



Carbon Leakage and Competitiveness

Overview of the Issues and Options

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Carbon Leakage and Competitiveness

- 1. What are we talking about?**
- 2. How does Carbon Leakage happen?**
- 3. (Why) is it a problem?**
- 4. Which sectors are at risk of carbon leakage?**
- 5. What are the options to prevent leakage?**
- 6. How will this evolve in the future?**

Carbon Leakage: What are we talking about?



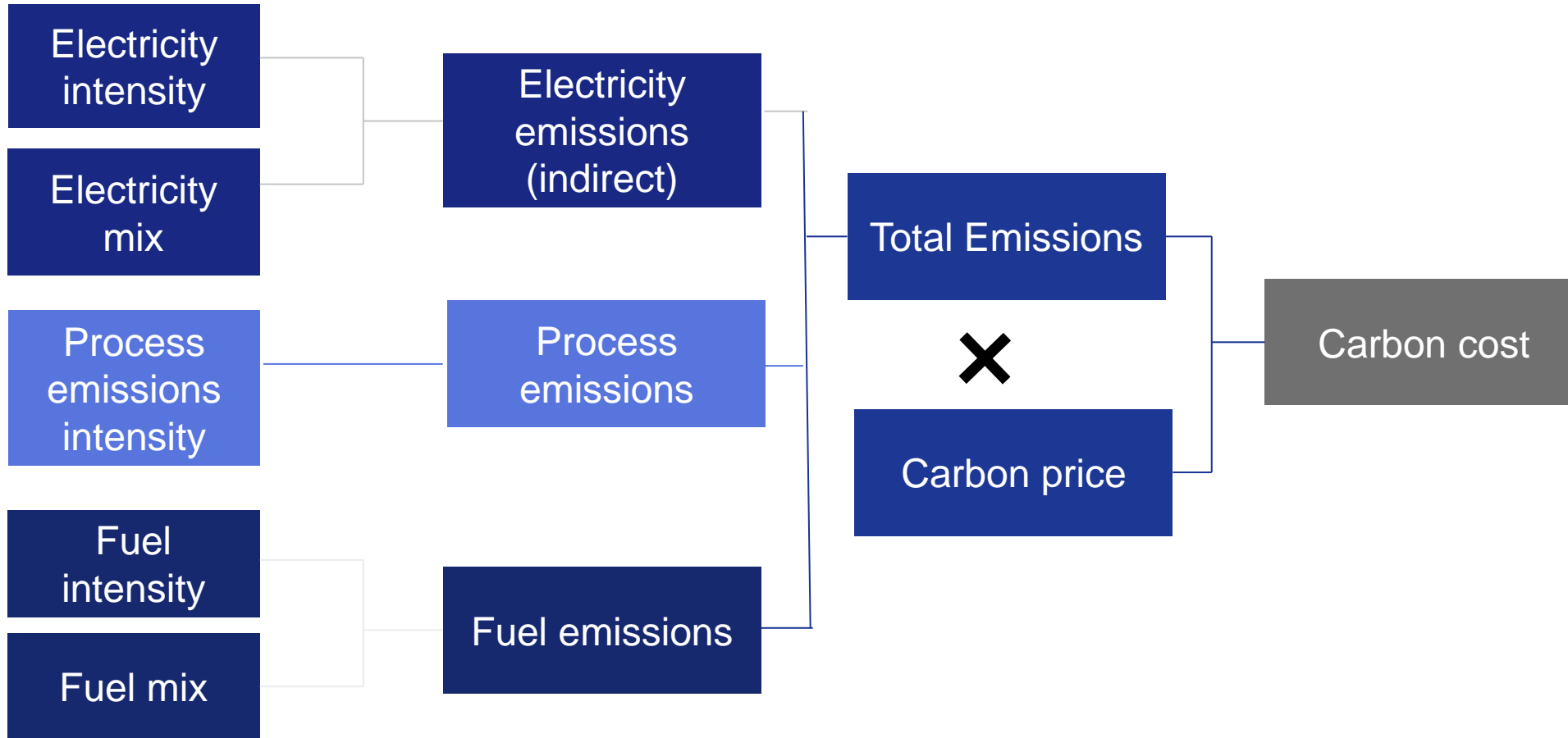
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Carbon leakage: what are we talking about?

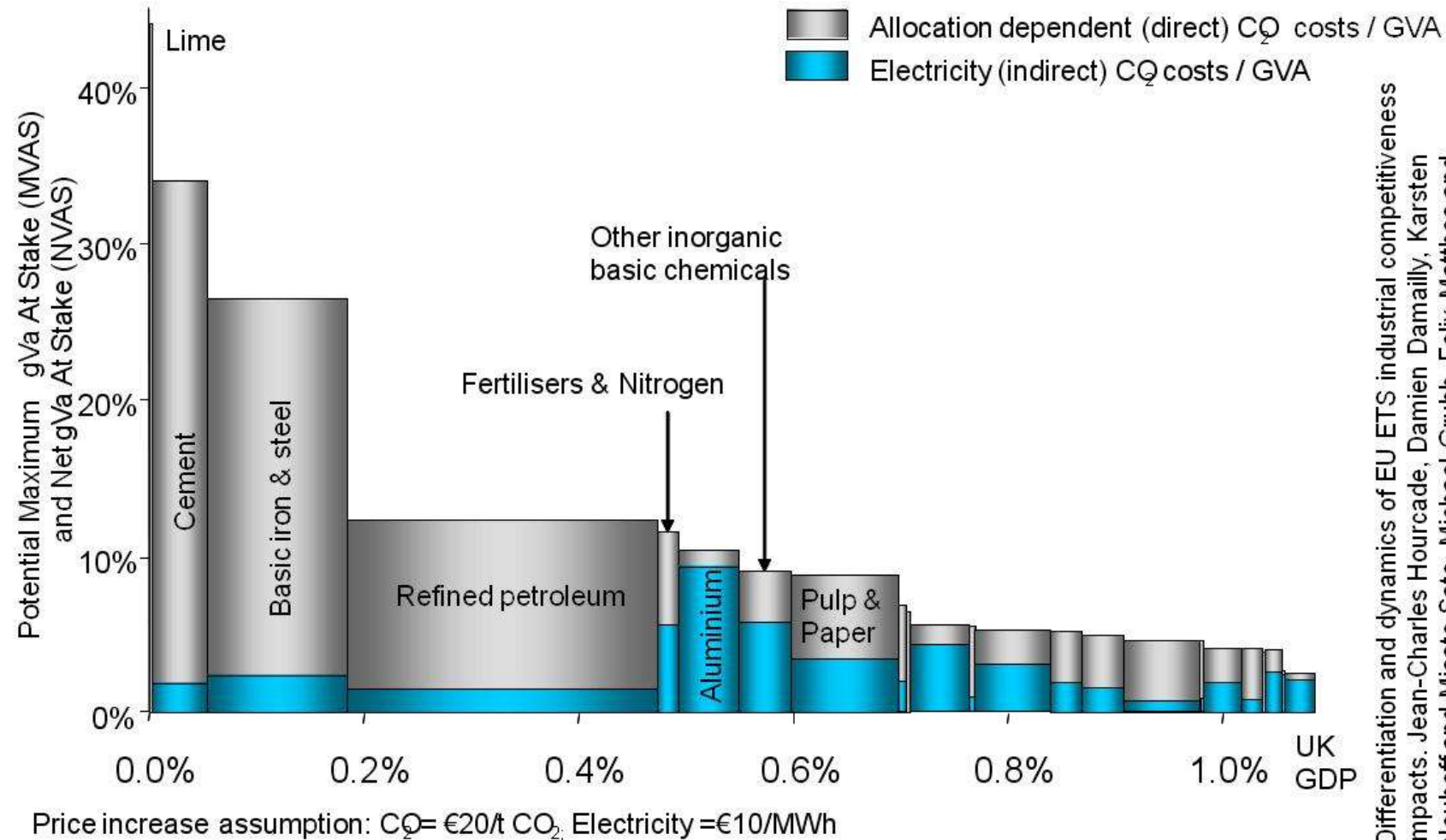
Common usage: a reduction of GHG emissions achieved by **shifting GHG-emitting activities to another country**, driven by **differences in carbon regulation**

- ▶ IPCC: “phenomena whereby the **reduction in emissions** (relative to a baseline) in a jurisdiction / sector associated with the **implementation of mitigation policy** is offset to some degree by an **increase outside the jurisdiction / sector** through **induced changes** in consumption, production, prices, land use and / or trade across the jurisdictions / sectors”
- ▶ IEA: leakage rate is “the ratio of emissions increase from a specific sector outside the country (as a result of a policy affecting that sector in the country) over the emission reductions in the sector (again, as a result of the environmental policy)”

ETS adds to the production cost of industry

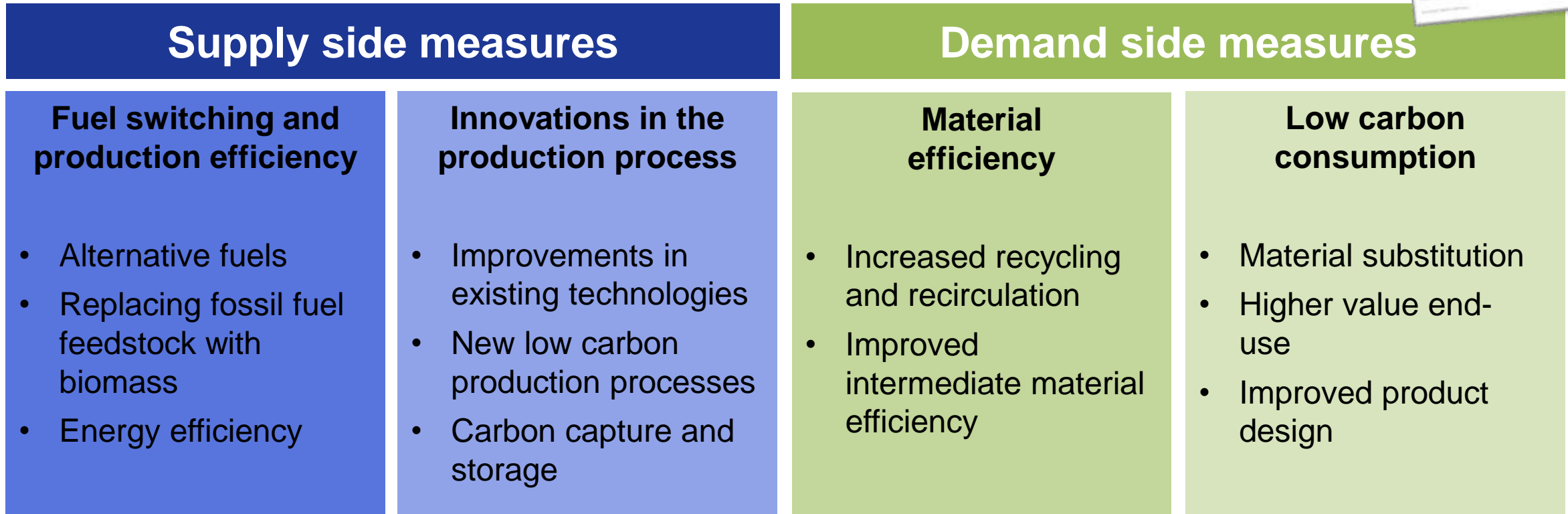


Cost burden from ETS: analysis for the UK



Differentiation and dynamics of EU ETS industrial competitiveness impacts. Jean-Charles Hourcade, Damien Damailly, Karsten Neuhoff and Misato Sato, Michael Grubb, Felix Matthes and Verena Graichen

Reminder: why it is good to include industry in a carbon pricing system



Carbon pricing provides incentives along both supply and demand sides

Source: ICAP (2020). Carbon Leakage and Deep Decarbonisation

Forms and Channels of Carbon Leakage



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Carbon leakage or no carbon leakage?

Give your answer at mentimeter: head to menti.com and enter the voting code 6796 0963 or follow the QR link below:



Channels of carbon Leakage

Operational leakage: the “Relocation” of production from existing production capacities, could take the form of:

- ▶ Physical relocation of plants – very rare in real life;
- ▶ Relocation of production volumes between installations operated by the same company;
- ▶ Change in market shares.

Investment leakage: investing more to expand capacities in regions with a weaker carbon constraint

Leakage through energy resource markets

Carbon Leakage: (Why) is it a problem?



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Carbon leakage: why is it a problem?

In principle:

- ▶ **Effectiveness of climate policy suffers:** reduction at home is (partly) offset through increases abroad
- ▶ **Efficiency of climate policy suffers:** Production could become more polluting overall
- ▶ **Political impact:**
 - **Unfair distortion of competition** as a concern to domestic producers;
 - **Loss of investment, income and jobs** in the domestic economy – politically toxic mix;
 - Seen to **penalise frontrunners**: we would like to do more, but then we'll be pay for it by losing business.

Carbon leakage: is it actually a problem?

- ▶ Evidence is mixed:
 - **model-based ex-ante studies** mostly find a significant leakage risk – but
 - **empirical ex-post studies** (econometric or anecdotal) show little or no conclusive evidence of actual leakage
- ▶ Possible reasons:
 - Carbon leakage is hard to **separate from the baseline**, reinforces trends happening anyway for various reasons.
 - Most ex-post studies were conducted at times / in situations of **low carbon prices**.
 - All systems include **provisions** to reduce the risk of carbon leakage.
 - It might still be **too early** to detect long run effects.

Carbon Leakage: Who is exposed?

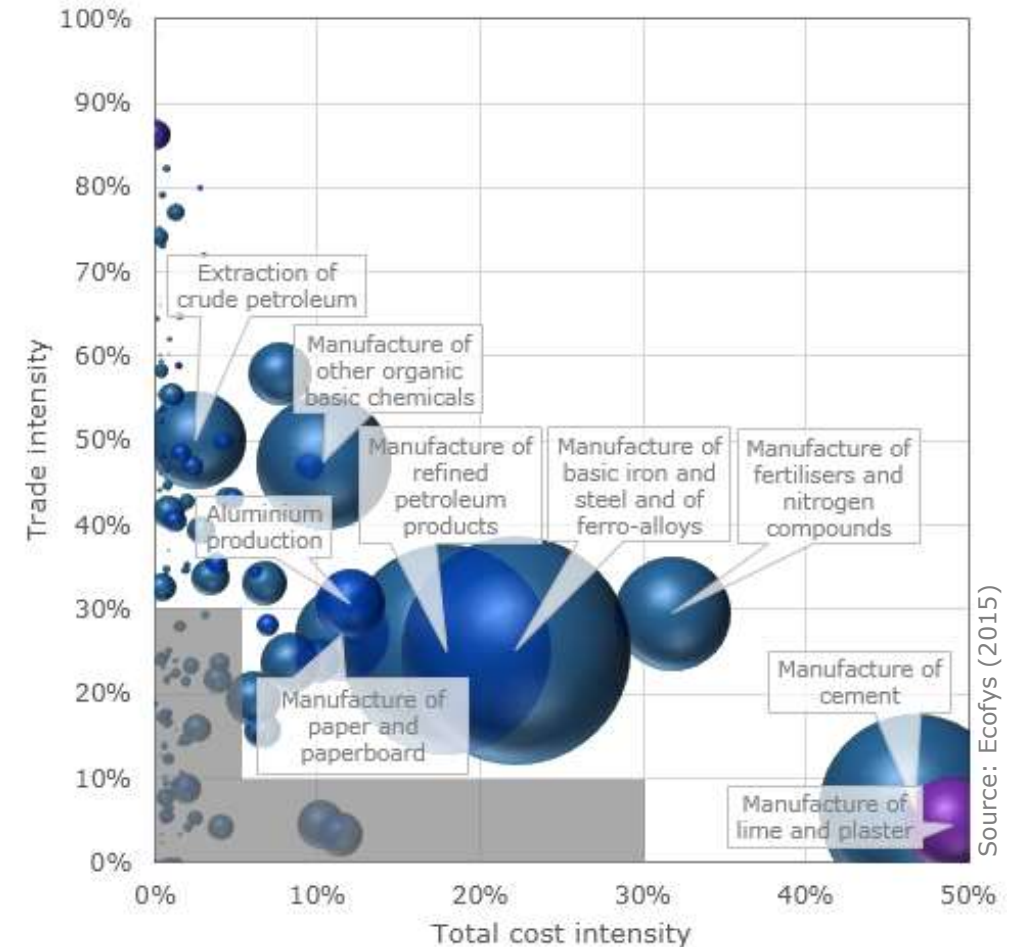


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Which sectors are exposed?

Common understanding: Carbon leakage risk as a combination of

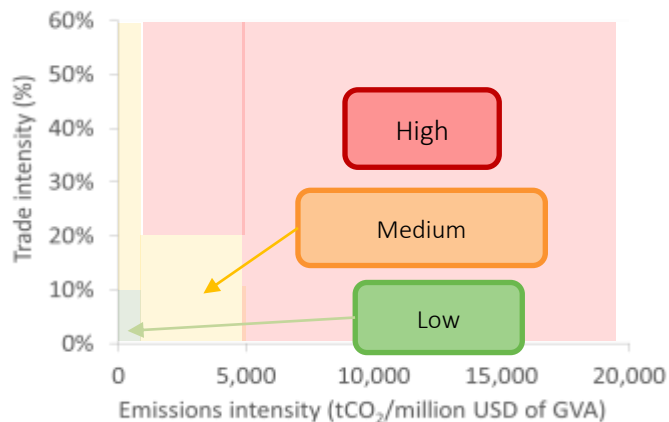
- ▶ **Cost burden** resulting from of the carbon price (emission intensity)
- ▶ Ability to **pass the carbon cost on to customers** / exposure to international competition (proxy: trade intensity)



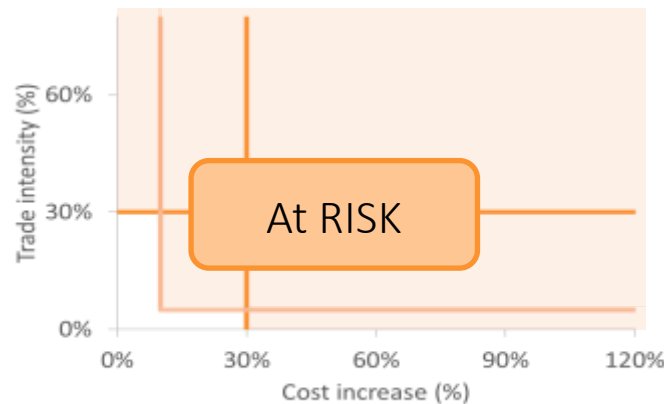
Current criteria for leakage risk assessments

1. **Emission Intensity** – does the carbon price significantly increase productions costs in the sector?
2. **Trade intensity** – does international competition prevent business from passing on their costs to consumers?

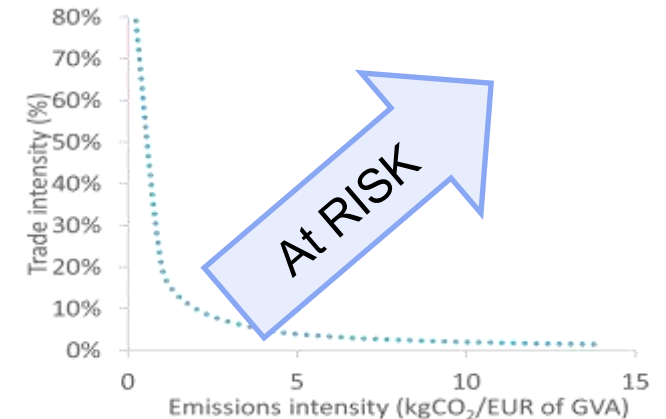
Combination of the two based on tiers or binary assessment:



California \ Quebec



EU ETS Phase III



EU ETS Phase IV

Source: Vivid economics, 2018

Policy Responses to Carbon Leakage



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What policy options are there to tackle the risk of carbon leakage?

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Tackling Carbon Leakage: Policy Responses

General aim is to level the playing field: reduce the impact of C pricing on domestic producers, put a burden on foreign producers, or achieve convergence

Preferential allocation rules for domestic producers at risk of carbon leakage (ex ante free allocation or ex-post rebates / output-based allocation)

Adjustments at the border: tariffs and equivalent burdens or rebates

Convergence of mitigation efforts

- ▶ Through a global or sectoral agreement on comparable mitigation efforts;
- ▶ Convergence of carbon prices through linking of carbon markets, carbon clubs

Consumption charges on emission-intensive goods, irrespective of origin

The EU's CBAM



Carbon Border Adjustment Mechanism (CBAM) puts a price on the **carbon emitted during the production of carbon intensive goods** that enter the EU (upstream).

EU importers **buy carbon certificates** corresponding to the carbon price that would have been paid, had the goods been produced under the EU ETS.

If a non-EU producer can show that they have already paid a price for the carbon used in the production of the imported goods in a third country, the **corresponding cost can be fully deducted** for the EU importer.

The EU's CBAM



CBAM initially applies only to a selected products at high risk of carbon leakage: **iron and steel, cement, fertiliser, aluminium and electricity generation**. Plans to expand the scope to chemicals and plastics, and by 2030 to all products covered by the EU ETS.

Carbon Border Adjustment Mechanism will be phased in gradually: Initial reporting period in operation since October 2023, reports due by 31 January 2024. Importers need to surrender allowances as of 2027 (for 2026 emissions).

Exporters can report the actual (verified) emissions or resort to default values (to be published).

Surrender obligation for importers adjusted corresponding to the phase-out of free allocation in the EU ETS (gradual until 2034).

Carbon Leakage: a Longer-Term View



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Carbon Leakage and Competitiveness – the Long Run

Short-run interest: preserve existing production facilities (and industry jobs, related value chains) in their **current locations**, with **current technologies**

Long-run goal:

- ▶ Facilitate the necessary structural change towards a climate-neutral economy (including a resilient, low-carbon industry)
- ▶ Incentivise transformative investment, promote breakthrough innovation, develop leadership for low- or zero-carbon technologies

Tides are turning with regard to competitiveness...



Countries anywhere have **NDCs** to achieve, many also **neutrality goals**

Competitiveness is increasingly about **leadership in low-C technologies**

CBAM proliferation, prospect of more widespread use of **carbon prices**



Major **(re-)investment needs** for a future-proof, resilient industry

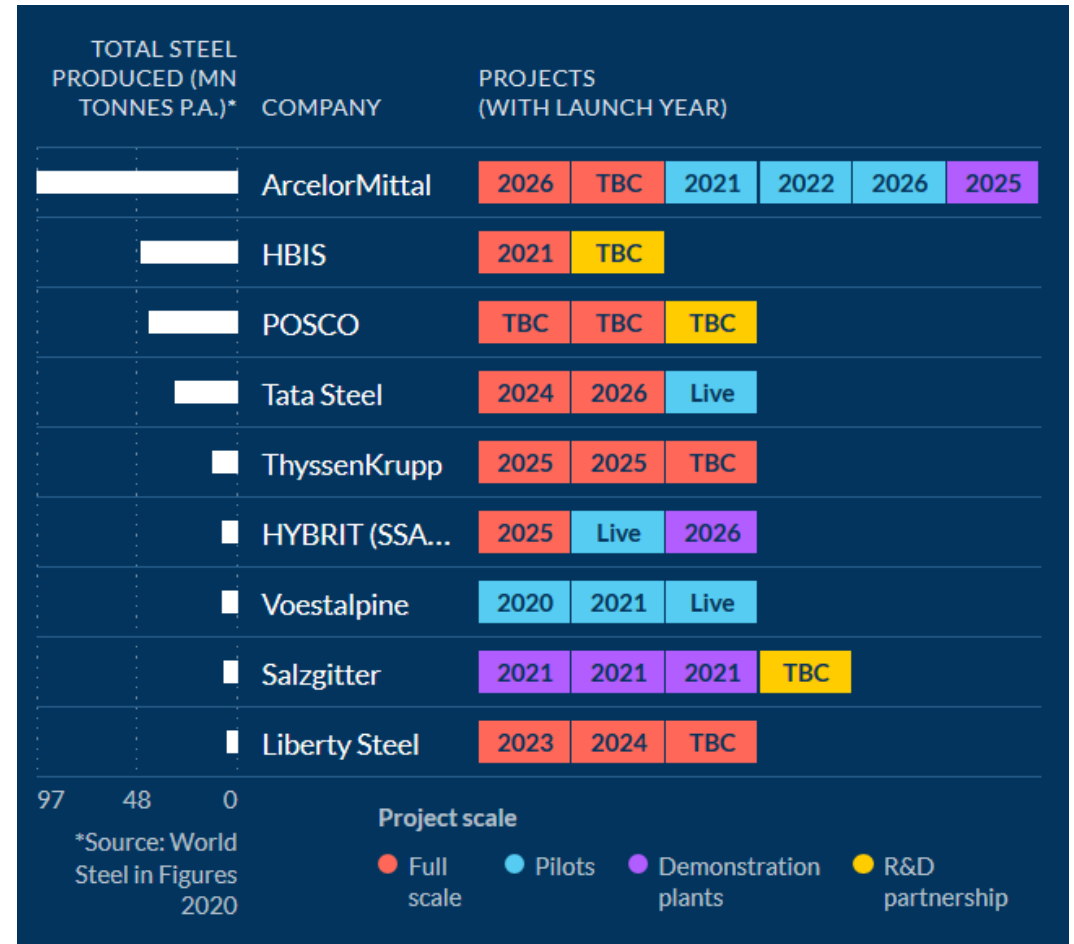
In the medium term: allowance budget **insufficient** to continue free allocation

New tools to **incentivise investment** into low-carbon processes (CCfD)

So - pick your battle carefully

Top five global steel producers have committed to be climate-neutral by 2050

- ▶ ArcelorMittal, 97 Mt steel (2019)
- ▶ Baowu Group, 95 Mt
- ▶ Nippon Steel, 52 Mt
- ▶ HBIS, 47 Mt
- ▶ POSCO, 43 Mt



Thanks! Any more Questions?

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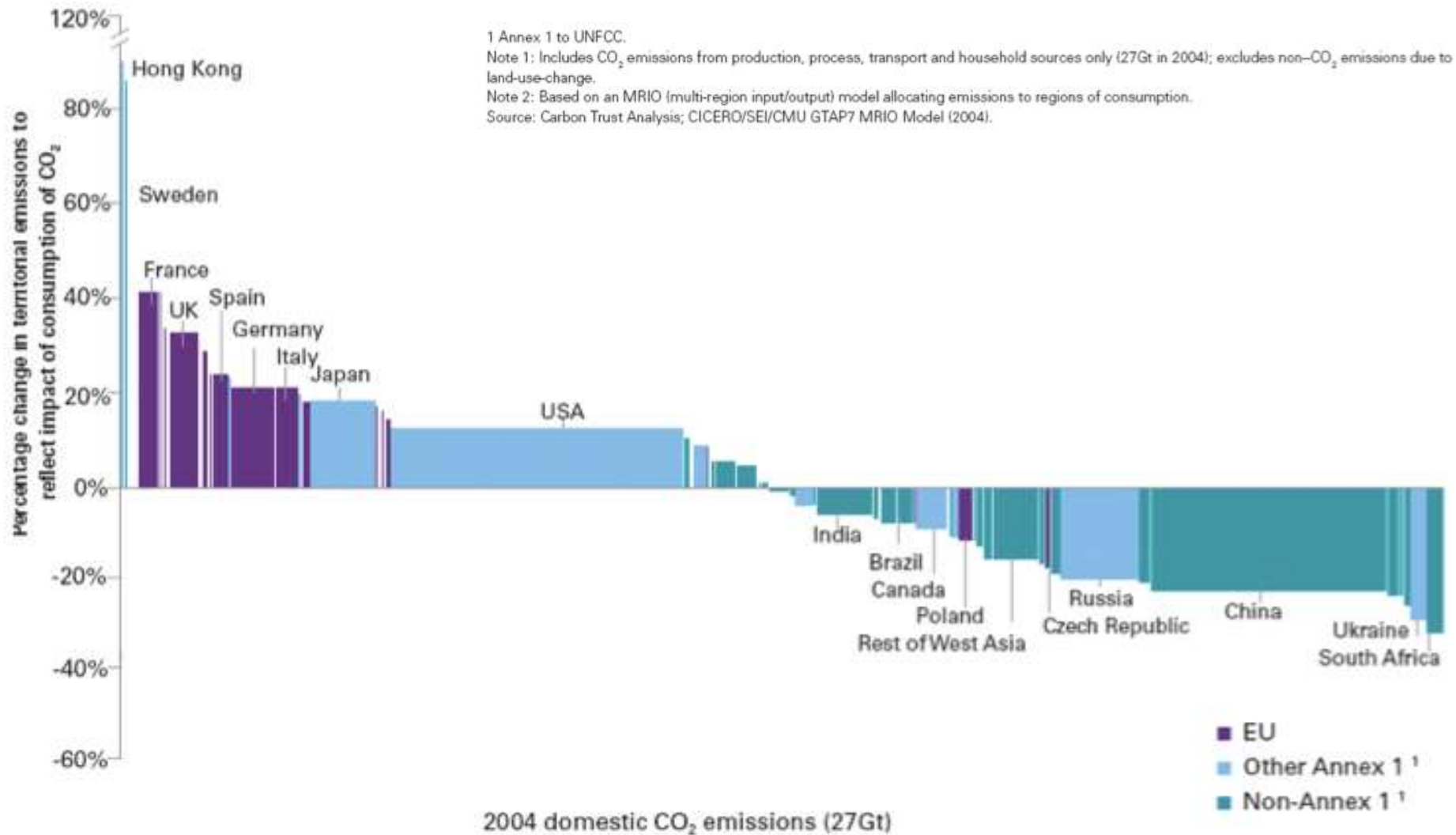
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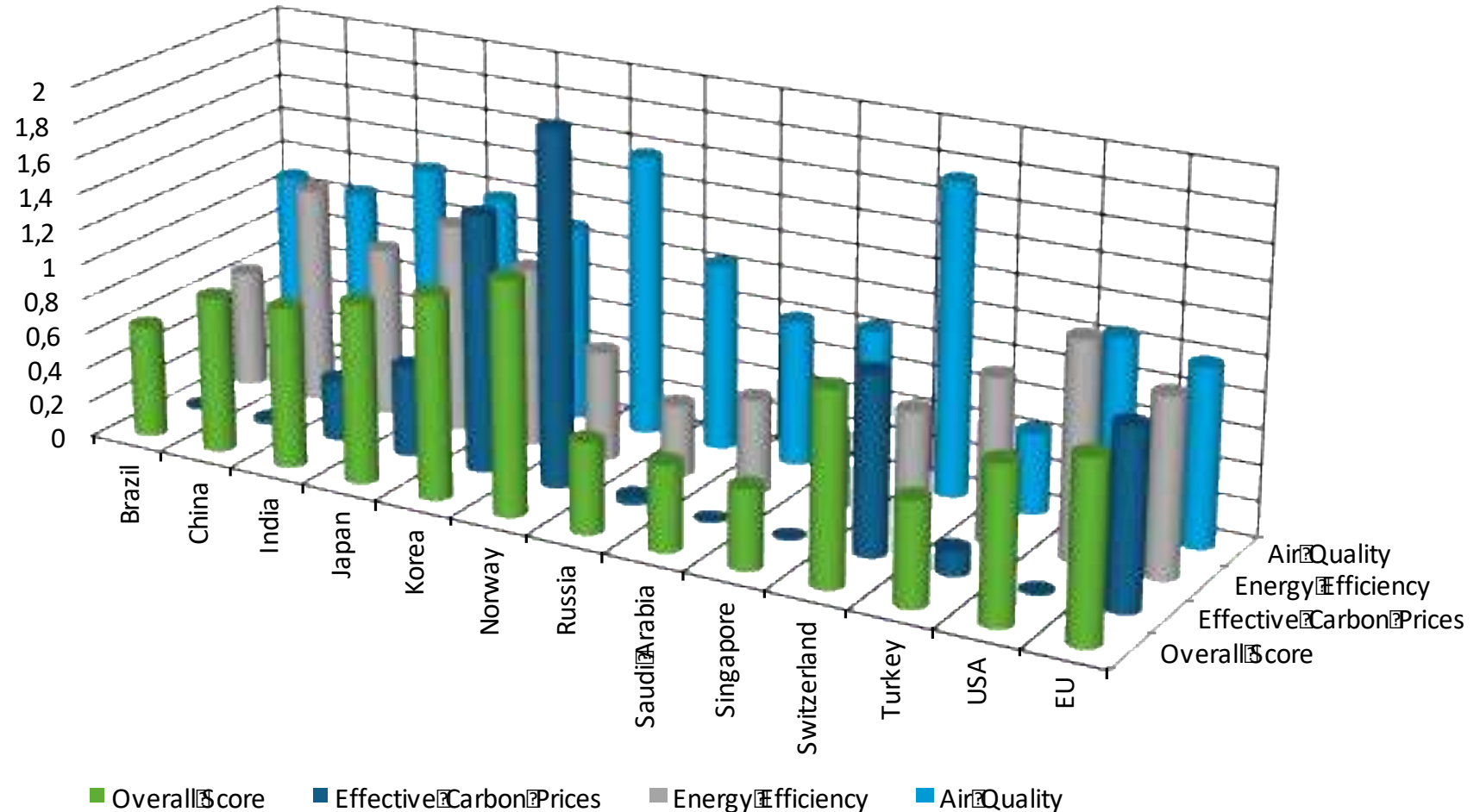
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The flipside of carbon leakage: Imported emissions



How unlevel is the playing field, actually?

Comparison of regulatory standards in the EU and its 12 main trading partners: **clear differences in the carbon price, more nuanced if air quality and energy efficiency policies are considered**



What does Carbon Leakage look like?



Free ex-ante allocation as a means of leakage protection

Approach: Offset the carbon costs to specific firms through free ex-ante allocation (Grandparenting, Benchmark with fixed output)

Advantages

- ▶ Attractive way of compensating industry, relatively simple
- ▶ Maintains some abatement incentives by selling surplus allowances

Disadvantages

- ▶ Penalizes early action
- ▶ Repeated grandparenting may introduce distortions and gaming
- ▶ Pays a premium simply for staying in the market – not linked to investment

Free ex-ante allocation as a means of leakage protection

Approach: Free allocation based on sector benchmarks x actual firm output (allowances allocated are adjusted if output changes)

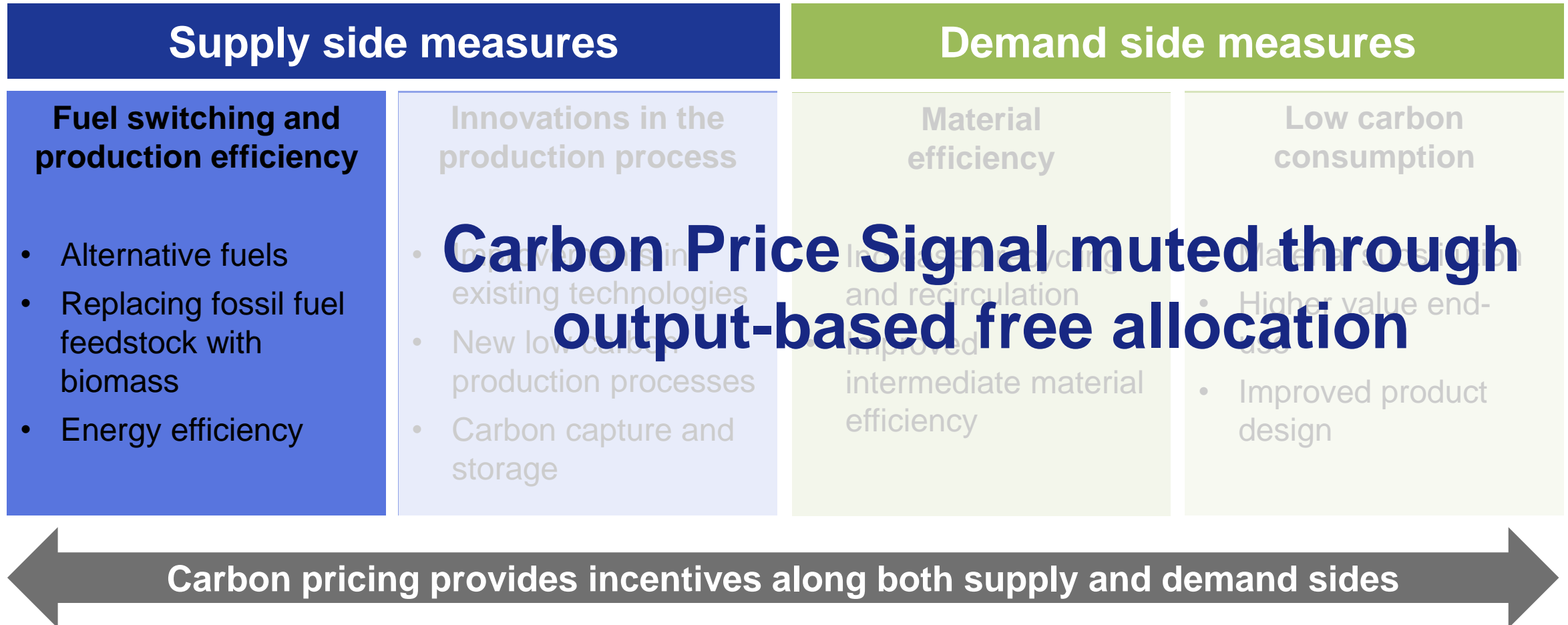
Advantages

- ▶ Maintains incentives to abate emissions intensity, rewards early action
- ▶ Targets leakage risks effectively

Disadvantages

- ▶ Strong incentive to maintain / increase production levels
- ▶ Data-intensive and potential for lobbying
- ▶ Challenges for declining cap

Keeping industry in an ETS makes sense – mobilise abatement potential along the value chain



Border carbon adjustments (BCAs)

What are they?

Tariffs on imported energy-intensive goods to eliminate differences in carbon costs.

Adjustment at the border based on embedded emissions (typically BM)

Treatment of exports, consequences for free allocation remains uncertain

What is the rationale?

Maintains leakage protections for vulnerable sectors.

Level playing field that allows for cost pass-through and incentives for abatement.

Generates revenue that can be used for technology/innovation