



Preliminary Study on the Impact of the EU Carbon Border Adjustment Mechanism (CBAM) on Thailand, India, and Vietnam

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ERCST

Roundtable on
Climate Change and
Sustainable Transition

Why Are We Discussing BCAs Now?

- Paris Agreement →
 - Continued asymmetry of climate efforts - NDC nationally determined
 - Paris Agreement objectives
 - Carbon neutrality
 - 1.5/2⁰ C
- European Green Deal
 - EU Climate Law and carbon neutrality
 - Increase 2030 level of ambition from -40% to -55%
 - EUA prices --- from EUR 5 to EUR 50

EU Carbon Border Adjustment Mechanism (CBAM) - What Do We Know So Far?

- **Political Guidelines of 16 July 2019:**

*‘To complement this work, and to ensure our companies can compete on a level playing field, I will introduce a **Carbon Border Tax** to avoid carbon leakage. This should be **fully compliant** with World Trade Organization rules. It will start with a number of **selected sectors** and be **gradually extended**.’*



Europe's Border Carbon Adjustment: State of Play

- December 2019: **European Council** endorses work, states that 'facilities in third countries need to adhere to the highest environmental ... standards'
- March 2020: **Inception Impact Assessment Roadmap** and public consultation on the elements of the CBAM feedback IA; 219 submissions
- May 2020: European Commission mentions CBAM revenue ('€5 to €14 billion per year') as potential source for EU Recovery Plan (**'Next Generation EU'**)
- Confirmed by the historical **EUCO** in July 2020 (EU budget 2021-2027, Recovery Package) – BCA introduction by 2023
- **Public consultation completed** October 2020
- **European Parliament** own initiative March 2021
- Next steps: Impact assessment and **EC proposal** on CBAM expected mid July 2021

Study objectives and scope

- Estimate the costs that an EU Carbon Border Adjustment Mechanism (CBAM) could potentially impose – as additional tax burden – on certain exporters of products to the EU market
- The analysis considers different design options of the CBAM instrument
- Elements considered:
 - Trade coverage: **Exports** to the EU27
 - Geographical scope: **Thailand, Vietnam, India**
 - Sectoral scope: **Cement, aluminium, steel (all countries), refined petroleum products, pulp & paper, plastics in primary form (some countries)**
 - Emissions scope: **Scope 1** (direct only) and **Scope 1 & 2** (direct and indirect from electricity and heat)

General approach, and assumptions

Approach:

- Calculation estimates the additional burden incurred by exporters to the EU27 of selected products in 2023 (assumed to be the first year of CBAM in force)
- CBAM cost calculation is based on **3 components**:
 1. The **carbon intensity** value of a product (expressed in **tCO₂/t of product**): The additional cost imposed on exports assumed to be based on a default carbon intensity value e.g. the average carbon intensity of EU producers, or of the producers in the exporting countries.
 2. The **volume (tons) of exported products**: Exports quantity (tons) in 2023 assumed unchanged compared to 2017-2019 annual average.
 3. The **carbon price** (EUR/t CO₂): The level of adjustment (EUR/tCO₂) would mirror the price of emissions allowances under the EU ETS

Scenarios (1)

- Six scenarios (see next slide) that reflect possible CBAM design
- Based on options for 2 CBAM design elements:
 1. CO2 intensity (t CO2 emissions/ton of product)
 - 1a. Exporting country-specific average (nonEU CO2intensity),
 - 1b. EU average (EU CO2intensity),
 - 1c. Differential between average intensity in the exporting country and the EU (Δ CO2intensity).
 2. Crediting of foreign climate policy:
 - 2a. Yes - CBAM will credit policies in exporting countries entailing a carbon price (Δ CO2 price);
 - 2b. No - the full EU carbon price will apply to exports (EUACO2price)
- For each of the six scenarios, results presented for two cases:
 - I. CBAM will account for direct emissions only (Scope 1)
 - II. CBAM will account for direct emissions (Scope 1) & indirect emissions from electricity and heat (Scope 2)

Scenarios (2)

No foreign carbon price crediting

With foreign carbon price crediting

Scenario	Approach to calculating CBAM	Explanatory notes
(1)	$EUA_{CO_2 price} * EU_{CO_2 intensity}$	<ul style="list-style-type: none"> Carbon price for imports to EU equals price of EU ETS allowances ($EUA_{CO_2 price}$) Exporters emissions determined based on average CO₂ intensity of EU producers ($EU_{CO_2 intensity}$)
(2)	$EUA_{CO_2 price} * nonEU_{CO_2 intensity}$	<ul style="list-style-type: none"> Carbon price for imports to EU equals price of EU ETS allowances ($EUA_{CO_2 price}$) Exporters emissions determined based on average CO₂ intensity in exporting countries ($nonEU_{CO_2 intensity}$)
(3)	$EUA_{CO_2 price} * \Delta_{CO_2 intensity}$	<ul style="list-style-type: none"> Carbon price for imports to EU equals price of EU ETS allowances ($EUA_{CO_2 price}$) Exporters pay for the part of average CO₂ intensity in exporting countries in excess to the average EU CO₂ intensity ($\Delta_{CO_2 intensity}$)
(4)	$\Delta_{CO_2 price} * EU_{CO_2 intensity}$	<ul style="list-style-type: none"> Crediting for foreign carbon pricing policies (carbon tax or ETS), carbon price for imports equals the difference between EU ETS allowance price and carbon prices in exporting countries ($\Delta_{CO_2 price}$) Exporters emissions determined based on average CO₂ intensity of EU producers ($EU_{CO_2 intensity}$)
(5)	$\Delta_{CO_2 price} * nonEU_{CO_2 intensity}$	<ul style="list-style-type: none"> Crediting for foreign carbon pricing policies (carbon tax or ETS), carbon price for imports equals the difference between EU ETS allowance price and carbon prices in exporting countries ($\Delta_{CO_2 price}$) Exporters embedded in imports determined based on the average CO₂ intensity in exporting countries ($nonEU_{CO_2 intensity}$)
(6)	$\Delta_{CO_2 price} * \Delta_{CO_2 intensity}$	<ul style="list-style-type: none"> Crediting for foreign carbon pricing policies (carbon tax or ETS), carbon price for imports equals the difference between EU ETS allowance price and carbon prices in exporting countries ($\Delta_{CO_2 price}$) Exporters pay for the part of average CO₂ intensity in exporting countries in excess to the average EU CO₂ intensity ($\Delta_{CO_2 intensity}$)

Steel - Thailand

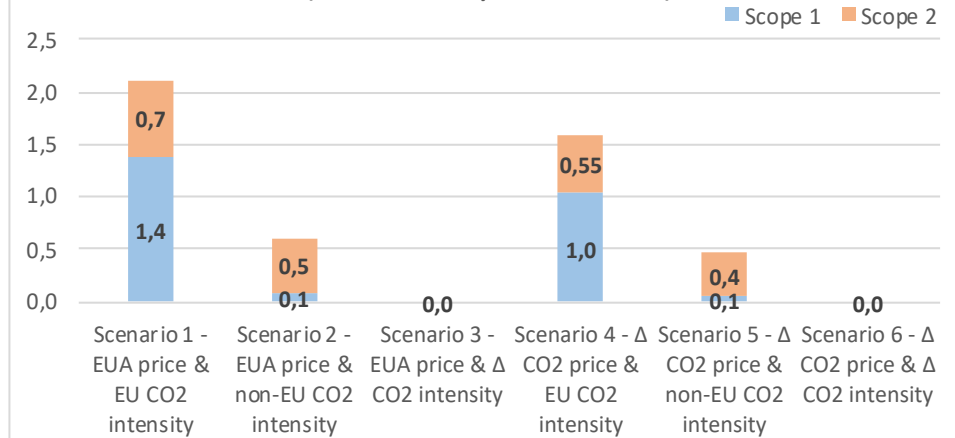
CO2 intensity - tCO2/ton of crude steel

	Direct emissions	Direct & indirect emissions
EU27	0,72	1,10
Thailand	0,04	0,32

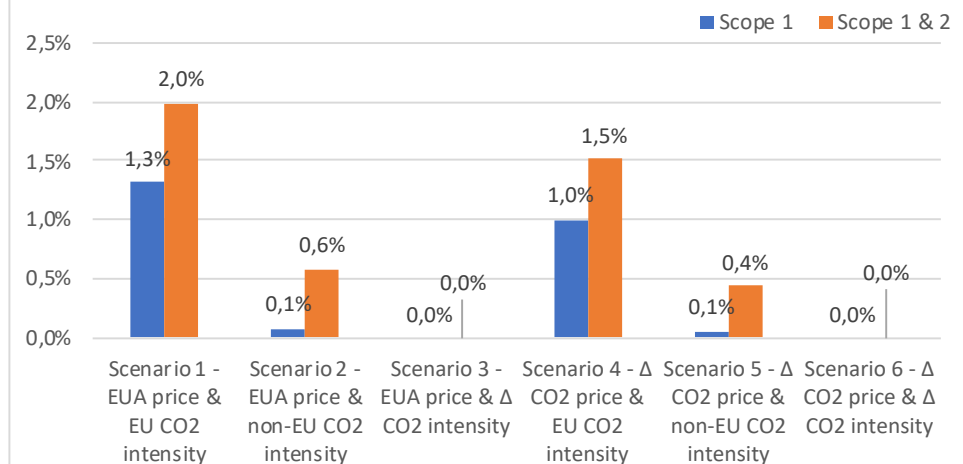
Notes:

- Emission intensities associated with specific production technologies (BF-BOF, scrap-based EAF) from IEA Iron and Steel Technology Roadmap (2020)
- Crude steel production mix by process technology in the exporting country based on World Steel Association data.

CBAM payments on steel exports from Thailand (€ million / year in 2023)



Competitiveness loss, steel exports from Thailand (CBAM payment / current prices)



Aluminium - India

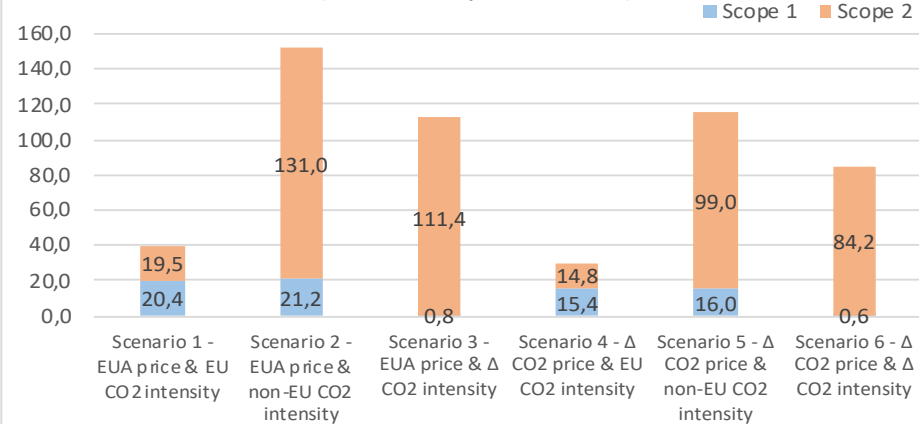
CO2 intensity - tCO2/ton of product

	Direct emissions	Direct & indirect emissions
EU27	1,8	3,5
India	1,9	13,3

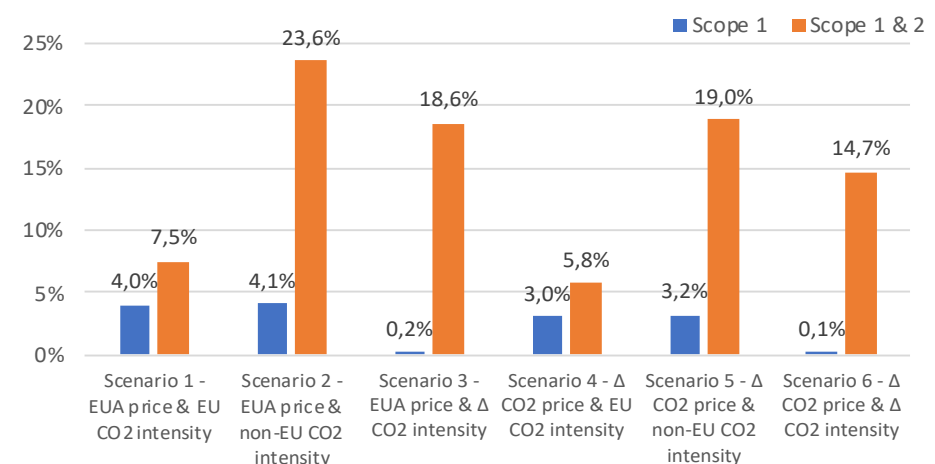
Notes:

- Direct CO2 intensity and electricity consumption based on data by International Aluminium Institute (IAI).
- Direct intensity covers fuel, and non-fuel CO2 emissions from: Anode/Paste, electrolysis.
- Regional granularity of IAI data. For IN, data concern 'Asia excluding China' region. For EU, data concern 'Europe' (=EU28+EFTA)

CBAM payments on aluminium exports from India
(€ million / year in 2023)



Competitiveness loss, aluminium exports from India
(CBAM payment / current prices)

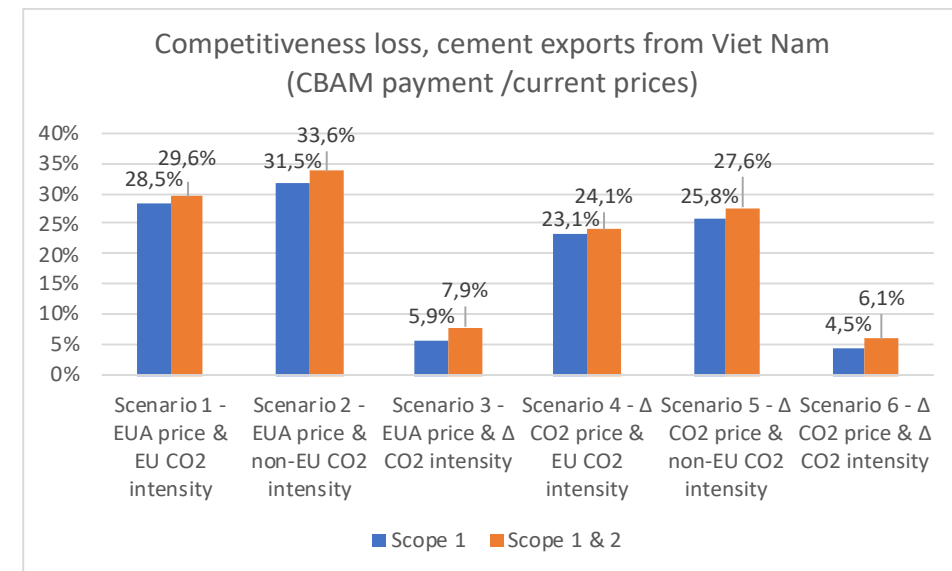
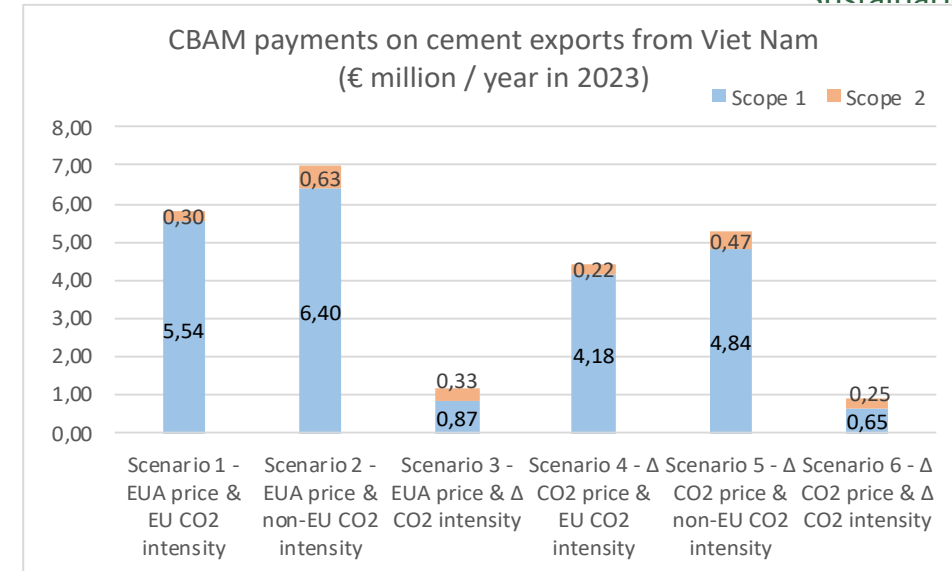


Cement - Vietnam

	CO2 intensity - tCO2/ton of product	
	Direct emissions	Direct & indirect emissions
EU27	0,63	0,66
Vietnam	0,73	0,80

Notes:

- EU: Direct CO2 intensity and electricity intensity sourced from the Getting the Numbers Right (GNR) database managed by the Global Cement and Concrete Association.
- Vietnam: Direct CO2 intensity and electricity intensity sourced from an analysis of the emissions of Vietnam' cement industry (Nordic Partnership Initiative)

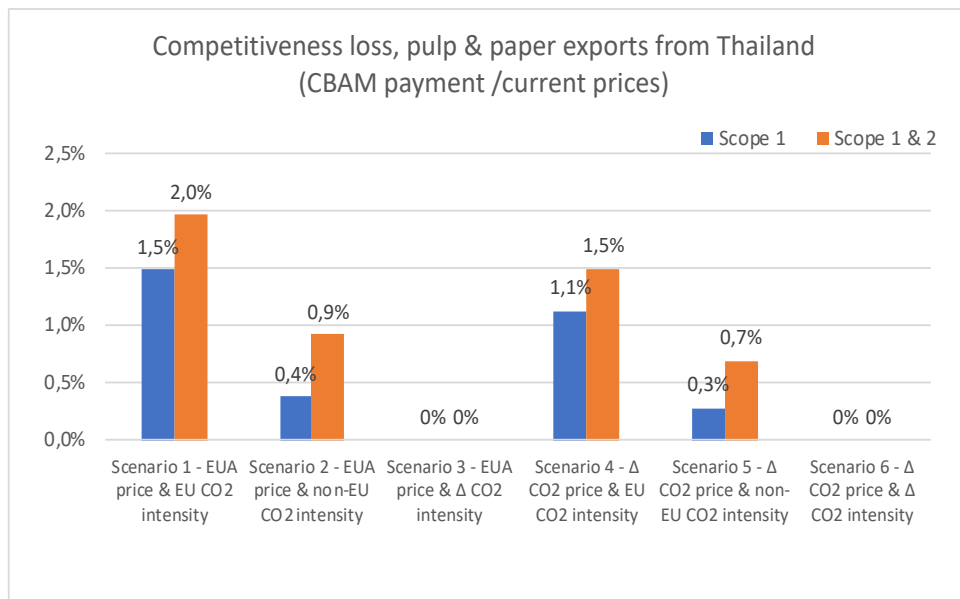
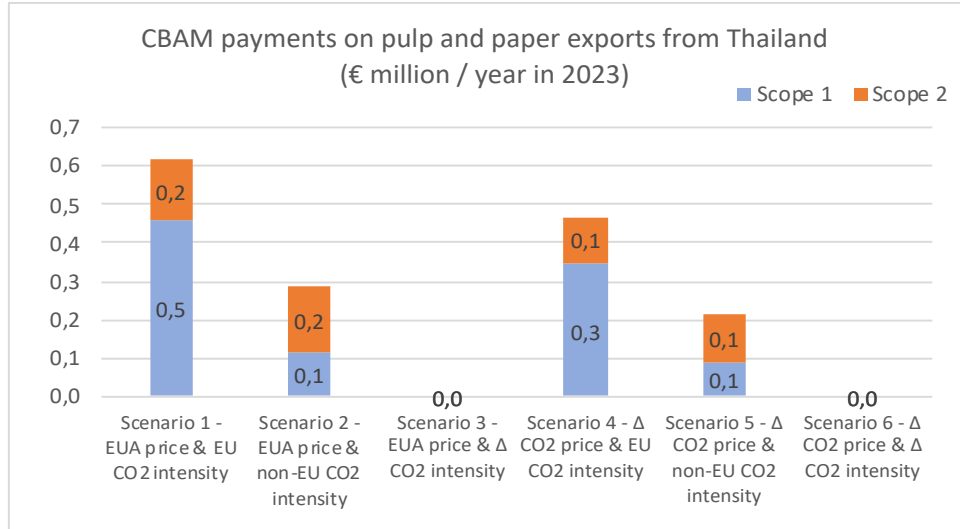


Pulp & paper - Thailand

	CO2 intensity - tCO2/ton of product	
	Direct emissions	Direct & indirect emissions
EU27	0,3	0,4
Thailand	0,08	0,18

Notes:

- EU intensities from CEPI key statistics
- Thailand intensities from TGO CFP database

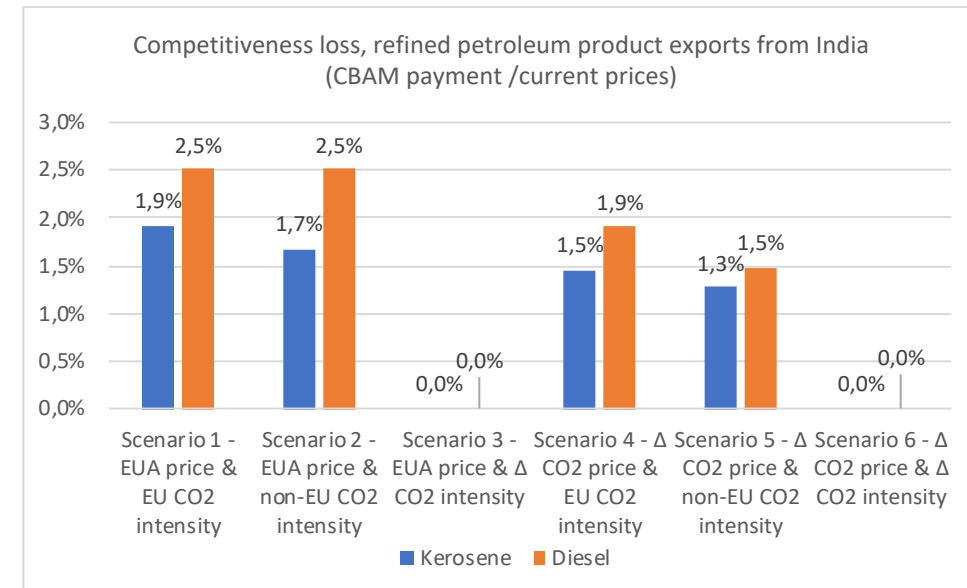
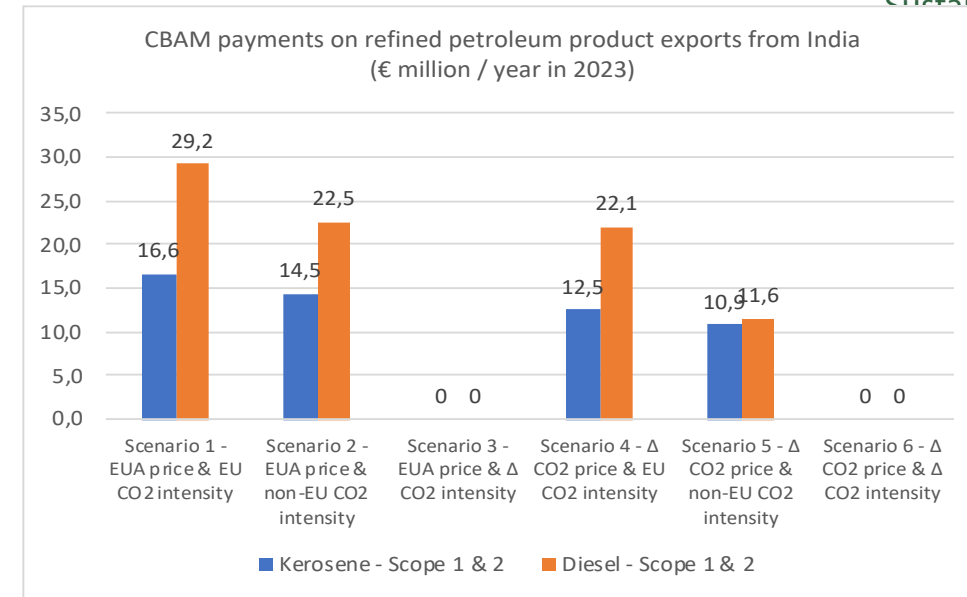


Refined petroleum products - India

	CO2 intensity - tCO2/ton of product	
	EU	India
Kerosene	0,26	0,23
Diesel	0,31	0,24

Notes:

- EU CO₂ intensity values: based on JEC consortium (JRC-Eucar-Concawe) that has developed a model to allocate emissions to specific products for the EU refining sector.
- India average CO₂ intensities: input by The Council on Energy, Environment and Water (CEEW), calculated based on refinery data by Indian Petroleum and Natural Gas Statistics (2017-18), refining emissions, energy density of fuels, and crude conversion rates.



Key observations (1)

- Energy-intensive and trade-exposed (EITE) sectors like cement, steel, and aluminum, are highly likely candidates to be covered by CBAM in the near to medium-term.
- Exporters of cement, steel, and aluminum from Thailand would face a total CBAM “bill” at the border of EUR 109 million annually respectively (Scenario 2; Scope 1 & 2 emissions); CBAM payments would represent 0,02% of Thailand’s GDP forecast in 2023.
- CBAM payments can represent a significant share of current prices for some products e.g. >30% for cement, >10% for aluminium
- CBAM diversified impacts depending on adopted design, e.g. sectoral/product scope, emissions scope, emissions intensity etc

Key observations (2)

- Emissions scope: Exporters of cement, steel, and aluminum from Thailand would face a total CBAM “bill” at the border of EUR 23 million annually if only Scope 1 covered, instead of 109 million for Scope 1 & 2 emissions (Scenario 2)
- Product scope: Analysis assumes that a CBAM would apply to imports of raw materials (e.g. primary aluminium, crude steel), as well as semi-finished products of these materials (e.g. aluminium rolled products, steel pipes).
 - Total ‘CBAM bill’ would be lower in case only upstream materials are covered, and higher the more downstream products it covers in the value chain.
- Choice of applicable default CO2 intensity values (EU or foreign, etc) has a significant impact on costs
 - Exporting country CO2 intensity not necessarily higher than EU intensity (e.g. steel in Thailand, fuels in India)
 - Allow for process to challenge carbon intensity default values: foreign producers could be granted the possibility to individually prove that they are “cleaner” than default values; This could potentially reduce the tax burden imposed by the EU CBAM (but could invite resource shuffling)
- The level of the adjustment (EUR/tCO2) has an important bearing on the magnitude of the impact: calculations based on CO2 price EUR 41/tCO2; Today EU ETS prices > EUR 50/tCO2; Carbon pricing in exporting countries would likely be deducted from the payable level of adjustment (Δ CO2 price), reducing CBAM burden.



Thank you

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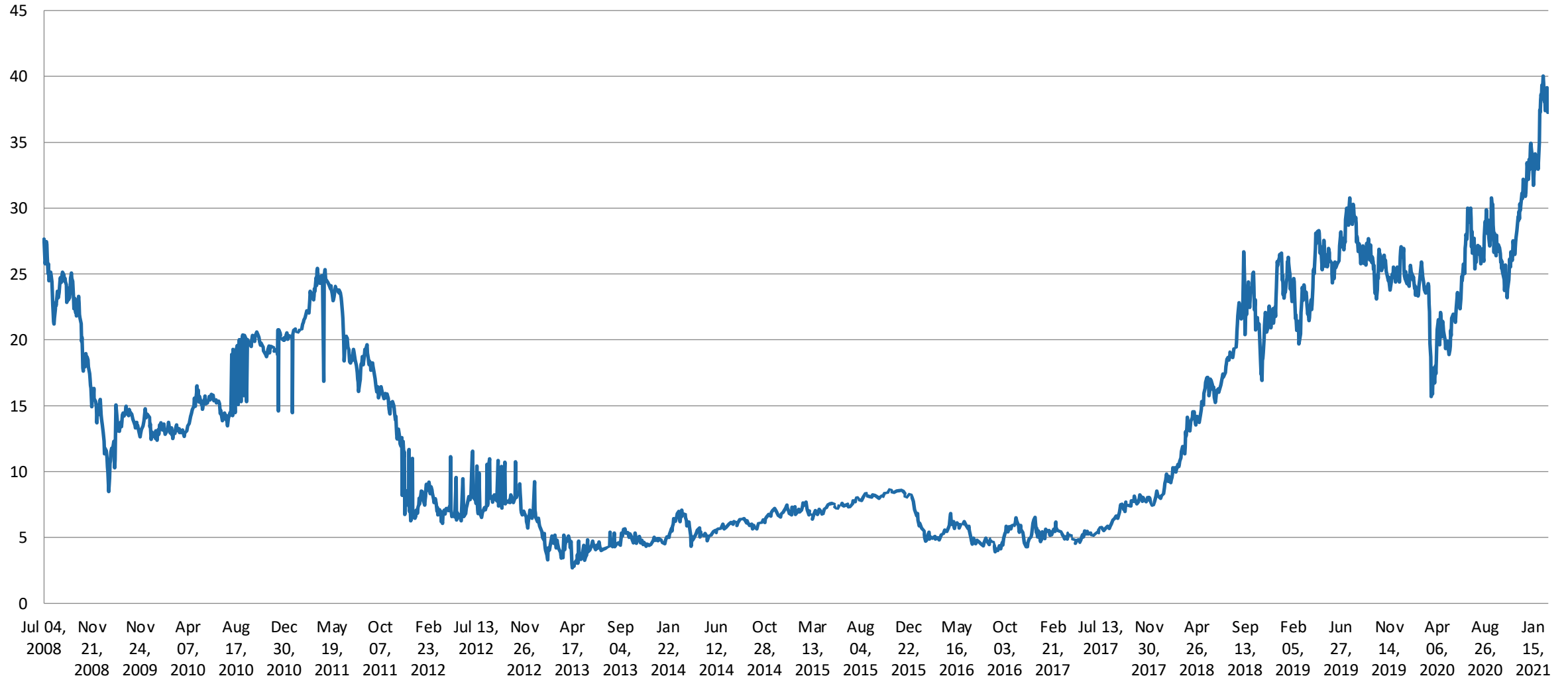


Appendix

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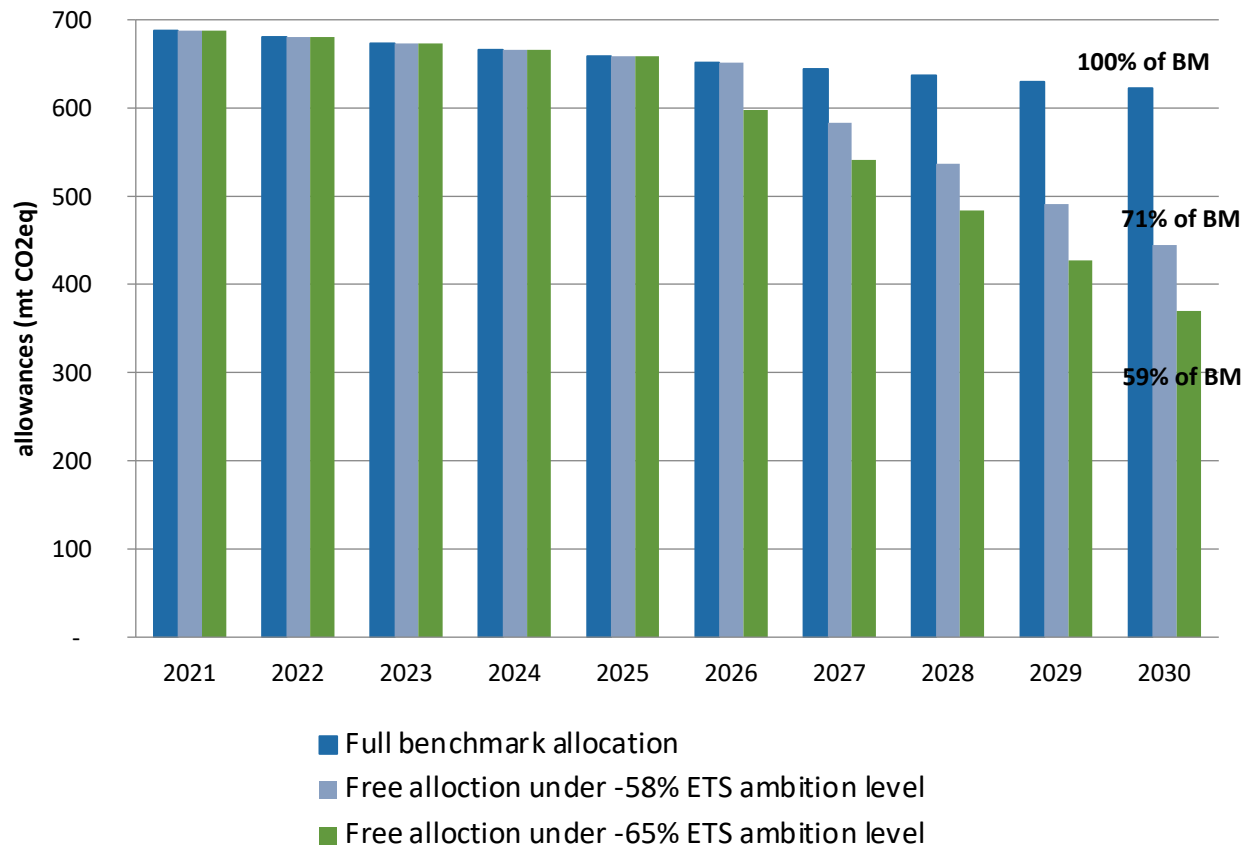
EUA futures, July 2008 – 1 March 2021



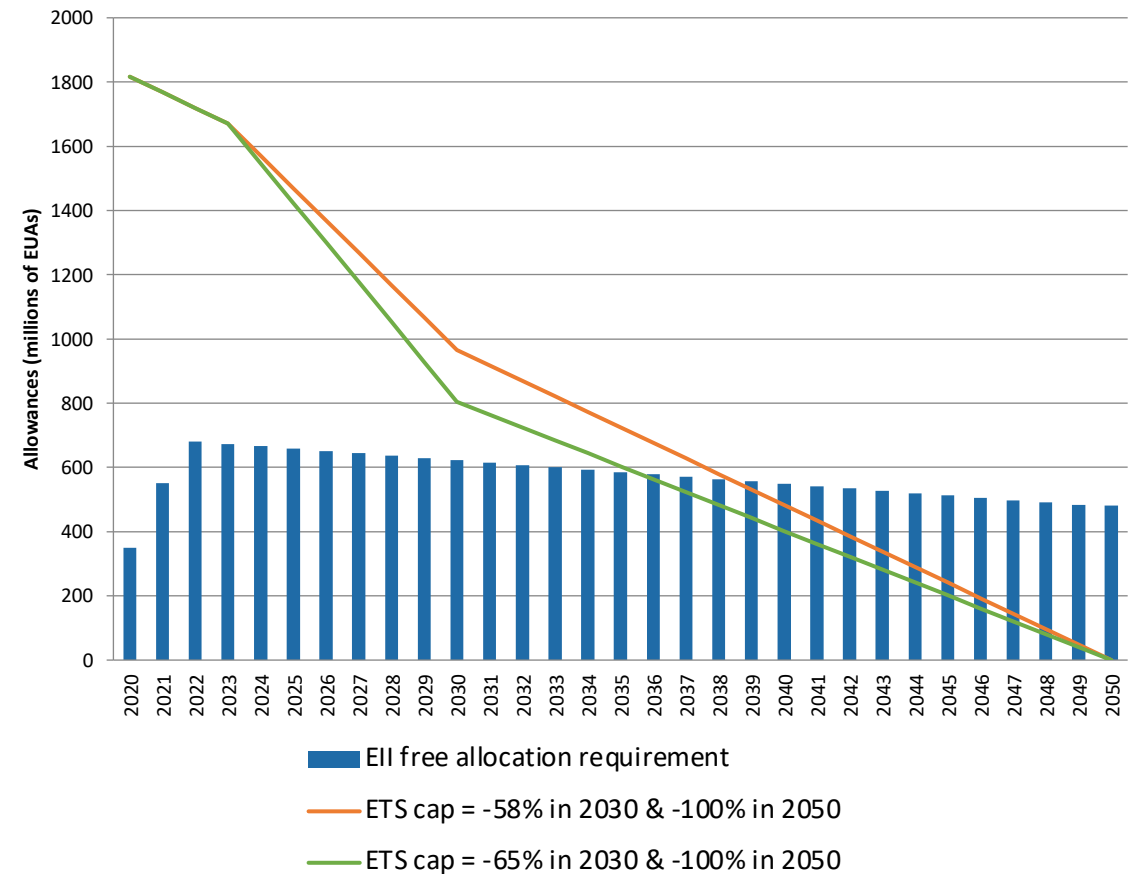
Source: ICE

Availability of Free Allocation

The cross-sectoral correction factor (CSCF) under higher EU 2030 target scenarios

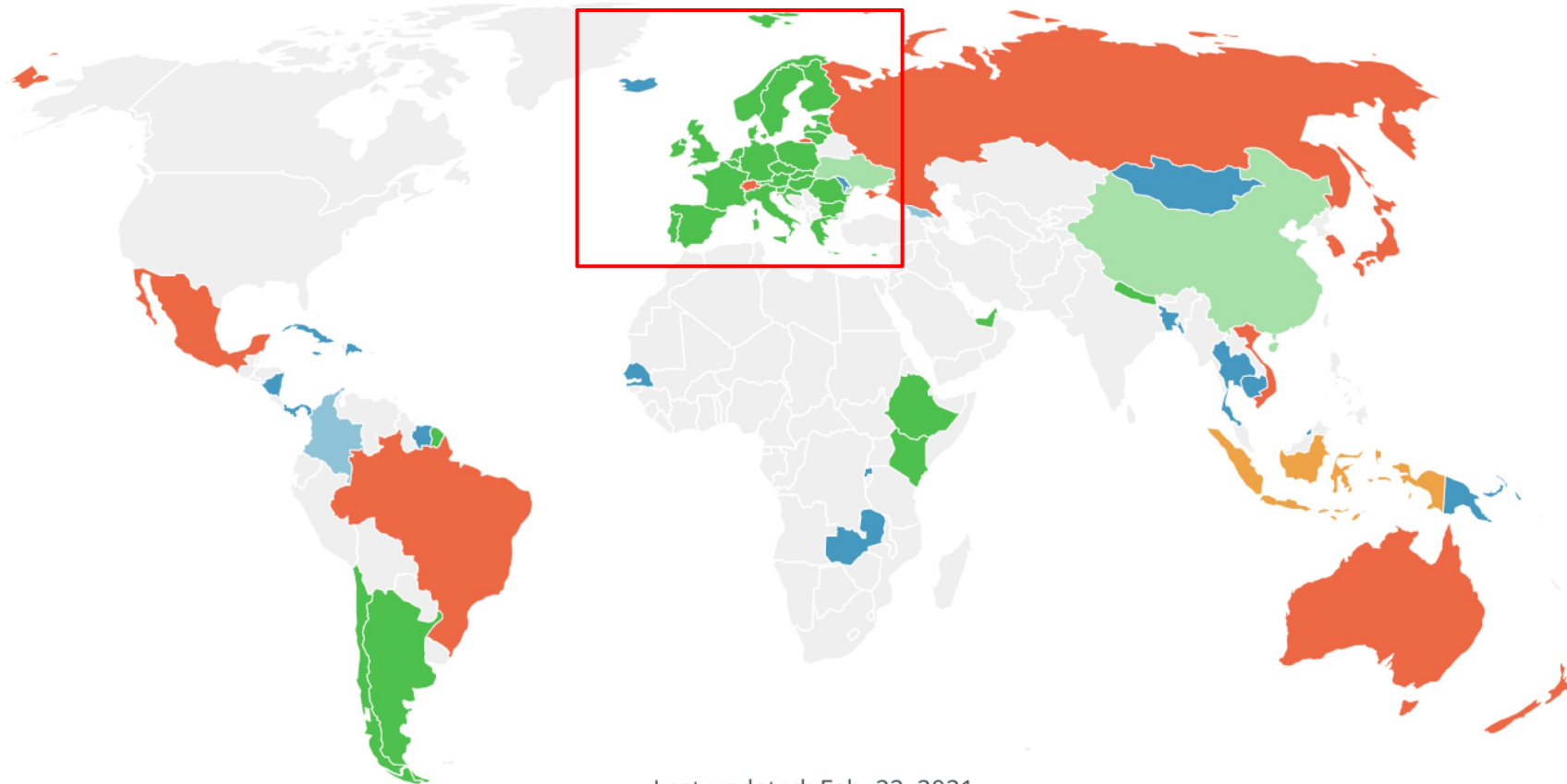


Projected free allocation 'needs' vs. the EU ETS cap under higher EU 2030 target scenarios



Source: Agora Energiewende

2030 Climate Targets: European Union ahead of the curve compared to the rest of the world



Last updated: Feb. 22, 2021

Map is for reference only

CLIMATE TARGETS

Status of the 2020 NDC update process

44 Countries have **submitted** new NDC targets (43 countries plus the EU27)

- 9** Countries we analyse have submitted **stronger NDC targets** (8 countries plus the EU27)
- 10** Countries we analyse **did not increase ambition**
- 25** Countries **we do not analyse** submitted new NDC targets

5 Countries have **proposed** new NDC targets

- 2** Countries we analyse have proposed **stronger NDC targets**
- 1** Countries we analyse stated they **will not propose more ambitious targets**
- 2** Countries **we do not analyse** proposed new NDC targets

114 Countries have not updated targets

European Commission main policy mechanism options

- **A tax applied on imports at the EU border**
 - On products whose production is in sectors that are at risk of carbon leakage
 - This could be a border tax or customs duty
- **An extension of EU Emission Trading Scheme to imports**
 - Requiring the purchasing of emission allowances under the EU ETS by either foreign producers or importers
- **Carbon tax (e.g. excise or VAT type) at consumption level**
 - On products whose production is in sectors that are at risk of carbon leakage
 - The tax would apply to EU production, as well as to imports
- **The obligation to purchase allowances from a specific pool outside the ETS**
 - Dedicated to imports, which would mirror the ETS price

EU CBAM design elements

- CBAM decomposed into **9 key design elements** as identified in the ERCST report '*Border Carbon Adjustments in the EU Issues and Options*'* for which the EU may have to make choices ERCST (2020):
 1. Policy mechanism;
 2. Coverage of trade flows;
 3. Effect on free allocation
 4. Geographic scope;
 5. Sectoral scope;
 6. Emissions scope;
 7. Approach to determining embedded emissions
 8. Crediting for foreign climate policies;
 9. Use of revenue;

Evaluation Criteria of options:

- Environmental benefit
- Competitiveness benefit
- Legal feasibility
- Technical and administrative feasibility
- Political feasibility

* ERCST (2020), Border Carbon Adjustments in the EU: Issues and Options, September 2020, <https://ercst.org/border-carbon-adjustments-in-the-eu-issues-and-options/>

Coverage of Trade Flows	During the pilot phase, the proposed CBAM covers imports, with leakage related to exports addressed separately through continued, but declining free allocation to European producers for both domestically consumed and exported products
Policy Mechanism	It could extend the ETS to imports, but have imports dealing in a virtual pool of allowances
Geographic Scope	The only national exemptions from the coverage of the proposed CBAM are for least developed countries, small island developing states, and states with whom the EU has linked emissions trading systems.
Sectoral Scope	Cover any sectors, sub-sectors identified at risk of leakage under ETS As well: Any sectors at risk of leakage due to carbon costs in input goods (Scope 3)
Emissions Scope	During the pilot phase, the proposed CBAM covers direct (Scope 1) emissions and indirect (Scope 3) emissions embedded in raw material inputs that are themselves covered products.
Determination of Embedded Emissions	Default emissions intensity for importers: global sectoral average Possibility for more than one sectoral benchmark, based on production method Importers can challenge the default with third-party verified data
Calculation of the Charge	Product of: <ul style="list-style-type: none"> • Global average intensity • Difference between the price of EUAs and an explicit carbon price in the exporting jurisdiction • Factor that reflects the amount of free allocation received by EU producers • Where no explicit price of carbon in exporting jurisdiction: cost of carbon based on a negotiated agreement between the EU and the country of origin
Use of Revenue	Revenue directed to: <ul style="list-style-type: none"> • Administrative cost • Defraying certification costs for importers • Funding mitigation actions in trade partner countries affected by the CBAM; • Contributing to the EU budget (“Own Resources”)

Issue	Leaked proposal
Sectoral scope	<ul style="list-style-type: none"> • Cement, Steel, Electricity, Aluminium + fertilizers (incl. semi-manufactured / more complex goods) • EC can add to list through delegated acts
Emissions scope	<ul style="list-style-type: none"> • Simple goods: Scope 1 & 2 emissions • Complex goods: Scope 1 & 2 emissions and part of Scope 3 emissions embedded in input materials consumed in production process
Revenues	<ul style="list-style-type: none"> • EU budget
Adjustment to EU Carbon Leakage System	<ul style="list-style-type: none"> • Confusing: CBAM = alternative BUT Free allocation is maintained through a 'transitional provision' • CBAM only applies for those emissions above the free allocation that domestic producers receive • no language on length of 'transitional provision' or whether free allocation is eventually phased out or not – only makes reference to the EU ETS directive
Export rebates	<ul style="list-style-type: none"> • no export rebates, but Free allocation maintained

Compliance mechanism

- Notional ETS – importers have to surrender units each year equal to embedded emissions in their imports
- Unit price = average EU auction price of previous week

Carbon content assessment of imports

For products:

- actual emissions: formula for direct and indirect emissions at installation level + formula for embedded emissions in semi-manufactured goods ('more complex goods')
- 'default values in case actual emissions cannot be determined' : 2023-2025 average carbon intensity of comparable EU producers, starting 2026: 10% worst-performing installations in EU

For electricity:

- average CO₂ intensity of electricity produced by fossil fuels in the EU
- option to declare actual emissions

Exclusion

- only countries part of or linked to EU ETS are exempted

Crediting foreign climate policies

- Only carbon pricing policies (carbon tax, ETS) are recognized – to be verified by authority – prices paid are deducted from CBAM

Carbon prices

- Scenarios (1)-(3): carbon price for imports mirrors the price of EU emission allowances ($EUA_{CO_2 \text{ price}}$) under the EU ETS.
 - Results make use of EUA price forecast for 2023 of about 41 (EUR/t CO₂);
- Scenarios (4)-(6) assume crediting for foreign carbon pricing policies: We run scenarios (4)-(6) assuming a hypothetical carbon price of EUR 10/t CO₂ having been introduced in exporting countries. Scenarios (4)-(6) thus serve as sensitivity analysis.