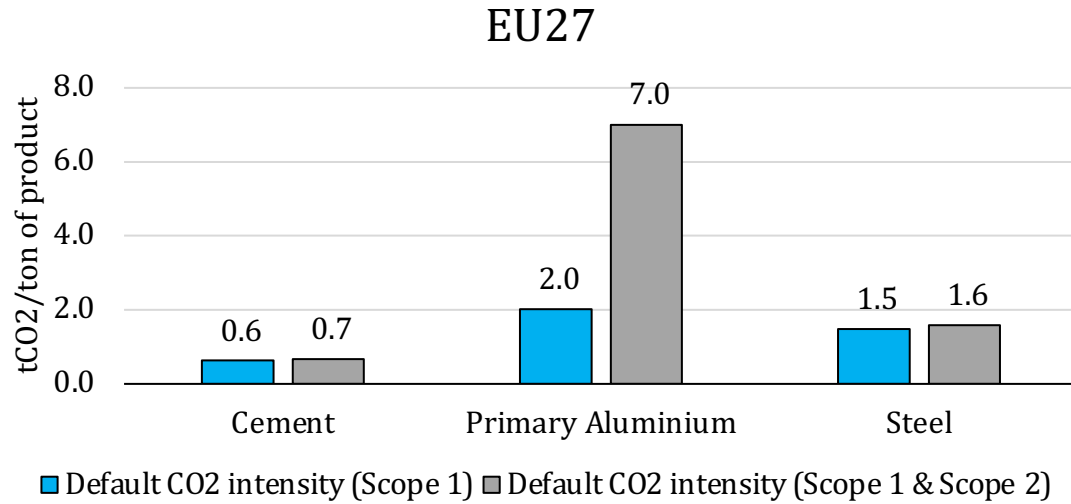
Further Comments on the Scenarios

- We assume that the CBAM will be based on 2 components:
 - the **carbon price**
 - the **carbon content** of imports
- Each design option would have different implications in terms of
 - Legal feasibility (WTO rules)
 - Technical and administrative feasibility (including data needs)
 - Political and diplomatic feasibility (risk of controversy)
- The first approach (1) would treat all imports equally and not less favourably than the average European producer
- Foreign producers could be granted the possibility to individually prove that they are cleaner than the default emission intensity

Default Emission Intensities: Data and Estimation

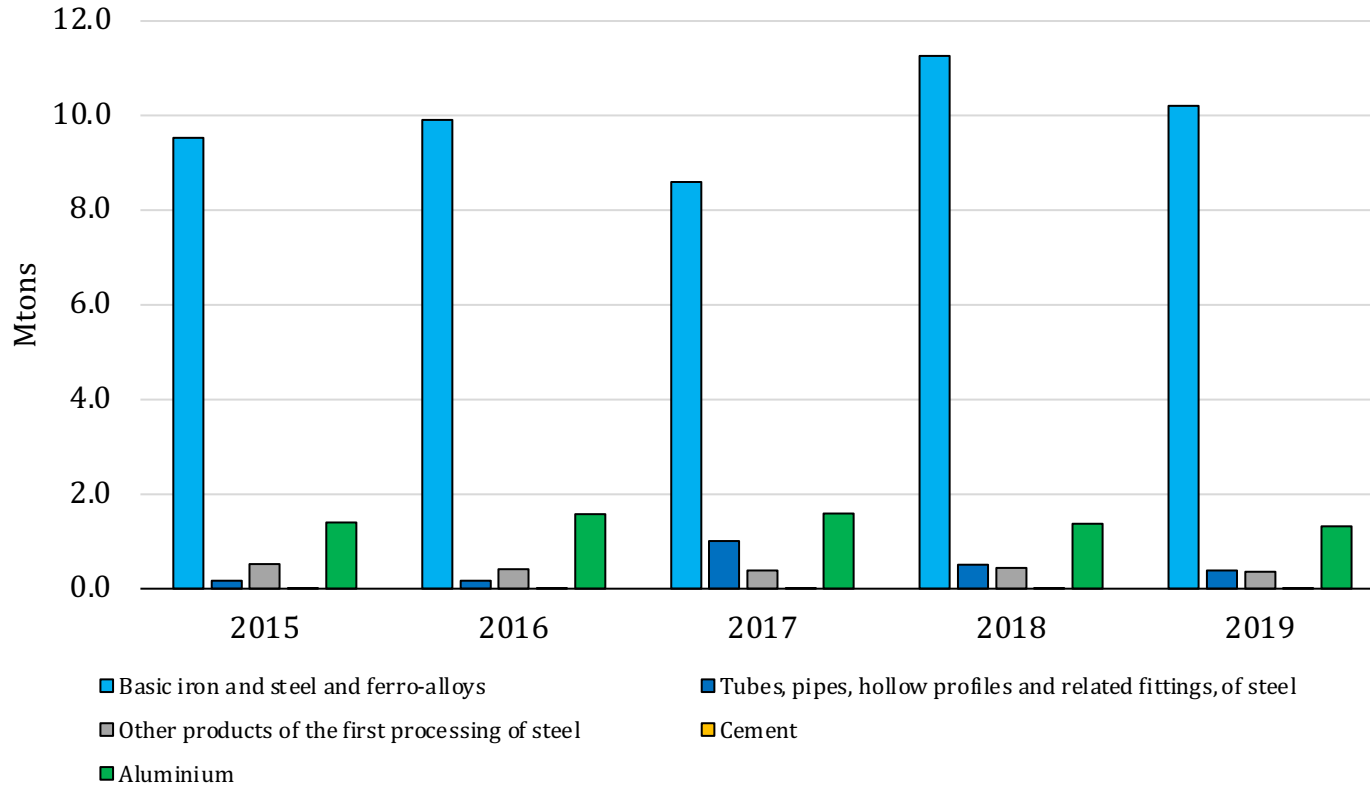
- Data collection and estimation of recent default emission intensities for products (in tCO₂/t of product) and grid electricity emission factors
 - The 54 benchmark values will be revised in phase 4 of the EU ETS to reflect technological change
- **Cement**
 - *Emission intensities* from the GNR database of the Global Cement and Concrete Association (GCCA)
- **Primary Aluminium**
 - *Scope 1 and Scope 2 CO₂* sourced from company's and sectoral associations' sustainability reports and roadmaps (*Eurometaux, En+ Group, South32*)
 - For the EU27, *Scope 1 CO₂* emissions were estimated from the GHG Inventory Submission to the UNFCCC
- **Steel**
 - *Emission intensities* of production processes (BOF, EAF) from Toktarova et al. (2020), *Scope 1 and Scope 2 CO₂* intensities estimated based on the *production mix* by country (World Steel Association)
- **Electricity**
 - *Emission factors* from the European Environment Agency (EEA), the Analytical Center for the Government of the Russian Federation, and *Climate Transparency (2019)*

Default Emission Intensities

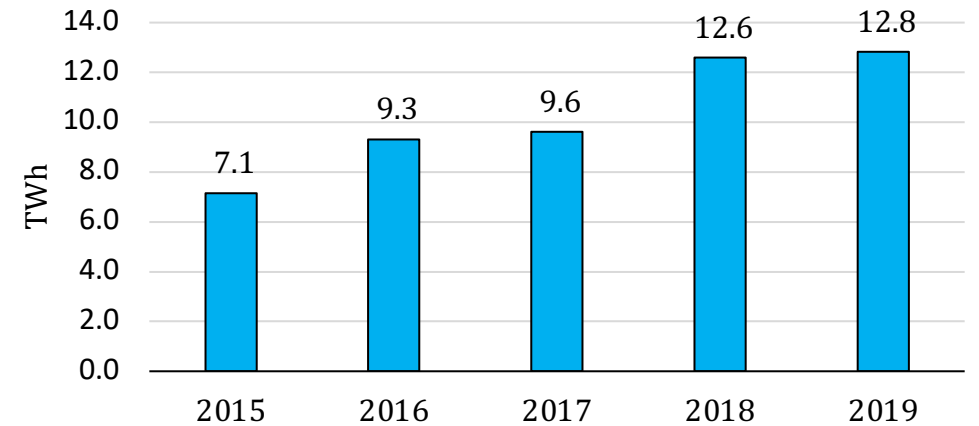


Volume of Imports from the Russian Federation

Imports of Steel, Aluminium and Cement



Electricity Imports

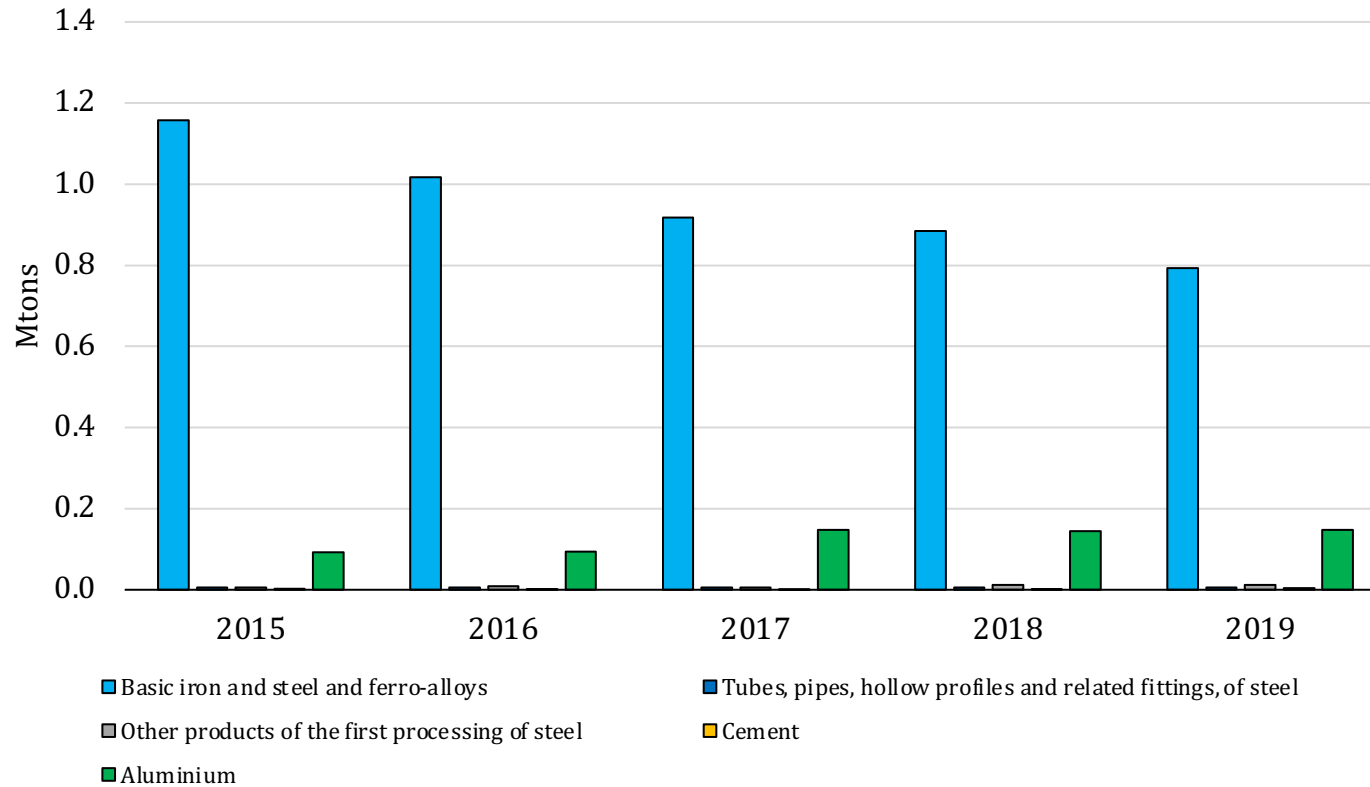


Source: COMEXT and Sandbag (2020), The path of least resistance

We rely on 2019 trade data and assume no changes in trade patterns.

Volume of Imports from South Africa

Imports of Steel, Aluminium and Cement



Source: COMEXT International Trade in Goods Statistics

We rely on 2019 trade data and assume no changes in trade patterns.

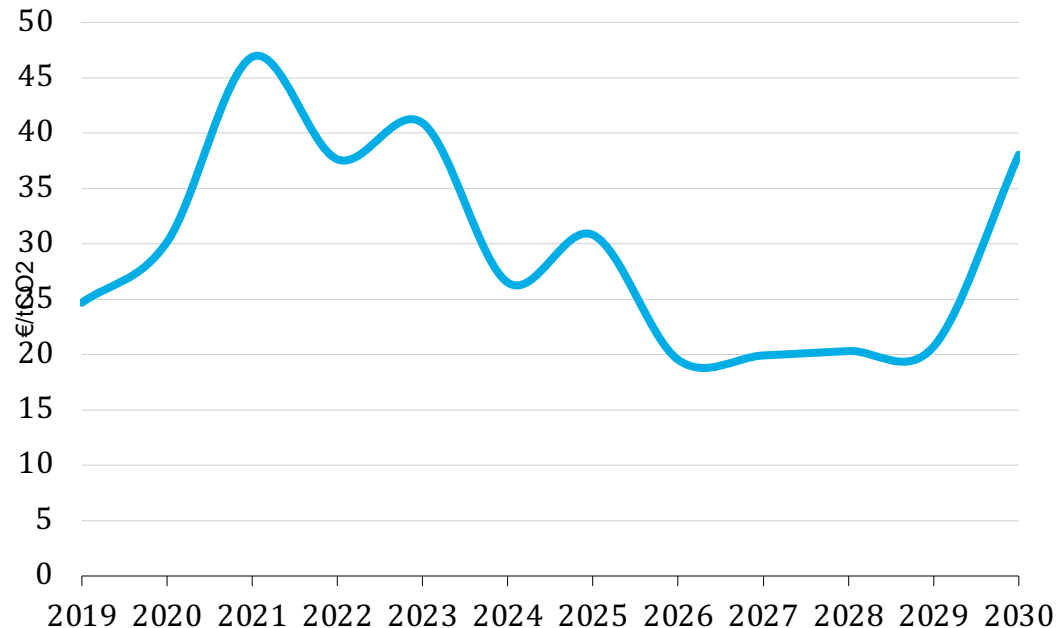
Assumptions on Carbon Pricing

- **Carbon pricing in the EU27 in 2023**

- *Forecasts from Bloomberg NEF (40.9 €/tCO₂)*

- **Carbon pricing in non-EU countries**

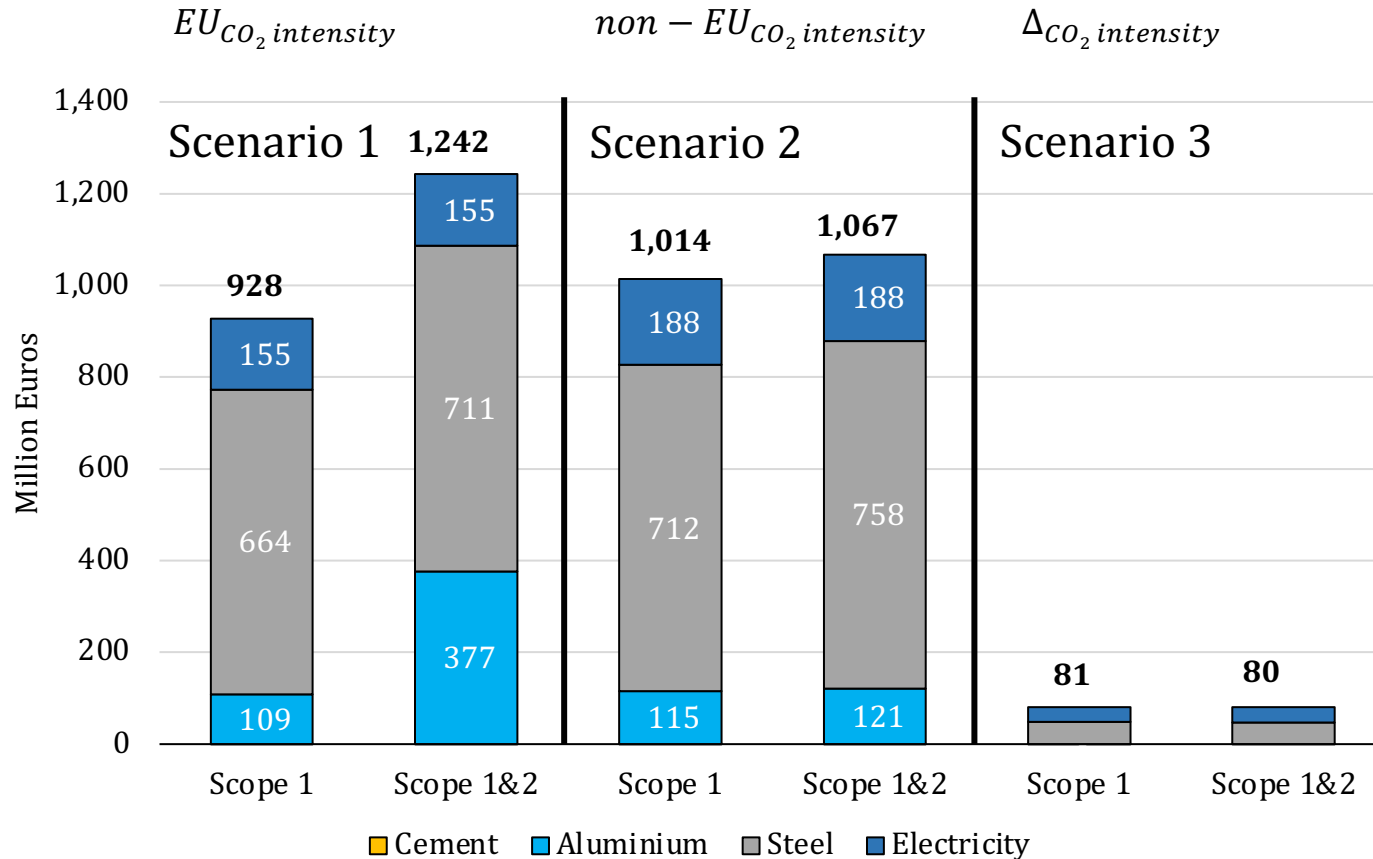
- *ETS prices in the Russian Federation and South Africa from the OECD (2016) Effective Carbon Rates database*
- *Cross checked with the World Bank (2020) State and Trends of Carbon Pricing 2020*



- **Sensitivity Analysis**

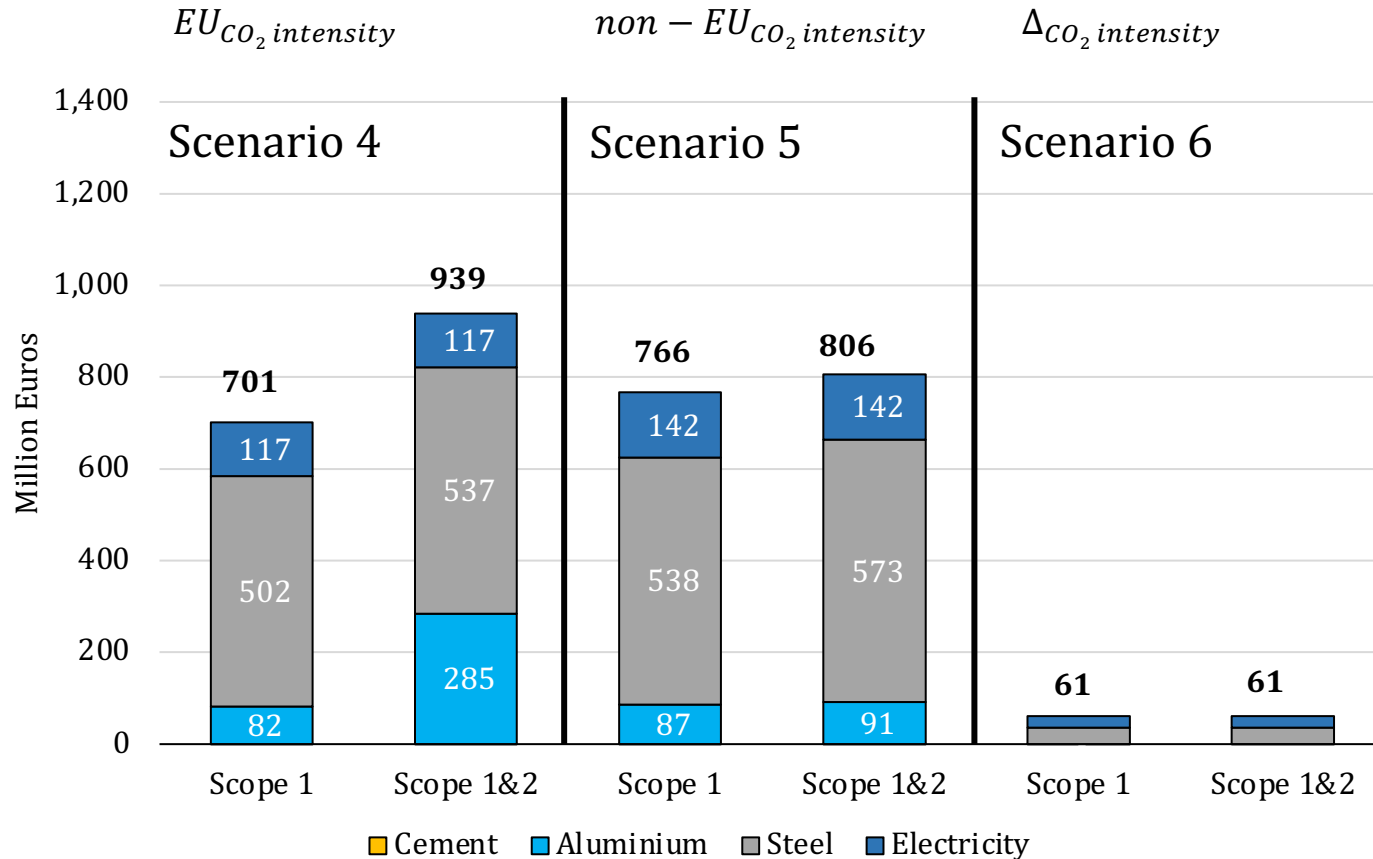
- Introduction of ETS systems in the Russian Federation and South Africa:
- ETS price of 10 €/tCO₂

Results for the Russian Federation



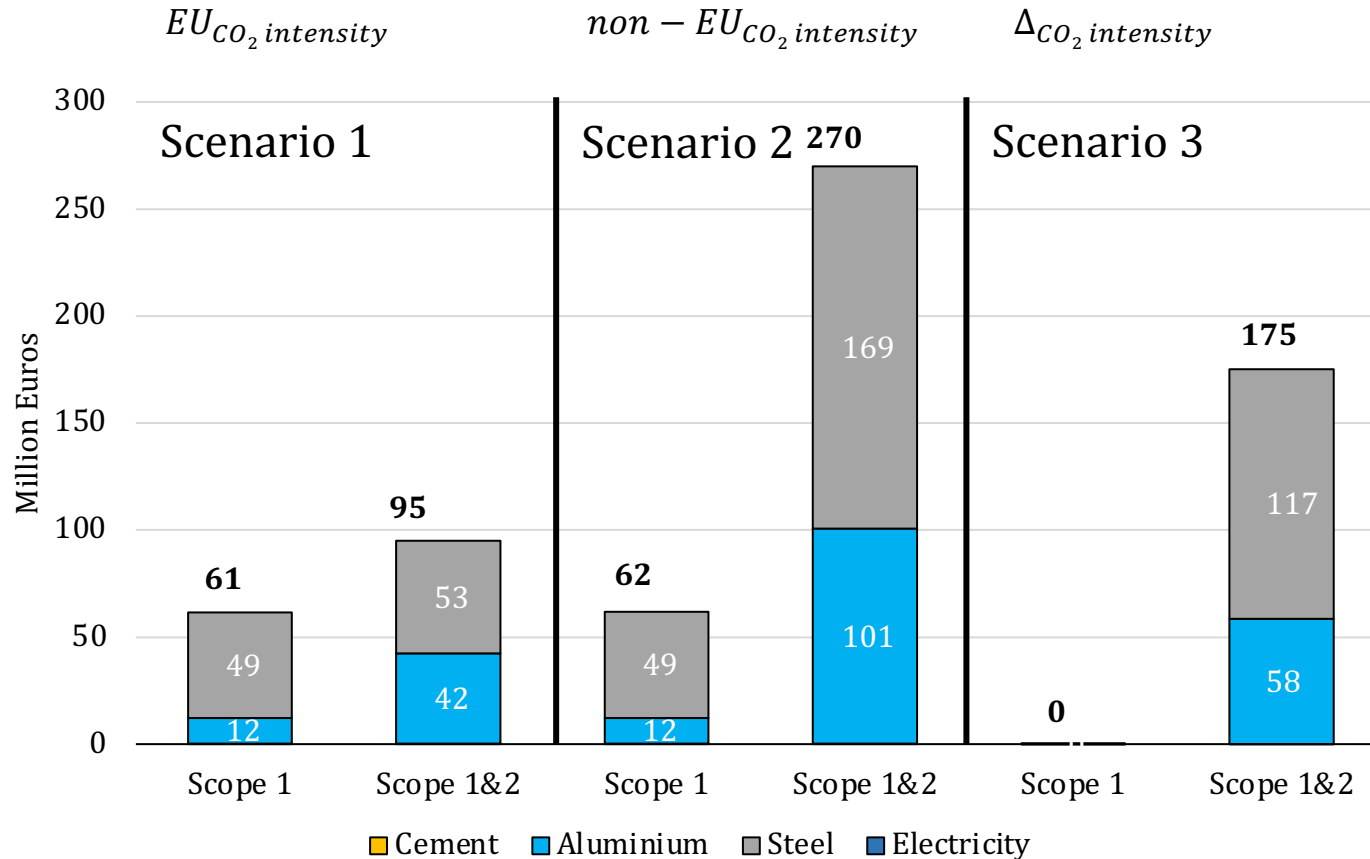
- Average annual additional costs can vary considerably across sectors
- **Key factors:** trade volumes and emissions
- Adoption of EU default emission intensities would generate the highest total costs when including Scope 1 and Scope 2 emissions
- Largest tax burden expected on steel (highly traded product), but significant for aluminium and electricity too
- Costs for cement are lower in magnitude, but between 40% and 48% of exports value to the EU)

Sensitivity Analysis for the Russian Federation



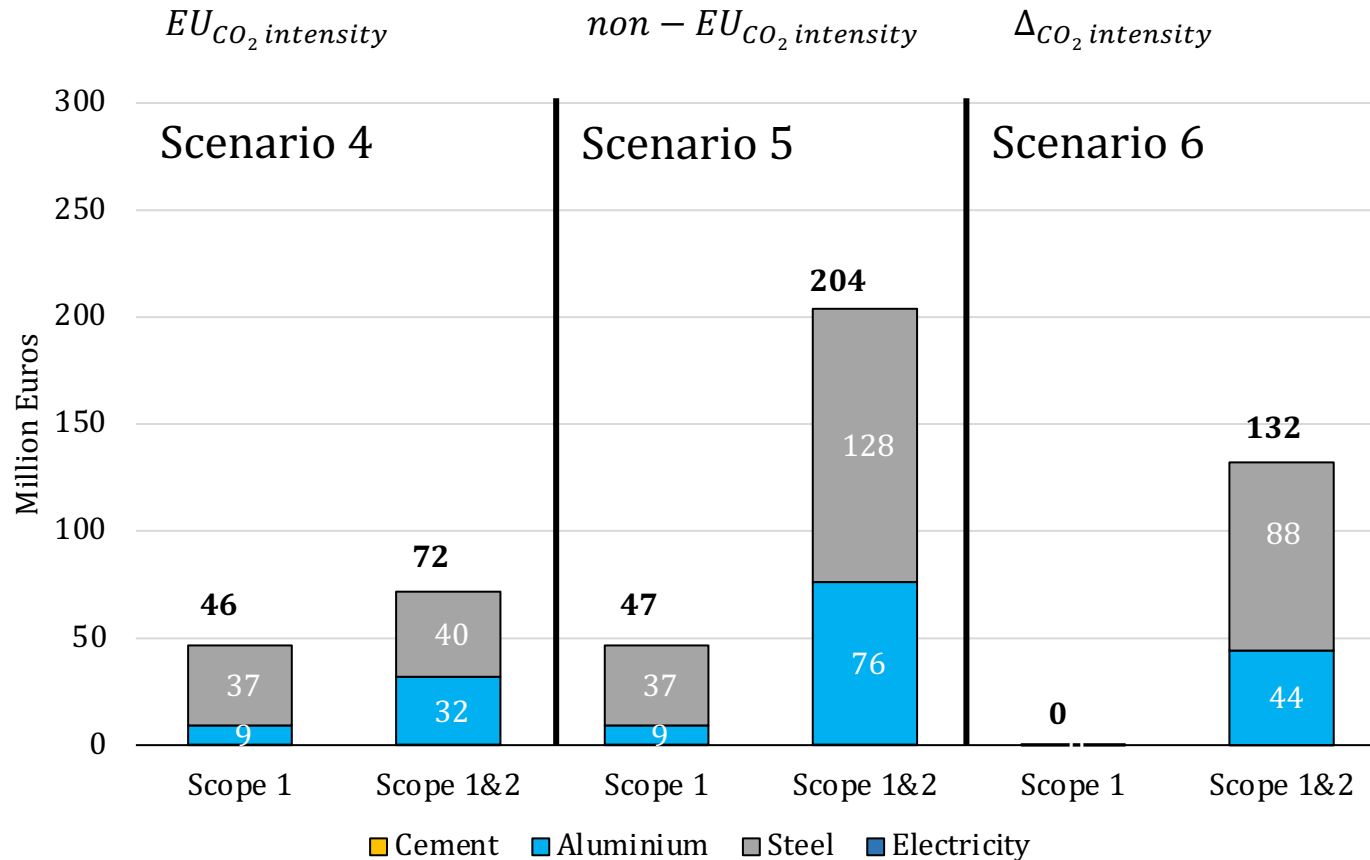
- Crediting for foreign carbon pricing policies could significantly reduce the total tax burden
- **Key factors:** trade volumes and emissions
- Adoption of EU default emission intensities would generate the highest total costs when including Scope 1 and Scope 2 emissions
- Costs for cement are reduced, but still between 30% and 36% of exports value to the EU

Results for South Africa



- Average annual additional costs can vary considerably across sectors
- **Key factors:** trade volumes and emissions
- Adoption of South Africa’s default emission intensities would generate the highest total costs
- Largest tax burden expected on steel (highly traded product), but also significant for aluminium (up to 32% of exports value to the EU)
- Costs for cement are lower in magnitude, but between 24% and 29% of exports value to the EU

Sensitivity Analysis for South Africa



- Crediting for foreign carbon pricing policies could significantly reduce the total tax burden
- **Key factors:** trade volumes and emissions
- Adoption of EU default emission intensities would generate the highest total costs when including Scope 1 and Scope 2 emissions
- Costs for cement and aluminium are reduced, but still between 18% and 22% for cement and up to 25% for aluminium

Conclusions and Key Issues

- The EU CBAM could have **highly diversified impacts** depending on the adopted design, sectoral and emission scope (up to 1.2 €billion for Russia and 270 €million for South Africa in 2023)
- The CBAM is a **complex** policy tool and numerous issues need to be addressed:
- Use of EU or foreign **default emission intensities**
 - Should be product specific and change over time to reflect technology change
 - Problems for implementation related to data availability, especially for foreign countries
- Allow for process to **challenge carbon intensity default values**
 - Foreign producers could be granted the possibility to individually prove that they are cleaner
 - This could potentially reduce the tax burden imposed by the EU CBAM
- Allow for **crediting of existing policies** in non-EU countries
 - Which policies should be credited? ETS systems? Carbon taxes? Other environmental policies?
- How will CBAM revenues be used?

QUESTIONS?

THANK YOU FOR YOUR ATTENTION!