

Fossil Fuel Support to Industrial Users

WTO FFSR Initiative
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Dylan Bourny

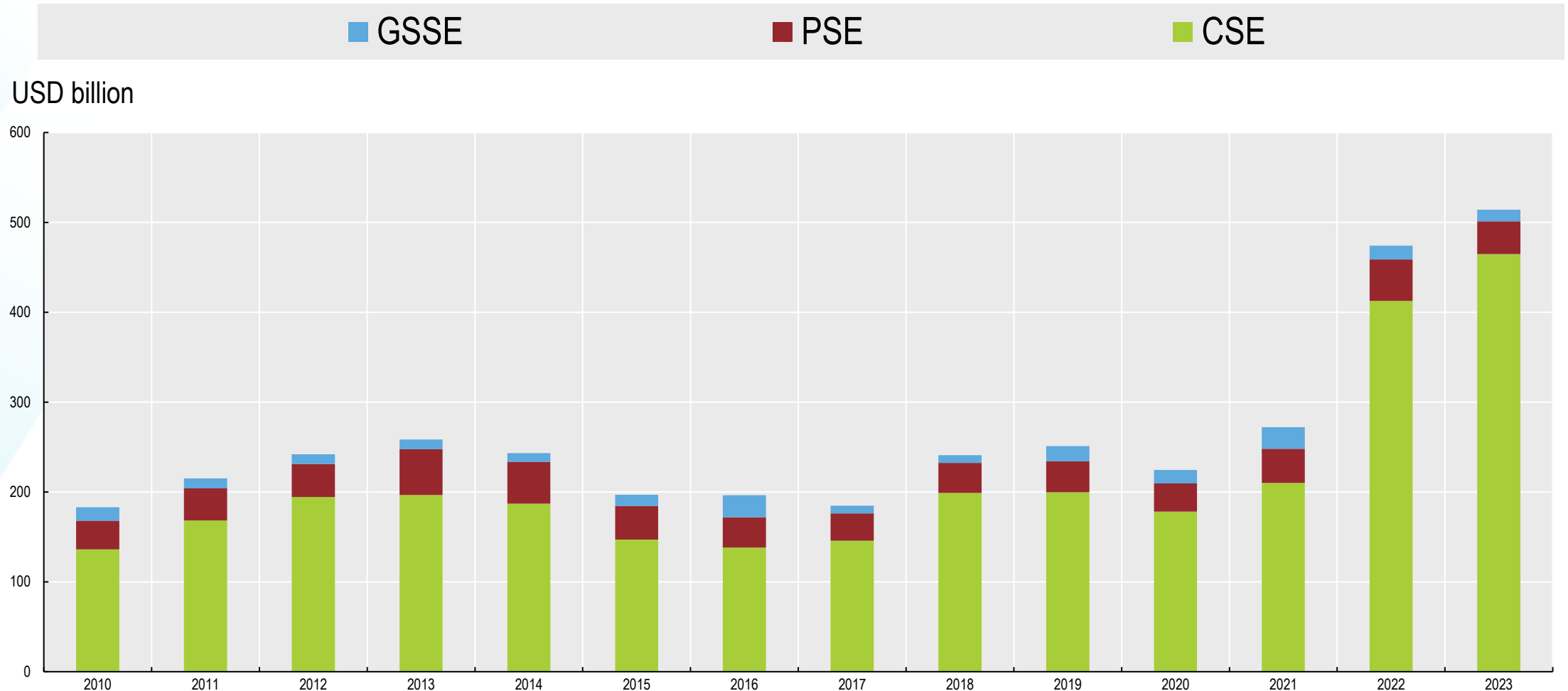


The OECD Inventory of support measures for fossil fuels

- The OECD Inventory identifies, documents, and estimates the fiscal cost of government support measures that encourage fossil-fuel production or consumption.
- It is based on a bottom-up approach that collects detailed information from official government sources (e.g. budget reports) for individual support measure for fossil fuels.
- The latest edition of the Inventory includes more than 1900 support measures in 51 OECD, G20, and EU Eastern Partnership economies.



Support for consumption accounts for most of the fiscal cost of support for fossil fuels

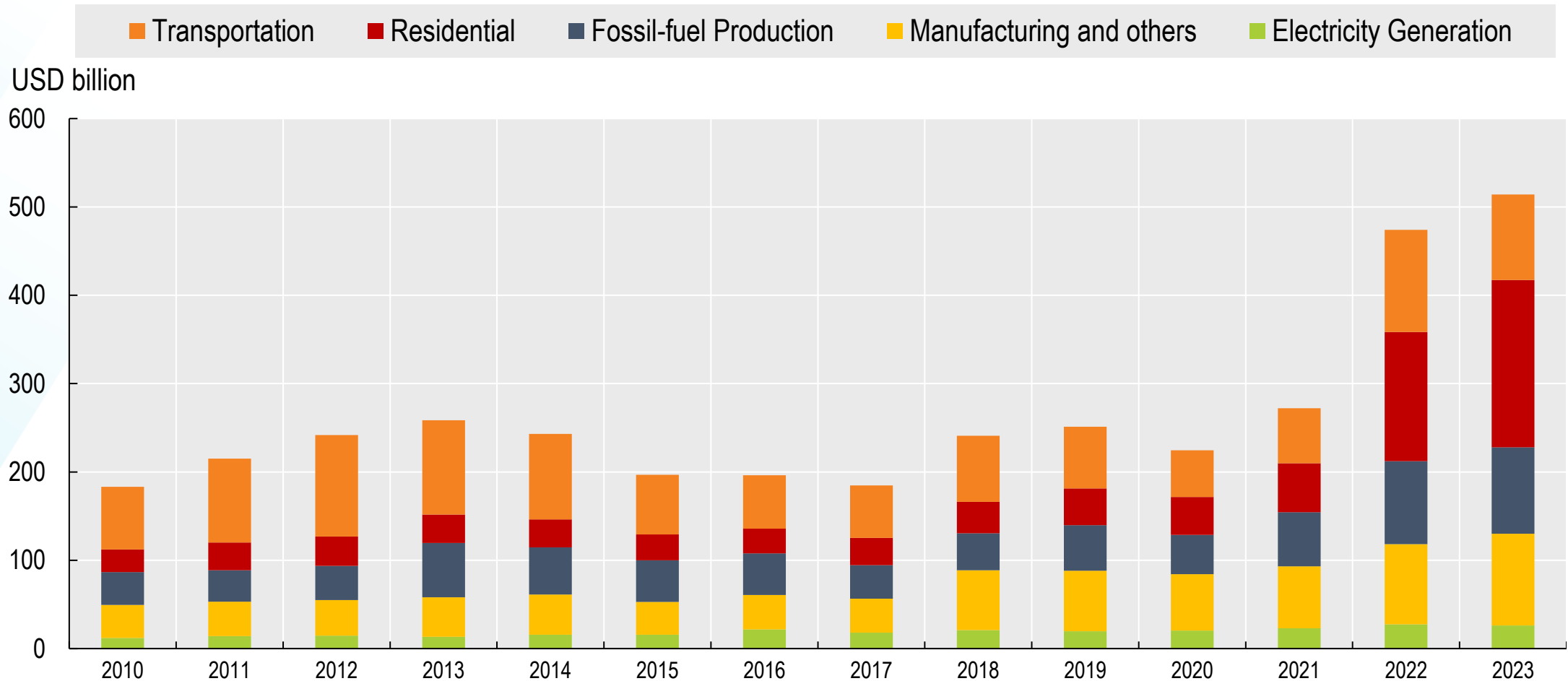


Source: OECD Inventory of support measures for fossil fuels

Restricted Use - À usage restreint



Support for residential use and manufacturing now represents the largest shares



Source: OECD Inventory of support measures for fossil fuels

Restricted Use - À usage restreint

The climate implications of government support in aluminium smelting and steelmaking

An Empirical Analysis

Dylan Bourny, Grégoire Garsous, and Donal Smith



What is the problem?

- The world needs to achieve net-zero emissions by 2050
- Firms must rapidly adopt new production methods
- But government support can either help or undermine the achievement of this goal



What is the problem?

Government support can have multiple implications for trade:

- Competition distortion: allowing less innovative, efficient or competitive companies to crowd out other firms ((OECD, 2017); (Evenett and Fritz, 2021))
- Investment decisions: links between government support and larger investments in fixed tangible assets (OECD, 2021)
- Trust undermining: lower trust in the global trading system and fuel anti-globalization sentiment (OECD, 2017)



What is the problem?

May also contribute to increase emissions, especially in energy-intensive sectors:

- Excess production: (inefficient) firms producing industrial output above market levels thereby generating excessive emissions
- Incentives removal: less incentives to adopt more environmentally friendly production methods (soft budget constraint phenomenon)



What do we do?

Explore empirically whether government support has contributed to increase emissions of GHGs in industrial sectors

Focus on aluminium smelting and steelmaking because:

- they are energy intensive (respectively 2% and 10% of global carbon emissions)
- they receive large amounts of government support (OECD, 2021)



Data & methodology



Data on government support

Two unique datasets:

1. Firm-level information on the amount of support that companies receive (OECD, 2021)
 - Government grants: lump-sum cash transfers provided by governments and disclosed by firms in their financial statements
 - Tax concessions: reductions on income tax offered by governments and disclosed by firms in their financial statements
 - Below market borrowings: government support provided through more favourable borrowing conditions than the ones prevailing on financial markets and offered by state banks or other government-related financial entities



Data on firm-level emissions

2. Plant-level information on emissions and production (CRU group)
 - Excellent coverage of the aluminium and steel production units
 - Built-up for like-for-like comparisons by considering emissions associated with specific standardized products (i.e. primary aluminium and crude steel)
 - Boundaries to measure the emissions arising along the manufacturing processes of these products are standardized (scope 1, 2 and 3)

Matching firms across these two datasets to analyze the relationship between government support and firms' environmental performance



Final dataset

Sample of firms covering a large share of global output:

- Steelmaking industry:
 - 37 firms (309 steelmills)
 - Approximately 68% of global production
- Aluminium industry:
 - 31 firms (281 aluminium smelters)
 - Approximately 57% of global production

Time coverage: 2006-2021



Empirical methodology

Common practice of decomposing changes in emissions into three drivers (Grossman and Krueger, 1991) (Copeland and Taylor, 1994)(Copeland and Taylor, 2004) (Levinson, 2009) (Levinson, 2015)):

- A scale effect, which measures changes in emissions if output was simply scaled up, holding constant the composition among production units and their emissions intensities (i.e. their technology)
- A composition effect, which measures changes in emissions due to changes in the composition among production units (i.e. changes in production units' market shares), holding constant their emissions intensities and the scale of the sector
- A technique effect, which measures changes in emissions due to changes in production unit emissions intensities, holding constant their output and composition

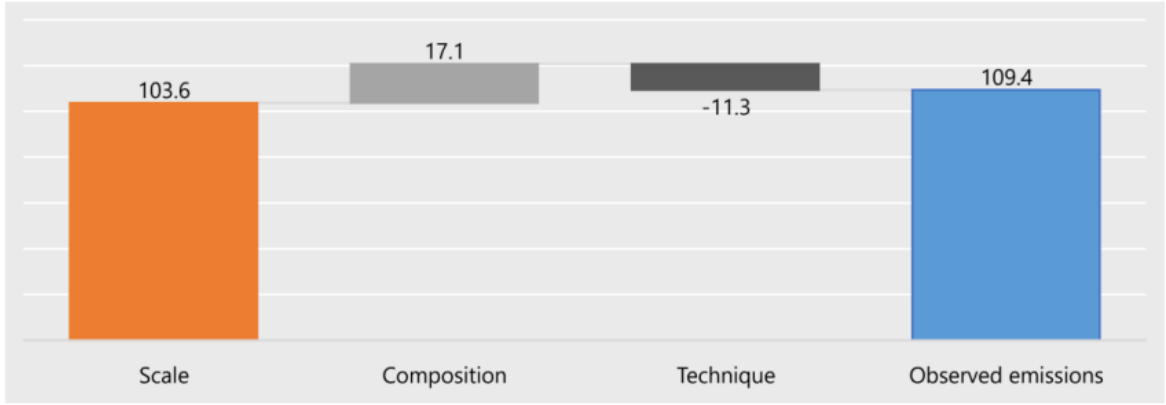
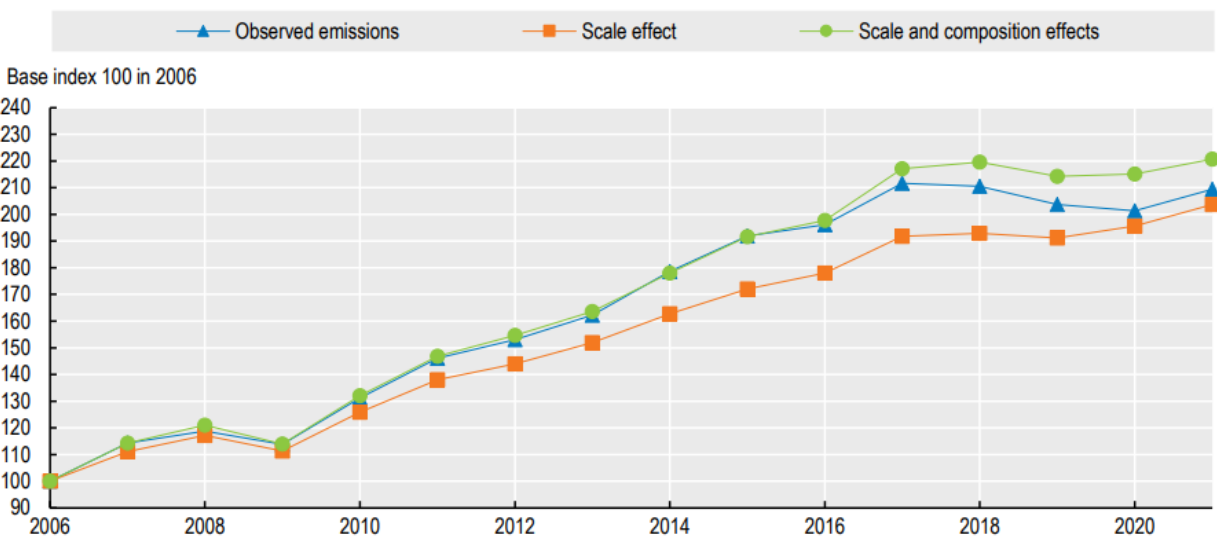


Main findings

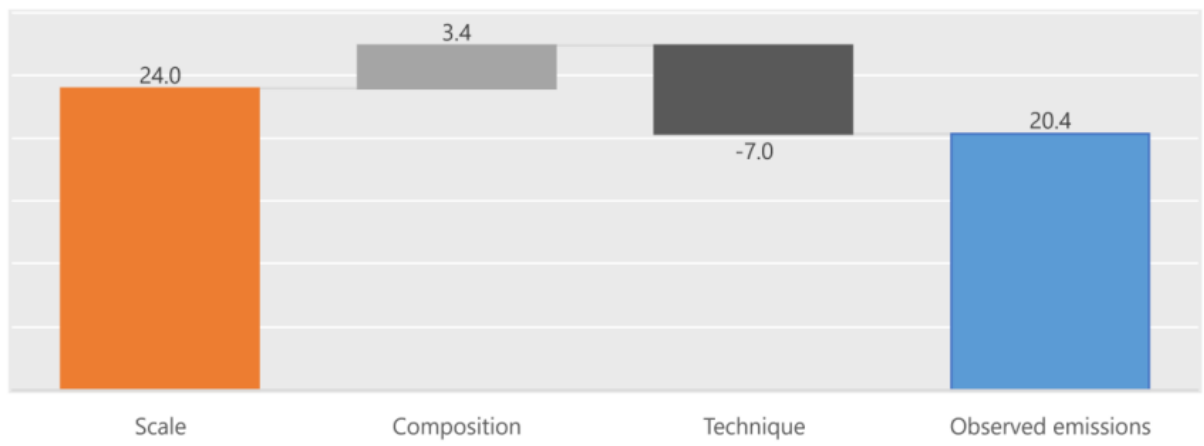
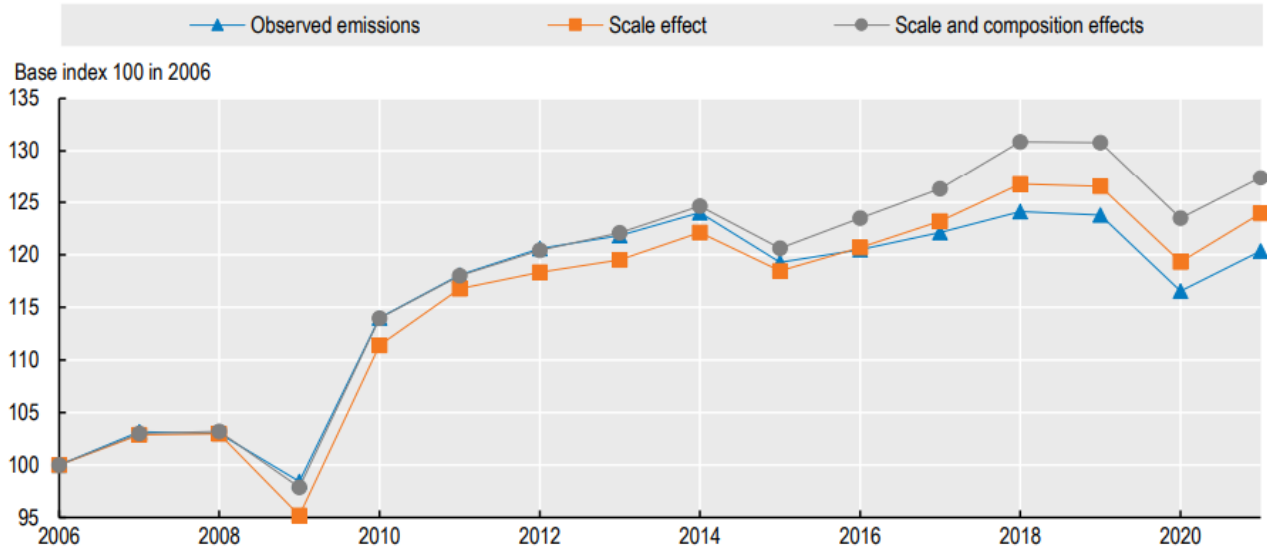


Increased emissions are driven mostly by the scale effect

Aluminium



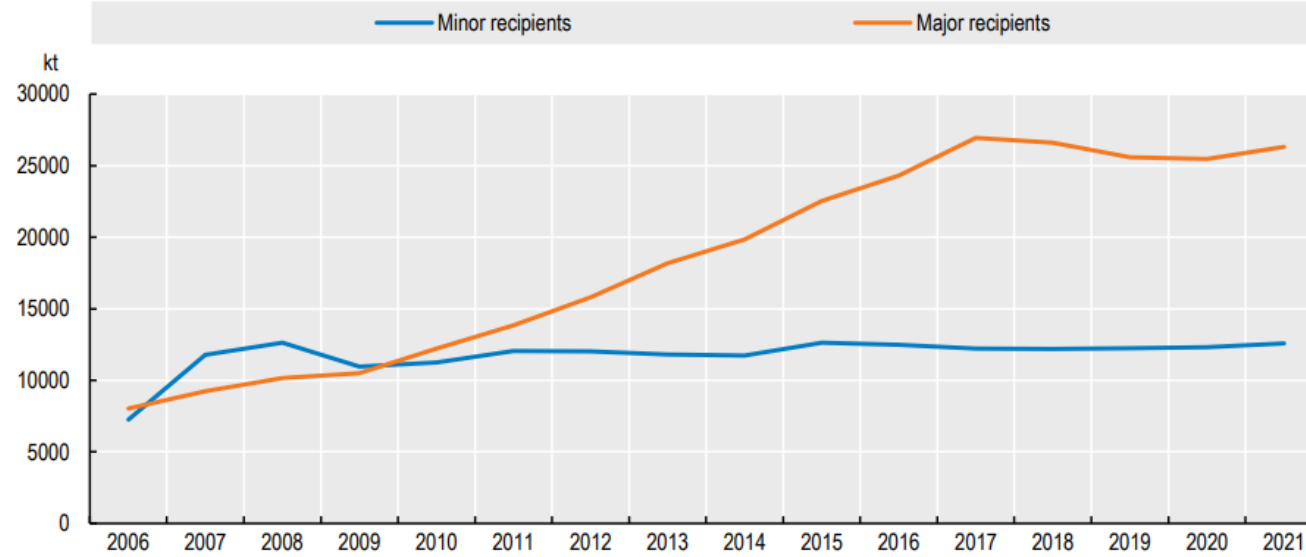
Steel



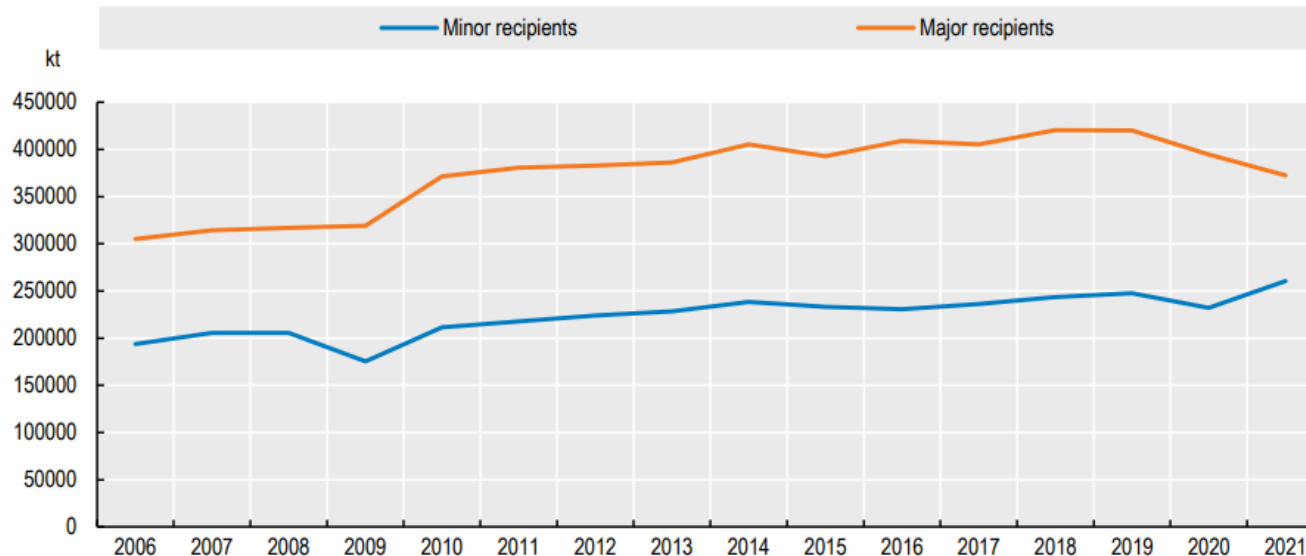


Government support helps drive production, which drives emissions

Aluminium

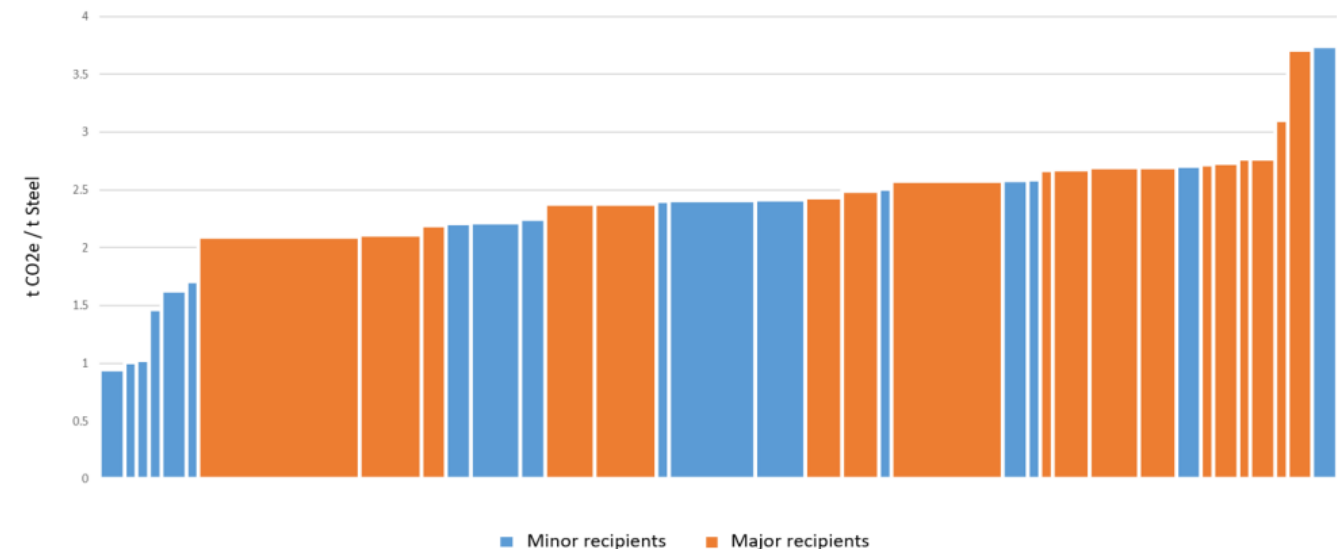


Steel





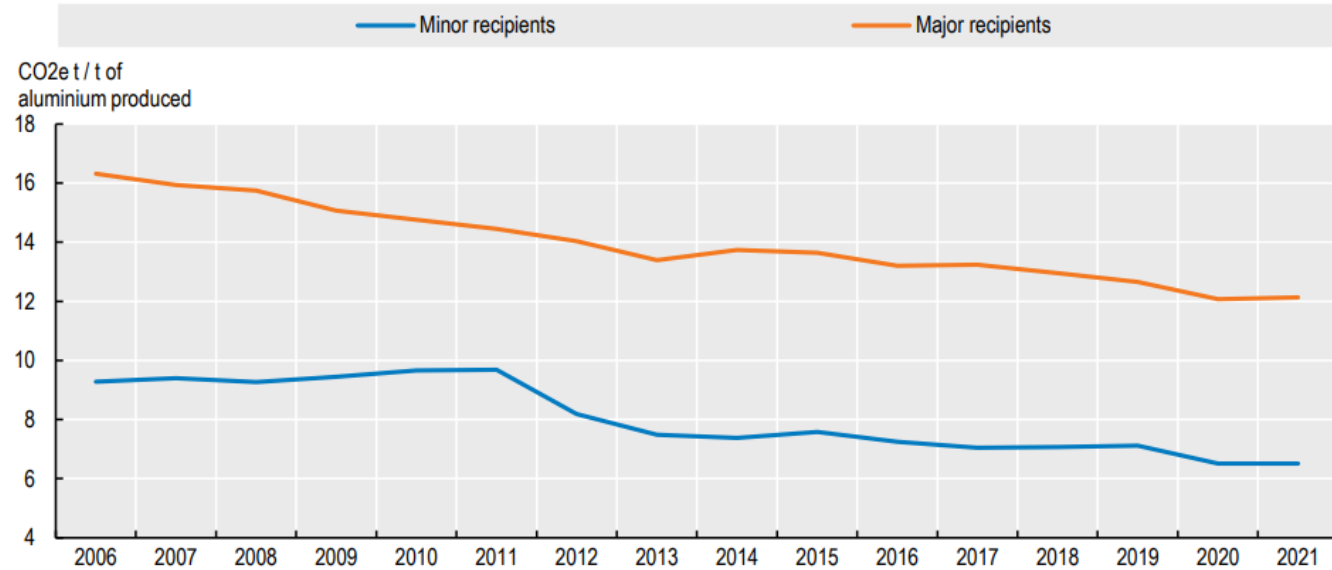
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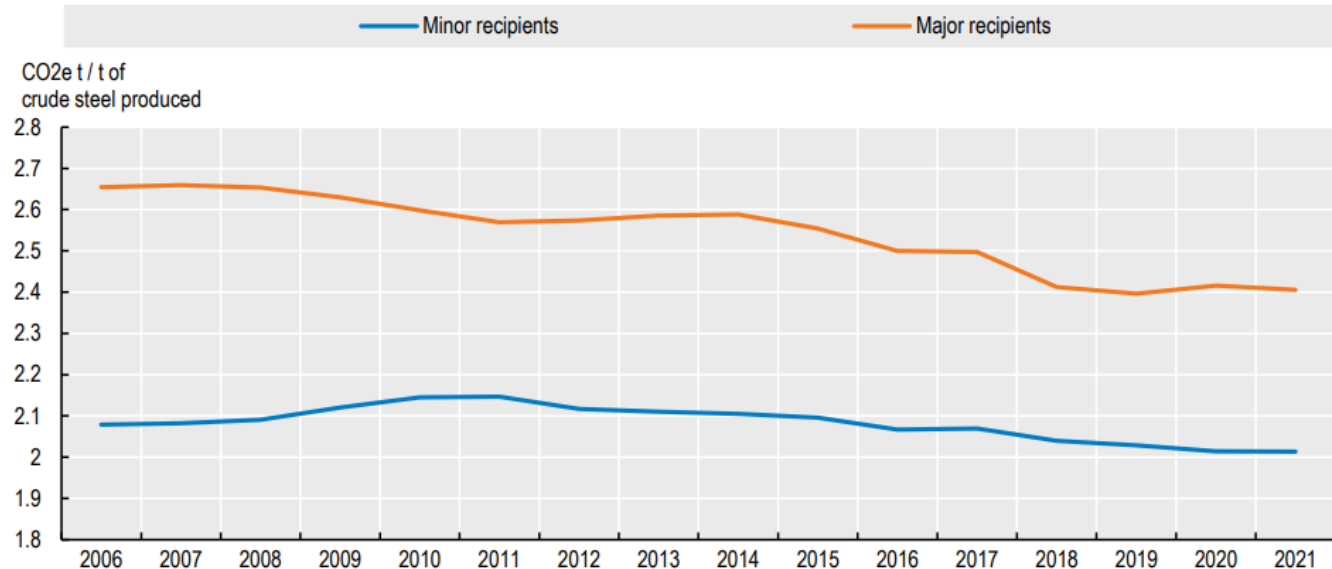


Government support does not drive the technique effect which reduces total emissions

Aluminium



Steel

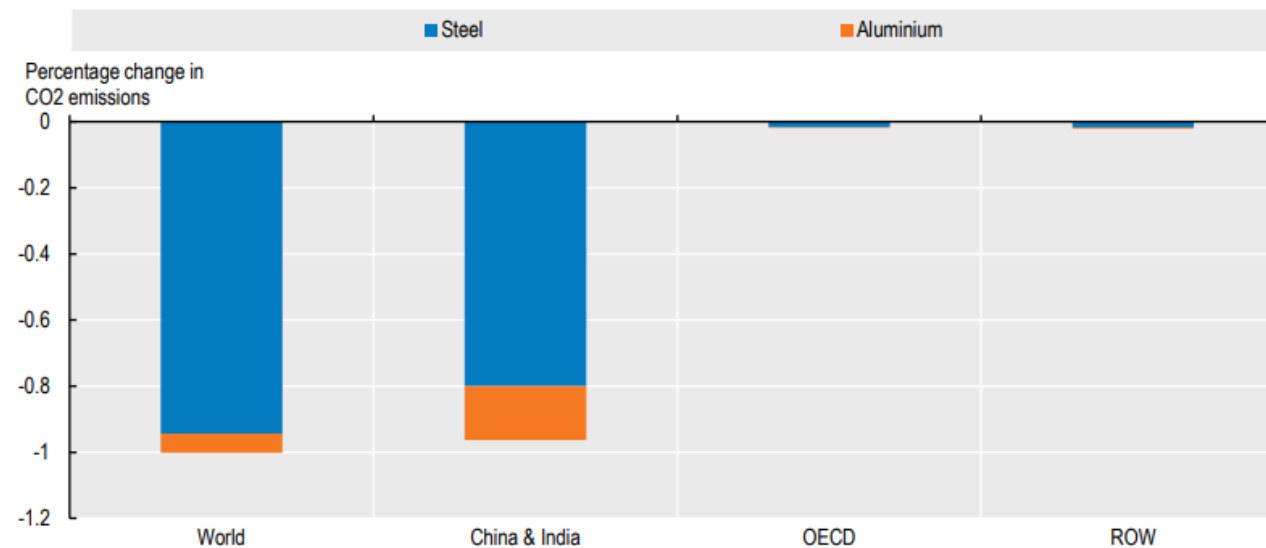
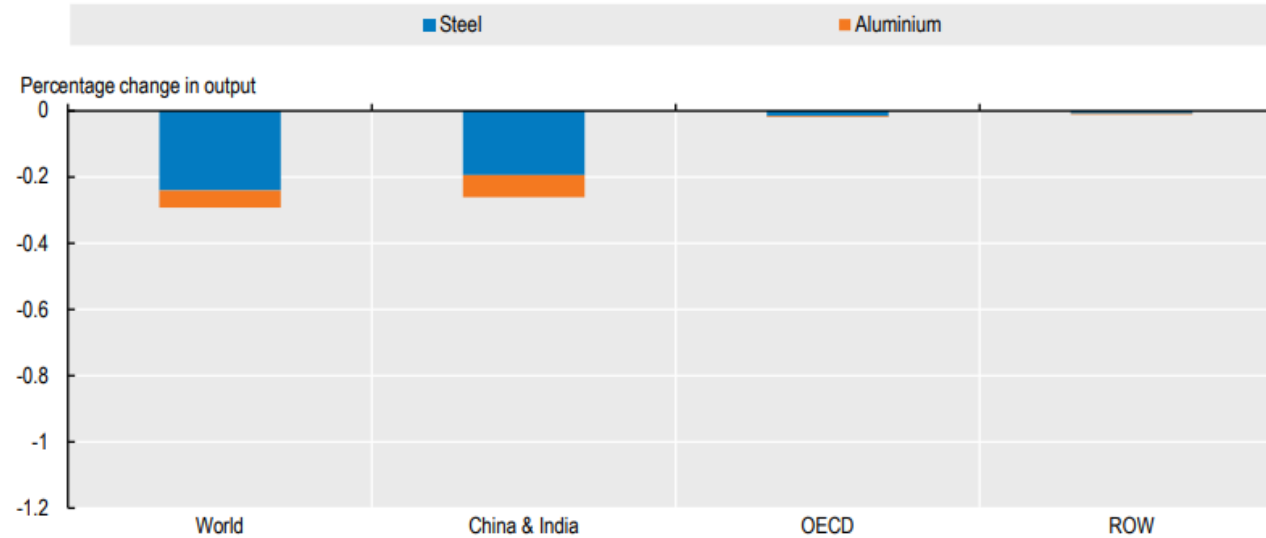




What if government support is removed?



Simulations: what if we remove all government support?





Diving into results

China and India drive emissions reduction because:

- the amount of government support removed is large and it applies to a large production base
- they are characterised by high emission intensities in aluminium smelting and steelmaking activities

Removing government support might be a cost-effective strategy to reduce emissions:

- emissions reduction is twice as large as the emissions reduction observed in 2020 resulting from COVID-19 restrictions
- frees up scarce public resources for alternative uses



Concluding remarks



Summing up

- Government support...
... contributes to increased emissions from aluminium and steelmaking activities:
 - mainly through an increase in production output
 - but also by moving production from more to less efficient plants... does not play a role in the development of techniques enabling enhanced environmental performance.
- If government support is removed, global output will decrease but emissions will decrease much more.
- Reforming government support provided to emissions-intensive industries therefore appears to be one opportunity to both strengthen the global trading system and to support a (global) low carbon transition



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