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Report

A guide to the EU CBAM

Perspectives for Chinese Stakeholders

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About Sandbag

Sandbag is an independent think tank dedicated to advancing data-driven, evidence-based climate policies that drive rapid and effective emissions reductions in Europe and beyond. With deep expertise in carbon markets, industry decarbonization, and energy transitions, we leverage our in-house research capacity, sophisticated data modelling, and visualisation tools. We design and advocate for robust climate solutions that ensure everyone can contribute to, and benefit from, the fight against climate change.

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Executive Summary

The EU's Carbon Border Adjustment Mechanism (CBAM) was created to replace the free allocation of emission permits in the EU's carbon market, as protection against competition from countries with lower carbon costs.

Despite being fully in force since January 2026, imposing carbon fees to imports, the legislation is still being finalised. In addition, changes in its scope and rules are already being proposed for 2028; with additional changes likely to be adopted in the future.

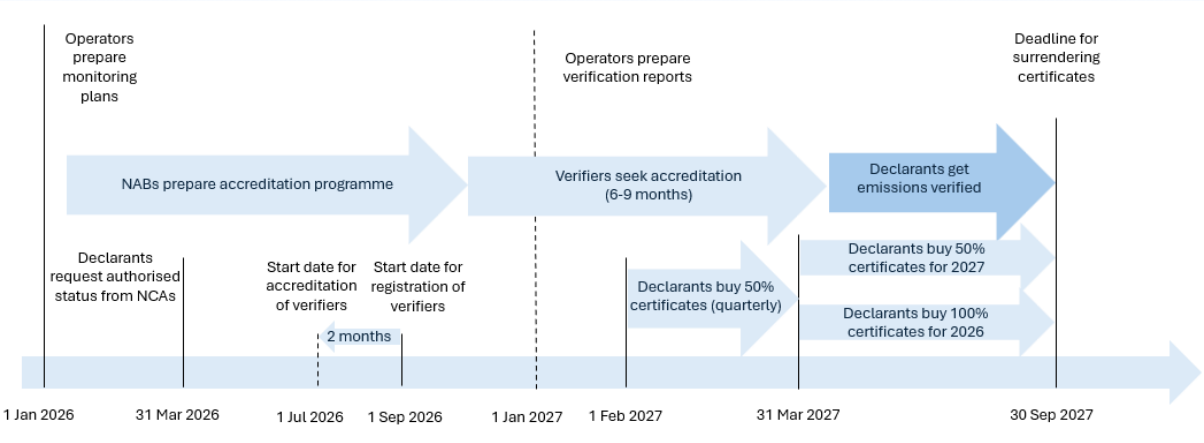


Figure 1 Timeline of CBAM compliance

This report reviews the challenges to Chinese firms and ways of addressing them:

- Availability of verifiers doing site visits in China: firms already accredited for the EU ETS will get fast-track approval, and Chinese entities (including, but not only branches of EU-based firms) can be entrusted by accredited firms.
- Discounts for carbon price paid will be very small: allowances (and CCERs) paid in the National ETS will likely be discounted due to free allocation; Green Certificates will not be eligible.
- Timing: monitoring plans should be prepared now. New guidance documents were published on 14 August 2026. If using precursors, manufacturers should preferably source those precursors from firms directly exposed to the EU market.
- For flat steel goods, default values may be less costly than actual data below 550 tonnes exported (annually) in 2026 and 350 tonnes in 2034.
- Hedging: in case of failed MRV, importers may pass their volume liabilities to suppliers through contractual clauses.
- Confidentiality: for risk management purposes, importers might require detailed emission reports from suppliers, even though this is not required for CBAM declarations. This can be avoided if risk is fully covered, e.g., by cash deposits or bank guarantees.
- Circumvention: although some reallocation channels still exist, the EU is gradually closing them.
- Decarbonisation should turn CBAM costs into revenues.

At country level, we have assessed the impact of the CBAM on Chinese imports to the EU in various configurations of the CBAM: 1) its current scope; 2) its extension to 180 downstream products, as proposed by the European Commission; 3) to chemicals, polymers, and refinery products; 4) the extension of its emissions scope to pre-consumer metal scrap, as proposed by the Commission; and 5) to indirect emissions.

In 2025, China exported **11.2m tonnes of CBAM goods** to the EU across 559 products. After full ramp-up of the CBAM (in 2034), in a scenario where exported goods have the national average emissions intensity, we estimate annual CBAM fees due on these products to be **1,385 million euros**. The

downstream extension proposed by the European Commission to 180 new products would add **5.9m tonnes** of goods into the CBAM scope, across 169 products and **632 million euros** to the CBAM bill.

However, CBAM fees are only one side of the story. Thanks to the expected price rise in EU markets with the phasing out of free emission permits for domestic producers, revenues will also increase for importers, with a lower net cost for Chinese CBAM imports of **935 million euros**. Net costs would also increase by a more modest **352 million euros**, if the proposed downstream extension was adopted.

Ultimately, compliance costs can be reduced by ensuring that the embedded emissions of exported goods are as low as possible. China's CBAM-covered exports only represent 0.8% (2.5 million tonnes) of the country's flat steel production – a share that would barely reach 1.5% if downstream goods were included. Innovative low carbon projects such as Baowu's Zhanjiang hydrogen-ready DRI plant with 1m tonne capacity could, if blended with 50% scrap, almost cover the entire country's EU exports.

In a scenario where the most innovative or lowest carbon products are dedicated to EU exports, annual CBAM fees would fall to 303 million euros and net costs would turn negative, i.e. a benefit, at -147 million euros.

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Abbreviations

Abbreviation	Meaning
ALCR	Activity Level Change Regulation
BF-BOF	Blast Furnace – Basic Oxygen Furnace
CBAM	Carbon Border Adjustment Mechanism
CBAM NCA	CBAM National Competent Authorities Portal
CN	Combined Nomenclature – EU classification of goods for trade
CN8	8-digit code in the Combined Nomenclature used to identify specific goods
CO_2e	Carbon Dioxide Equivalent – a standard unit for measuring carbon footprints
CSCF	Cross-Sectoral Correction Factor
DA	Delegated Act – a legally binding act by the European Commission to supplement or amend EU legislation
DG	Directorate-General – a department of the European Commission responsible for specific policy areas
DG TAXUD	Directorate-General for Taxation and Customs Union – the European Commission body responsible for CBAM
DMF	Dimethylformamide – a solvent used in chemical processing
DRI	Direct Reduced Iron
EAF	Electric Arc Furnace
EC	European Commission – the executive branch of the EU responsible for proposing legislation and enforcing EU laws
ETS	Emissions Trading System
FA	Free Allocation
FAR	Free Allocation Regulation
HSFO	High Sulphur Fuel Oil
IA	Implementing Act – a binding legal instrument adopted by the EC to ensure uniform implementation of EU legislation across all Member States
IR	Implementing regulation: either IA or DA
ICC	Indirect Cost Compensation
NAT	National Allocation Table
NIM	National Implementation Measure

1 EU CBAM: current status and future evolution

The European Union's Carbon Border Adjustment Mechanism (CBAM) started applying to imports into the EU on 1 October 2023. This report focuses on the EU CBAM's impacts on China, so in some instances it purposefully ignores aspects that do not affect Chinese stakeholders, such as electricity imports into the EU, or legislative developments regarding exports from EU-based installations.

1.1 The rationale behind the CBAM's introduction

1.1.1 An alternative to free allocation

The introduction of a CBAM was first presented by the European Commission in 2019 as "an alternative to the measures that address the risk of carbon leakage in the EU's Emissions Trading System"[1] (EU ETS) as the EU steps up its climate ambition. Carbon leakage designates the displacement of emissions from jurisdictions with more to less stringent climate policies, through the displacement of production, investments or fossil fuel consumption.

The EU ETS covers emissions from the power and heat generation, industry, aviation, and shipping sectors. It requires emitting installations, airlines, and shipping companies to surrender emission allowances (EUAs) equivalent to their annual emissions of carbon dioxide, nitrous oxide and perfluorocarbons. The number of available EUAs decreases each year. Companies source these EUAs either by purchasing them from auctions, from the market, or by receiving them for free, which is the case for most industrial plants.

The free allocation of allowances was initially put in place as a protection against the risk of carbon leakage.[2] Initially, allowances were allocated for free to all installations. Since 2013, with a few exceptions, installations in the power sector have not received free allowances because their low exposure to international competition allowed them to pass through their carbon costs to customers. On the contrary, industry plants in sectors deemed exposed to carbon leakage[3] continue to receive free allowances.

In her political guidelines for the next European Commission 2019-2024,[4] Ursula von der Leyen's first priority was the introduction of a European Green Deal, aimed at making Europe the first climate-neutral continent. To complement this ambition, the text reads, she would introduce a Carbon Border Tax to **avoid carbon leakage and create a level-playing field**. The European Green Deal[5] includes similar language: "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".

1.1.2 Why should free allocation be phased out?

As the origin of the CBAM, one may wonder why it is so important for the EU to phase out free allocation in its ETS?

1.1.2.1 Competitive distortions

The free allocation (FA) of emission permits is the dominant regime for EU industry plants, as 95% of them receive a number of them that matches 100% of their "benchmarks". Free allocation benchmarks are the number of permits given per unit of output and are set based on the EU's 10% best-performing plants, as per the (simplified) formula:

[1] Communication on the European Green Deal, European Commission, December 2019.
[2] Carbon Leakage: Theory, Evidence and Policy Design, Partnership for Market Readiness, October 2015.
[3] The criterion used combines trade intensity with carbon cost share.
[4] A Union that strives for more - My agenda for Europe, Ursula von der Leyen, July 2019.
[5] Communication on the European Green Deal, European Commission, December 2019.

$$\text{Free Allocation}_p = 100\%\ \text{benchmark}_p \times \text{volume produced}_p$$

$$p = \text{a specific product or process}$$

Benchmarks are tied to products or a production process, so that, for example, cement makers receive 0.693 allowances for each tonne of grey clinker produced, whereas steelmakers receive 1.248 allowances for each tonne of hot metal (pig iron) produced. Thus, the incentive to reduce emissions only works within what is achievable while producing the same amount of grey clinker or hot metal. This is a big problem, because the emission reduction potential within the scope of some benchmarks is extremely small. This is illustrated by the nearly horizontal shape of the blue curve in Figure 2: within a type of process, EU plants all have nearly the same emission intensity. Moreover, the emission intensity of the 10% most efficient plants has not gone down but it has in fact increased in the last fifteen years: from 1.328 to 1.360 tCO_2 per tonne of pig iron produced between 2007 and 2022.[6]

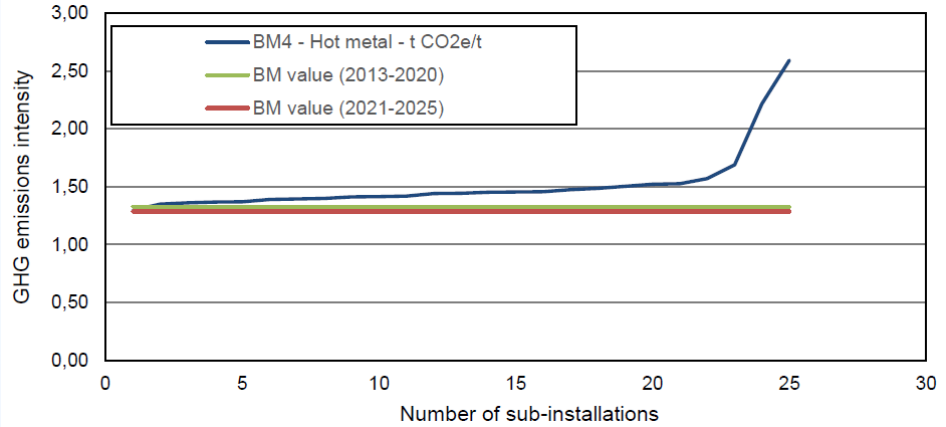


Figure 2 Free allocation hot metal benchmark and distribution of emissions intensity in the EU ETS[7]

This system of free allocation creates **distortions between processes covered by the ETS**. For example, in the steel sector, using blast furnaces allows for claiming more allowances compared to using electric arc furnaces. It also creates **distortions between products (covered or not by the ETS)**, as e.g. making Portland cement (which uses 95% grey clinker) gives the right to more permits than making low-clinker cement – let alone producing other equivalent construction materials such as bricks, stone, or timber products. **Free allocation based on output makes circularity less profitable**, as it rewards production over savings, which **hampers a key pillar of the EU's climate agenda**. It also carries some degree of **absurdity**, as the production of intermediary products (such as hydrogen) is rewarded even if these products are wasted and don't improve the end product.

1.1.2.2 Bureaucracy

Free allocation is also a source of unnecessary bureaucracy. It requires collecting confidential production data from all ETS-covered plants over long periods of time. In a document called National Implementation Measures (NIM), each Member State submits data on the production activity of its plants, broken down to the level of each process (called **sub-installations**), including data such as transfers of heat and gases, electricity production and emissions over the previous five years. The NIMs then undergo a consistency check and a completeness check by the European Commission, followed by additional assessments for certain installations. The Commission rejects or accepts the NIMs. This clears the way to **preliminary free allocation**.

This is only the first phase. Each year, FA is adjusted to the activity level of each sub-installation in the previous two years. This requires the transmission of an activity level report by each installation operator

[6] As evidenced by the European Commission's draft implementing regulation on revised ETS benchmark values for 2026-30.
[7] European Commission (2021), Update of benchmark values for the years 2021 – 2025 of phase 4 of the EU ETS.

to the national authorities. National authorities calculate and submit **adjusted FA** amounts for each installation, which the Commission validates.

Another direct consequence of free allocation is the need to apply a **cross-sectoral correction factor (CSCF)**, which is a multiplier with a value between 0 and 1. Since the number of free allowances is based on a plant's output, there is a risk that the total number would exceed the ETS cap. The CSCF is calculated so as to prevent this from happening, by uniformly reducing the number of free allowances allocated to each plant. **Final allocation** is published in **National Allocation Tables (NAT)**. This unpredictable factor creates **uncertainty for plant operators over the number of allowances** they will receive and the system's complexity creates risks of litigation.

To make free allocation less favourable to polluters, **conditionality requirements** have been introduced, obliging operators to run energy audits or adopt certified energy management systems, then submit a Climate Neutrality Plan outlining measures to reach climate neutrality by 2050 at installation level, intermediate targets and milestones to measure this progress every five years and include an estimate of the impact of each of the measures. The climate plans then have to be duly reported on, monitored, and verified (MRV). Afterwards, the MRV reports are checked by the Commission.

1.1.2.3 Market distortions

Free allocation is not sustainable in the long run as the emissions cap decreases quickly in the ETS. In addition, it is a source of **volatility of carbon market prices**. Because free allocation **mutes the carbon price signals** that industry should respond to. Having to pay for only a fraction of their emissions, plant operators are less sensitive to variations of allowance prices and are less likely to take emission reduction measures, if prices start spiralling up. Unmitigated emissions feed volatility instead of stabilising it.

In addition, allowances will run out eventually, if the emissions cap goes down to zero as per the EU's commitment to carbon neutrality. Giving them for free is therefore not compatible with this commitment in the long run.

Replacing free allocation with the CBAM would remove the unnecessary bureaucracy as well as competitive and market distortions associated with free allocation. This would further allow the EU to better follow its decarbonisation agenda.

1.2 Current legislation

1.2.1 Relevant legislation

The CBAM is ruled by regulation 2023/956 (**the 'CBAM Regulation'**), which entered into effect in May 2023 and was amended in October 2025 as part of a simplification 'Omnibus' package. The CBAM Regulation is complemented by several implementing regulations (IR), which address details left open by the main Regulation. Most of these acts have been adopted, but a few have yet to be finalised. Most of the regulations have been adopted very recently, which only just clarified several points.

Table 1 Legislation currently in force

Regulation	Role	Date passed
Regulations 2023/956 and 2025/2083	Defines the CBAM's structure. Some of its articles mandate the Commission to adopt implementing regulation.	Adopted 10 May 2023 Amended 8 Oct 2025 (Omnibus)
IR 2023/1773 under Art 35(7)	Methodologies for embedded emissions in the transitional period - No longer used	Adopted 17 Aug 2023
IR 2024/3210 and 2025/2550 under Art 14(6)	on CBAM Registry	Adopted 18 Dec 2024 Amended 10 Dec 2025
IR 2025/486 and 2025/2549 under Art 5(8) and 17(10)	on Status of authorised declarant	Adopted 17 Mar 2025 Amended 10 Dec 2025

IR 2025/2210 under Art 2(2)	on goods brought from artificial islands or exclusive economic zones	Adopted 31 Oct 2025
IR 2025/2551 under Art 18(3)	on conditions for Accreditation of verifiers (see 2.1.3.1)	Adopted 20 Nov 2025
IR 2025/2547 under Art 7(7)	on Methodologies for embedded emissions (see 2.1.7)	Adopted 10 Dec 2025
IR 2025/2621 and 2026/1740 under Art 7(7)	on Default values (see 2.2.1)	Adopted 16 Dec 2025 Amended 31 Jul 2026
IR 2025/2548 under Art 21(3)	on Price of CBAM certificates (see 2.1.6)	Adopted 10 Dec 2025
IR 2025/2546 under Art 8(3)	on Verification principles	Adopted 10 Dec 2025
IR 2025/2619 under Art 25(6)	on Customs Communication	Adopted 16 Dec 2025
IR 2025/2620 under Art 31(2)	on Free allocation adjustment (See 2.1.4)	Adopted 16 Dec 2025

1.2.2 Legislation still missing

Some proposed regulations have yet to be finalised. It is difficult to predict when these will be adopted and enter into force. However, the timeline in Figure 3 provides estimates based on public statements made by European Commission officials and on compliance dates set by the Regulation.

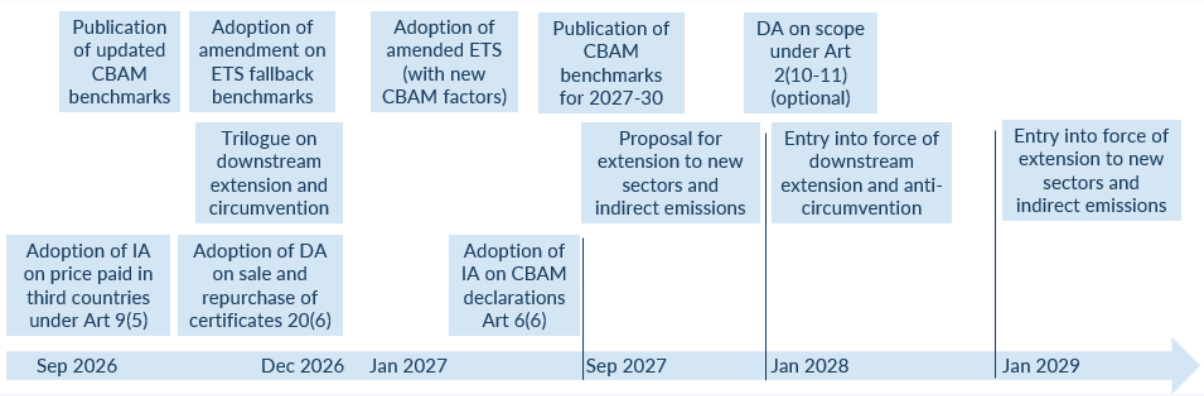


Figure 3 CBAM legislative texts that will be finalised in the future

Updated CBAM benchmarks

The existing implementing regulation (IR 2025/2620) on adjustments for free allocation, described in section 2.1.4, includes a list of CBAM benchmarks used to calculate the discount from CBAM fees to mirror free allocation in the EU ETS. However, those CBAM benchmarks are based on ETS values applicable during 2021-25. New EU ETS benchmarks were adopted on 29 June 2026, and CBAM benchmarks are expected to be amended accordingly. An amendment proposed on 17 July 2026 by the Commission may change those benchmarks again for the 2027-30 period, to increase the amount of free allocation given to processes involving heat and fuels. While this proposal will be subject to potential amendments to be proposed by the European Parliament and Council, it should be adopted by the end of 2026. It is therefore expected that CBAM benchmarks will be amended accordingly afterwards.

Implementing Act on carbon price paid in the country of origin – Article 9(5)

This IA will govern the conversion of the annual average carbon price paid in the country of origin into a corresponding reduction of CBAM certificates to be surrendered. It will include the conversion of the foreign currency carbon price into euros using the annual average exchange rate, the evidence needed to demonstrate the actual payment of the carbon price, examples of any applicable rebates or compensations, the qualifications required for the independent person certifying the imposition of a carbon price in the country of origin, and the conditions to ensure the person's independence is verified.

A legislative text was proposed by the Commission in May 2026. A consultation was then open over four weeks and adoption is expected by September 2026.

Delegated Act on Sale and repurchase of CBAM certificates – Article 20(6)

This act will govern the timing and administration of the sale and repurchase of CBAM certificates, in a way consistent with the auctioning of emission allowances under the EU ETS. A legislative text was proposed by the Commission in July 2026 and a public consultation was carried out until 6 August 2026. Adoption should follow in Q4 of 2026.

Implementing Act on CBAM declaration – Article 6(6)

This act will govern the submission of CBAM declarations, including their format, required content, submission procedure, and procedure for surrendering CBAM certificates.

Delegated Act on Scope – Article 2(10-11)

A number of countries outside the EU are exempted from the CBAM because they are covered by the EU ETS (Norway, Iceland, Liechtenstein) or a scheme twinned with it (Switzerland). The list may grow in the future as more third countries adopt similar initiatives. Exemptions limited to electricity imports may also happen for territories where there are technical issues in applying the CBAM to such imports. The DA on the scope will govern additions and removals of third countries and territories to/from these two lists.

EU ETS review

In parallel to the CBAM legislative process, a reform of the EU ETS kicked off in July 2026, with a legislative package proposed by the Commission. One of the proposed amendments concerns the CBAM factors, which is the amount of free allocation to be kept in the ETS. The CBAM factor is used in the calculation of CBAM fees, as explained in section 2.1.4. The CBAM factor is currently scheduled to decrease from 97.5% currently to 0 in 2034, but the Commission proposed to slow down this decline until 2038.

1.2.3 What has changed since the transition period?

The following summarises the changes that apply to the CBAM from 2026 onwards, compared to the period until 2025, with references to the relevant sections in the report for each of these changes:

- The compliance threshold increased from 150 euros per consignment to 50 tonnes of goods per year per importer (see section 1.2.4).
- Declarants must request the status of authorised declarants before importing CBAM goods (see section 2.1.1), which was not the case previously.
- Emission reports were required on a quarterly basis during the transition period, and are required annually from 2026 onwards (see section 2.1.2).
- Small differences were introduced on the reporting of embedded emissions (see section 2.1.7).
- Actual emissions reporting was mostly mandatory (for 80% of emissions) in the transition period, and is now optional.
- When actual data are not used, default values are now country specific, instead of being global in the transition period (see section 2.2.1), and for China they are generally higher than before.
- Unlike in the transition period, emissions reports must be verified by an accredited verifier (see section 2.1.3).
- While the transition period only imposed reporting obligations, the definitive period also imposes financial obligations (see section 2.1.6).
- Penalties for incompliance were limited to €10-50 per tonne of unreported emissions. This increased to €100 on top of the obligation to surrender certificates (see section 2.3.4).

1.2.4 Scope

The goods covered by the CBAM have remained the same since the regulation's entry into force in 2023 and are summarised in Table 2. They are identified by categories used by Europe's customs 'CN' nomenclature. The CBAM covers 576 of the 9,500 product categories traded by the EU, identified with 8-digit CN codes. It should be noted that goods intended for military purposes, as well as goods bought by importers whose total yearly imports of CBAM goods are less than 50 tonnes[8] are exempt from the levy.

Table 2 Goods covered by the CBAM

Product category	Products
Aluminium	Unwrought aluminium, aluminium powders and flakes, and all kinds of aluminium products (including bars, rods, wires, plates, sheets, foils, tubes and pipes, tube and pipe fittings, structures, reservoirs, tanks, casks, drums, cans, boxes, other containers, and cables)
Chemicals	Hydrogen
Cement	Cement clinkers, white Portland cements, other Portland cements, aluminous cements, other hydraulic cements, other kaolinic clays
Electricity	Electrical energy
Fertilisers	Nitric acid, sulphonitric acids, urea, ammonia (anhydrous or in aqueous solutions), nitrates of potassium, mixed fertilisers (nitrogenous mineral and chemical fertilisers, and other fertilisers containing nitrogen, phosphorus and/or potassium)
Iron and Steel	Agglomerated iron ores and concentrates (other than roasted iron pyrites), pig iron, ferrous products obtained by DRI and other spongy ferrous products, crude steel, and all kinds of iron and steel products* (including bars, rods, rails, wires, tubes, pipes, sheets and other flat-rolled products, reservoirs, tanks, casks, drums, cans, boxes, containers, as well as screws, bolts, nuts, hooks, and rivets) – *except certain ferro-alloys (only ferro-manganese, ferro-chromium, and ferro-nickel are covered), and ferrous waste and scrap (including remelting scrap ingots and steel)

Source: Sandbag, summarised from *European Commission (Annex I of the CBAM Regulation (EU) 2023/956*.

The CBAM covers GHG emitted by the manufacturing plants of the above products, but also those embedded in selected inputs of CBAM-covered goods, as summarised in Table 3.

[8] Except for electricity and hydrogen

Table 3 Products covered by the CBAM and their precursors in the EU ETS scope

CBAM-covered product	Precursors in CBAM scope	Precursors not in CBAM scope
Steel (BF-BOF[9])	Hot metal, sintered ore, ferro-nickel, ferro-manganese, ferro-chromium	Coke, lime, all other ferro-alloys, aluminium as steel alloy, **scrap**
Steel (EAF[10])	Direct reduced iron, hydrogen, ferro-nickel, ferro-manganese, ferro-chromium	Lime, other ferro-alloys, **scrap**
Aluminium	Aluminium	Alumina, pre-bake anode, **scrap**
Fertilisers	Ammonia, nitric acid, hydrogen	
Cement and clinker	Grey and white clinker, calcined clay	Alumina

Source: Sandbag, summarised from the CBAM regulation.

1.3 Proposed evolutions

While finalising the current legislation, future evolutions are already set in motion.

1.3.1 Downstream extension and anti-circumvention measures

In December 2025, the Commission proposed, in an amendment to the CBAM regulation supported by an impact assessment, an extension of the CBAM to cover:

- An extension of the scope of emissions of existing CBAM goods made of steel and aluminium, to include emissions from pre-consumer scrap
- An extension to 180 "downstream" products made from steel and aluminium goods already covered by the CBAM:
  - **34** Industrial Machinery & Machine Tools
  - **39** Vehicles & Chassis
  - **28** Metal Hardware & Fabrications
  - **21** Vehicle Components & Systems
  - **18** Domestic Appliances & Consumer Goods
  - **17** Construction & Lifting Equipment
  - **7** Engines, Motors & Power Generation
  - **6** Electrical & Electronic Components
  - **5** Medical, Laboratory & Safety Devices
  - **5** Agricultural & Lawn Equipment
- A list of empowerments for the Commission to amend the list of goods or request additional information or block the use of actual data in case of identified risks of 'abusive practices'
- The possibility to withdraw goods from the list of CBAM goods in case of "severe harm to the Union internal market", as per Article 27a.

The proposal, which would **enter into force in 2028**, needs to be adopted jointly by the Council and Parliament. In June 2026, the Council voted to widen this extension to about 200 products, and in July the lead Parliament Committee voted to increase it further, to 457 products. A plenary vote is scheduled for 14 September 2026, with trilogue negotiations expected to take place by the end of 2026.

[9] Made through the production route based on blast furnace and basic oxygen furnace
[10] Made using electric arc furnaces

1.3.2 Evolution step 2: other precursors, indirect emissions, other sectors

In December 2025, the Commission published a review report which provided an update on its work on potential further CBAM extensions.

1.3.2.1 Indirect emissions

"Direct" emissions refer to emissions released from on-site activities, whereas "indirect" emissions occur off-site **due to the consumption of electricity**. Under the CBAM, reporting obligations cover both direct and indirect emissions for all sectors, but financial obligations only cover direct emissions, except for cement, fertilisers, and agglomerated ore for which financial obligations cover both direct and indirect emissions.

The main obstacle to the inclusion of indirect emissions is the existence of indirect cost compensation (ICC). ICC is a scheme that allows Member States to pay EU industrial electricity users a subsidy to compensate for rising electricity prices under the effect of carbon pricing. Charging imports while keeping ICC could potentially create an unfair advantage for EU industry. Rather than being phased out, ICC was extended to fertilisers in December 2025, and its coverage of electricity-related carbon costs was raised from 75% to 80% for some products.

The review report listed several options to either replace or combine ICC with the CBAM but fell short of proposing one. It committed to produce a more thorough assessment by 2027. A more detailed report was actually published in June 2026, where options were compared.[11] Although the report expresses no clear preference, it describes a phased approach, where ICC is gradually phased out as indirect emissions are gradually added into the CBAM, as a "credible compromise".

It also states the need to prevent resource shuffling and the possibility to only accept claims of renewable energy use if the generation units are "additional", i.e. they were built specifically to meet the demand from the consuming facilities.

We believe that a legislative proposal could be made by the end of 2027, aiming for implementation in 2029.

1.3.2.2 Precursors

Similar to indirect emissions, emissions from precursors of CBAM goods were only given a preliminary feasibility assessment in the review report. The products mentioned as 'feasible' were **calcined lime, dolime, and magnesia**, whereas **coke** could be treated as a standalone precursor for iron and steel and ferro-alloys, with its co-products excluded from the CBAM scope. Ferro-alloys such as **ferro-silicon and ferro-silico-manganese**, as well **as alumina (and aluminium hydroxide)** could be added to the CBAM as new covered products as well as precursors of existing CBAM goods.

However, the Commission only committed to produce a more thorough assessment by 2027, which means they will not be covered for some time.

1.3.2.3 Additional goods

In its review report, the Commission reported shortlisting approximately 120 substances, including inorganic chemicals, organic chemicals and polymers, and identified refinery products as both an individual sector and precursors of organic chemicals and polymers. It concluded that the complexity of value chains made the inclusion of these products very challenging with regards to the attribution of emissions, but it would be technically feasible for certain chemicals and polymers. It recommended a phased approach starting with those with simple value chains or existing EU ETS product benchmarks,

[11] European Commission (2026), Technical Study on Indirect Emissions in the CBAM.

before expanding to a broader coverage. Ultimately, downstream products are very diverse, from detergents and cosmetic, to textile and packaging.

With regards to refinery products, the report concludes that it is easier to include all, even though the MRV challenges of restricting coverage to precursors of organic chemicals "would not be unsurmountable".

In any case, a more thorough assessment for all new products is only due by 2027.

2 Addressing business challenges

This chapter reviews the challenges faced by Chinese stakeholders, from legal obligations to ways of reducing negative impacts.

2.1 Obligations for Chinese firms

This section presents various stages of the CBAM compliance process.

2.1.1 Registration of declarants

Initially, customs authorities inform importers of their CBAM reporting duties. Declarants are either importers or their appointed customs representatives in the case of importers not located in the EU. They need to log on to the declarant portal Authorisation Management Module using their EORI number and apply for Authorised Declarant status from their National Competent Authority (NCA). Importers who requested authorisation before 31 March 2026 can clear CBAM goods through customs. Other declarants must wait until their authorisation is validated before being allowed to import CBAM goods.

Operators of manufacturing plants have the option to declare themselves and report their emissions in a dedicated portal (see section 2.3.2), but this is not an obligation.

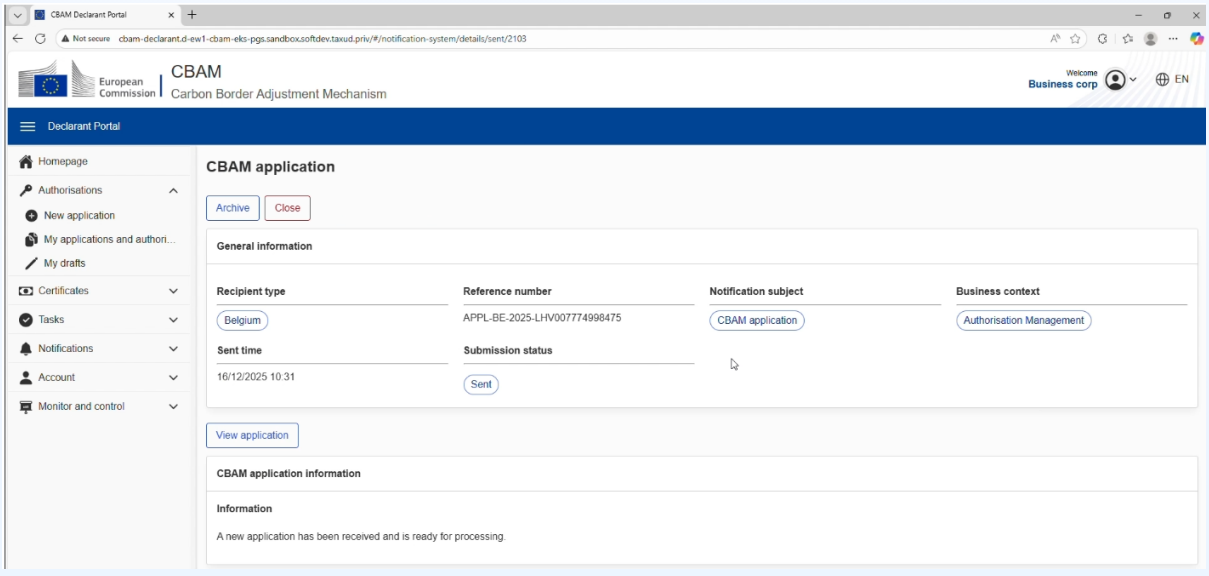


Figure 4 Screenshot of the CBAM's declarant portal AMM

2.1.2 Emissions report (yearly)

The reporting methodology defined by IR 2025/2547 is mostly similar to the one used during the transition period (ruled by IR 2023/1773), except for a few adjustments both in the cases in which emissions are reported using actual data and default values. The cost difference between actual and default values is discussed in section 2.2.

If declarants choose to report emissions based on actual data, they need to draft a **monitoring plan**. This document should describe the system's boundaries, the production routes, how input fuels and materials are monitored, which calculations and assumptions are used, and how data quality issues and missing data are handled.[12] Third-party verification will require a robust monitoring plan.

Direct embedded emissions can be monitored either through a calculation-based or measurement-based methodology. The latter involves the continuous measurement of the concentration of relevant greenhouse gases in flue gases, using measuring equipment. In contrast, calculation-based methodologies do not require any equipment and is fairly straightforward, as illustrated in Table 4. For calculation-based ones, the "standard method" associates emissions to a type of fuel used, whereas the "mass balance" method calculates emissions based on the difference between the carbon contained in the fuel and the carbon contained in the product. It is therefore better suited for steel products, which contains carbon in the final product.

Table 4 Method recommended for the reporting of emissions from a blast furnace + converter plant

#	Method	Source stream name	Activity data (AD)	AD Unit	Net calorific value (NCV)	NCV Unit	Emission factor (EF)	EF Unit	Carbon content	C-Content Unit
Ex.1	Combustion	Heavy fuel oil	252,000.00	t	45.00	GJ/t	73.00	tCO2/TJ		
Ex.2	Process Emissions	Raw meal for clinker	121,000.00	t		GJ/t	0.09	tCO2/t		
Ex.3	Mass balance	Steel	-1,808,226.00	t		GJ/t			0.00388	tC/t
1	Mass Balance	Coke fines	50,000.00	t	28.20	GJ/t			0.8800	tC/t
2	Mass Balance	Iron ores	5,600,000.00	t		GJ/t			0.0002	tC/t
3	Mass Balance	Coke	2,200,000.00	t	28.20	GJ/t			0.8800	tC/t
4	Mass Balance	Plastic wastes	70,000.00	t	38.00	GJ/t			0.6836	tC/t
5	Mass Balance	Scrap (external)	800,000.00	t		GJ/t			0.0021	tC/t
6	Mass Balance	Scrap (internal)	200,000.00	t		GJ/t			0.0018	tC/t
7	Mass Balance	Lime calcined	280,000.00	t		GJ/t			0.0027	tC/t
8	Mass Balance	Natural gas	170,000.00	t	48.00	GJ/t			0.7500	tC/t
9	Mass Balance	Other inputs	40,000.00	t		GJ/t			0.1000	tC/t
10	Mass Balance	Steel	-4,800,000.00	t		GJ/t			0.0018	tC/t
11	Mass Balance	Slags	-1,000,000.00	t		GJ/t			0.0003	tC/t

Source: CBAM portal of the European Commission.

2.1.3 Verification

The use of actual data (rather than default values) will require verification by accredited verifiers, so an important question will be the availability of accredited verifiers in sufficient numbers in what is set to be a tight schedule.

2.1.3.1 Accreditation

The rules for accreditation of verifiers were set in DA 2025/2551. These companies must request accreditation from EU national accreditation bodies (NAB), who will check the existence of staff with specific competence to undertake the roles of CBAM lead auditor, CBAM auditor, independent reviewer, and technical expert in verification.

Once accredited, verifiers must request to register within two months of receiving their accreditation. **Registration will start on 1 September 2026**. But before this can happen, NABs must set up an **accreditation programme**, which may not be ready until later in 2026. Then NABs will audit the work of verifiers on test-run data, before granting accreditation. Therefore, the first accreditations might not happen **before the end of 2026**.

[12] Annex II, A5 of Implementing Regulation 2025/2547.

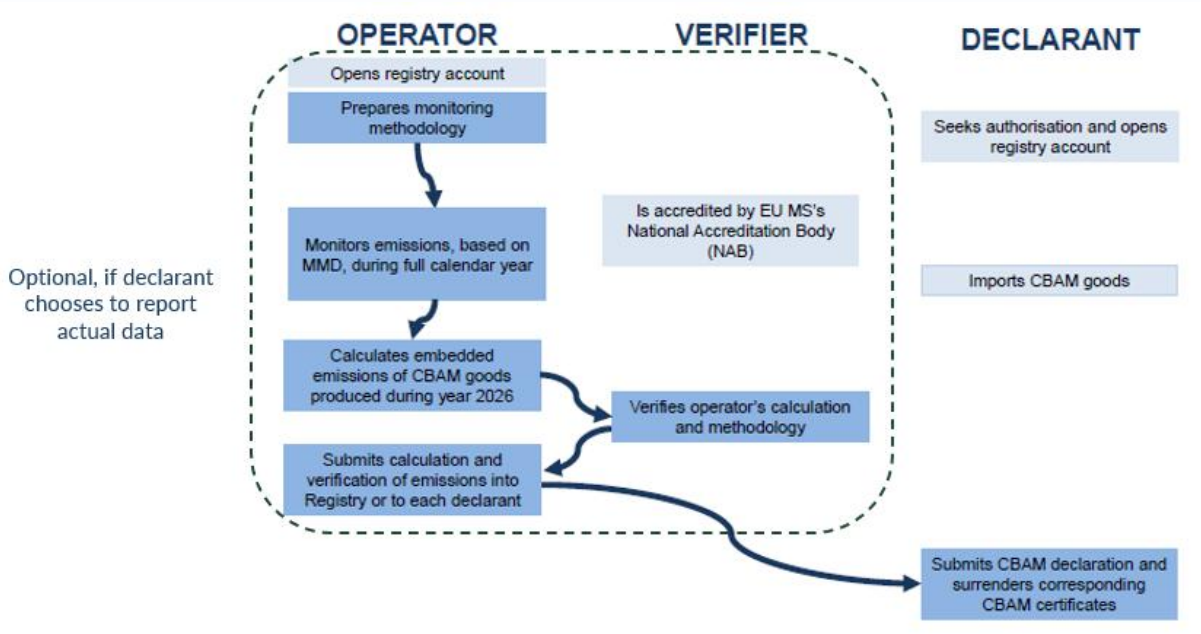


Figure 5 Steps to verification (source: European Commission)

Despite the tight schedule, there are a few positive signs. First, **both EU and non-EU firms can be accredited**, and the latter can apply with the NAB of any EU Member State. However, verifiers must be evaluated including through a site visit (which is less easy for non-EU ones), and only a handful of NABs have so far expressed their intention to accredit non-EU verifiers.

Second, verifiers who are already accredited under the EU ETS will not need to undergo the evaluation on emission monitoring (because it follows the same standards as for the EU ETS) and will only apply for an "extension of scope", which is a shorter, simplified process. An EU official mentioned 6 months as the expected timeline for this simplified procedure, compared to 9 months or more for the entire procedure for non-EU ETS verifiers.

Finally, accreditation is granted to legal entities and is independent of geography, so firms with multiple offices located in different countries don't need to seek multiple authorisations for their local offices. They can **outsource the task of verification** to their international offices, which means on-site visits only involve local trips within these countries. However, the parent company will be held responsible for the branch's compliance obligations (e.g. ensuring personnel qualification is aligned with the requirements imposed on the parent company) and liable in case of challenge by the authorities.

There is no set procedure to obtain an extension of the verification deadline in case verifiers were not available in sufficient numbers, but we believe the Commission will accept an extension if there was such a shortage.

2.1.3.2 Verification

Verification principles are ruled by IR 2025/2546. Verifiers can verify installations on the condition of the absence of a conflict of interest between the two, such as vested interests of the verifier in the installation itself. Verifications can occur **from 1 January 2027** (based on activity over 2026) and will consist of a physical or virtual site visit (the first one must be physical) and review of the monitoring plan. For complex goods using precursors, verification must take place **after the precursors themselves have been verified** – unless default values are used for those precursors, so this adds another stage to the process.

Due to the **commercially sensitive** nature of some data elements contained in the operator's **emissions report**, in the **verification report** operators may choose to include only a summary version thereof while concealing the full version from the CBAM declarant.[13]

Since the verifiers will charge for their work, some stakeholders have been wondering who will bear this cost. Since verification applies at installation level, the most logical way would be **for operators to pay** and then pass these costs through to their CBAM declarant clients.

2.1.4 Number of certificates required

The CBAM requires importers to surrender CBAM certificates based on emissions of goods imported in the previous calendar year. At the same time, free allocation will be gradually phased out for EU producers in the EU ETS between 2026 and 2034.

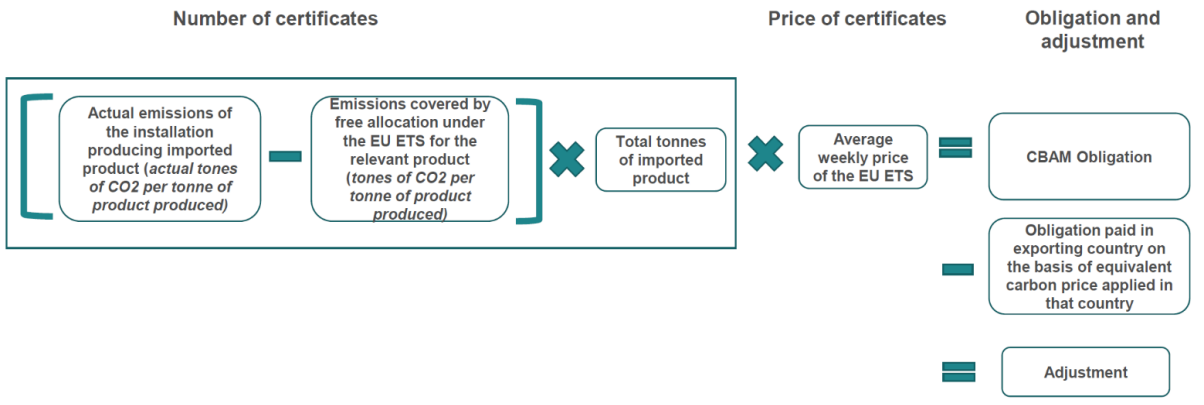


Figure 6 Value of CBAM financial obligations as free allocations are being phased out (source: European Commission)

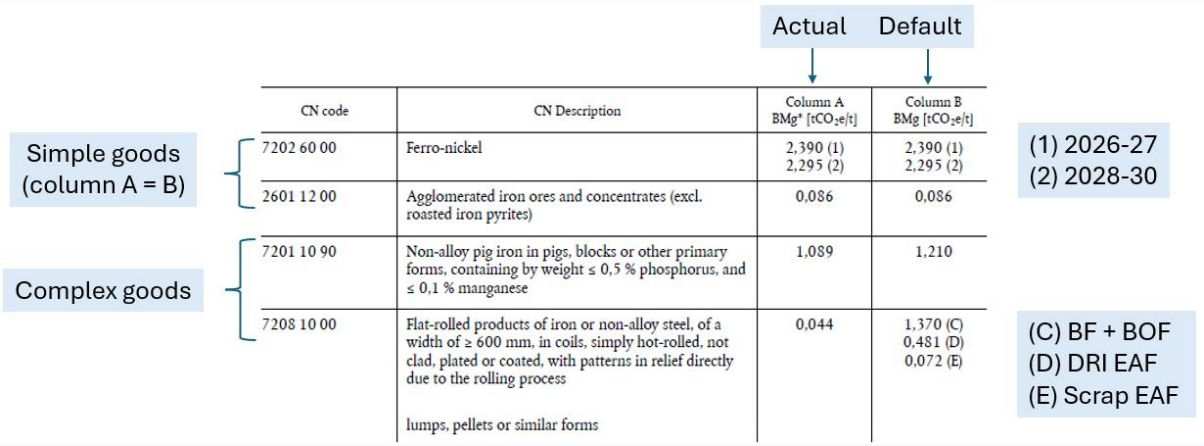
The number of CBAM certificates to be surrendered is shown in Figure 6. It must equal the emissions embedded in the goods, reduced by an amount (specific embedded free allocation, or SEFA) reflecting the number of free allowances that equivalent products covered by the EU ETS would receive. This number will be further reduced by the carbon price paid (if any) in the country of origin of the goods.[14] See comments in section 2.1.5 on carbon price paid by Chinese exporters.

Free allocation for EU producers under the EU ETS will gradually decrease to zero by 2034, which will gradually increase CBAM fees. Figure 6 shows the scheduled **CBAM factor**, which is number of free allowances to be given to ETS installation in proportion to their **ETS benchmarks**, which is the number they would receive in absence of the CBAM.

The calculation method for the free allocation discount in 2026-2033 was clarified in December 2025. Instead of exactly mirroring the way free allocation is given to EU plants, likely to avoid loopholes, it is based on a complex formula using 'CBAM benchmarks', which depend on the type of product (simple or complex), the year, the production process, and whether the reporting uses actual data or default values.

These elements appear in the CBAM benchmarks listed in implementing regulation 2025/2620. CBAM benchmarks are presented in two columns (A and B), as illustrated in Figure 7. For 'simple goods', both columns have the same value, whereas for 'complex goods' (determined using precursors) the values are different. A number or letter indicates the production route and the period of application of the value.

[13] Implementing Regulation 2025/2546.
[14] Article 9(4) of the CBAM Regulation.



CN code	CN Description	Column A BMg* [tCO2e/t]	Column B BMg [tCO2e/t]
7202 60 00	Ferro-nickel	2,390 (1) 2,295 (2)	2,390 (1) 2,295 (2)
2601 12 00	Agglomerated iron ores and concentrates (excl. roasted iron pyrites)	0,086	0,086
7201 10 90	Non-alloy pig iron in pigs, blocks or other primary forms, containing by weight ≤ 0,5 % phosphorus, and ≤ 0,1 % manganese	1,089	1,210
7208 10 00	Flat-rolled products of iron or non-alloy steel, of a width of ≥ 600 mm, in coils, simply hot-rolled, not clad, plated or coated, with patterns in relief directly due to the rolling process lumps, pellets or similar forms	0,044	1,370 (C) 0,481 (D) 0,072 (E)

Figure 7 CBAM benchmark for calculation of SEFA

Source: Implementing regulation 2025/2620

Using the values in Figure 7, we can calculate the CBAM benchmark of hot-rolled coils (HRC, with CN code starting 7208) made through the blast furnace + converter route. Figure 8 represents the CBAM benchmarks applicable in 2026 for each product of the value chain. When using default values, the CBAM benchmark of HRC can be taken directly from column B of the final product with CN code 7208, i.e. 1.370. However, when using actual data, CBAM benchmarks must be calculated by weighting each precursor with its input mass to produce 1 tonne of HRC.

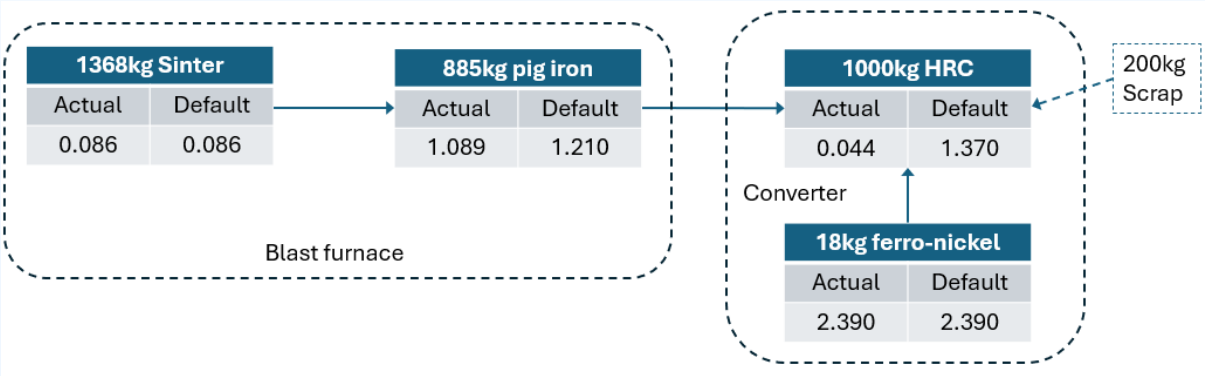


Figure 8 CBAM benchmarks of HRC value chain in the blast furnace + converter route

Source: Sandbag

Table 5 shows the calculation of CBAM benchmarks for HRC using actual data as well as using default values. SEFA is then calculated by multiplying the CBAM benchmark with the CBAM factor, which is 97.5% in 2026. The resulting value is 1.139 per tonne of product if using actual data and 1.336 if using default values. SEFA counts negatively in the CBAM fee formula, thus higher SEFA values lead to lower CBAM fee. The table's last column compares CBAM benchmarks with ETS free allocation benchmarks where applicable. Not all precursors of HRC have free allocation benchmarks, so this comparison is not possible for the entire product. The values are given for each process, per tonne of output, except for default value CBAM benchmarks which cover the product combined with its precursors.

Table 5 calculation of CBAM benchmarks using actual as well as using default values

		Using actual data	Using default values*	EU ETS free allocation
Sintered ore	1370 kg	0.086	0.086	0.086
Pig iron	885 kg	1.089	1.210	1.248
Ferro-nickel	18 kg	2.390	2.390	Fallback**
Hot Rolled Coil	1000 kg	0.044	1.370	
CBAM benchmark		**1.169**	**1.370**	
CBAM factor	97.5%			
Specific embedded free allocation (SEFA)		**1.139**	**1.336**	

Source: Sandbag (* per tonne of combined good; ** free allocation depends on amounts of heat and fuel used)

EU ETS benchmarks were revised in June 2026,[15] and they will be further revised by the end of 2026 for application in 2027, so CBAM benchmarks will be adjusted accordingly.

2.1.5 Discount for carbon price paid in China

According to the CBAM Regulation, declarants will be able to claim a reduction from to the number of CBAM certificates to be surrendered in order to take into account the carbon price "effectively paid" in the country of origin[16] of the goods. A legislative proposal was made on 13 May 2026, followed by a public consultation before adoption of the text.

Importers of Chinese goods will have the option to deduct a carbon price default value attributed to their embedded emissions, which is quite straightforward, or to declare the actual price paid, which will require more efforts. The latter would require providing evidence of the coverage of production facilities by a carbon pricing mechanism (CPM), attributing the emissions (and free allocation) to the goods produced by the installations, then converting the cost to euros, repeating these steps for precursors. Each of which steps will be explained and submitted as evidence in a report certified by an accredited entity.

2.1.5.1 China's emissions trading systems

Since March 2025, **China's National ETS** covers power generation, iron and steel, cement, and aluminium smelting. As most CBAM-covered products involve manufacturing processes also covered by China's National ETS, this provision should make Chinese exports **eligible for the discount** for products in the iron and steel sector, cement products, and aluminium products containing primary aluminium.

Although individual emitting entities may face effective carbon costs, this cost will be mitigated by **free allocation**, which they receive in an output-based manner (based on emission intensity levels, similarly to the EU ETS). According to Article 8(1)(b) of the proposed text, free allocation will count as a rebate to consider in the calculation of effective costs. As a result, the average discount for a given product type will depend on the portion of emissions not covered by the free allowances.

For 2025, each entity in the cement, aluminium smelting, and iron and steel sectors received a number of allowances equal to their emissions, so there were no effective costs. For 2026, the overall balance should be roughly neutral,[17] which suggests an average discount close to zero, although individual exporting firms may get higher discounts. According to China's Ministry of Ecology and Environment, by 2030 the ETS will combine free and paid allowances.[18]

[15] Implementing Regulation IR 2026/1412
[16] Article 9 of the CBAM Regulation.
[17] Environmental Defense Fund (2025), China's Carbon Emissions System: Past, Present and Future.
[18] Ministry of Ecology and Environment of the People's Republic of China (2025), Progress Report of China's National Carbon Market.

It should be noted that the use of carbon credits such as CCERs for compliance with the ETS is, in principle, eligible for discount under the CBAM, provided that, if using international credits, those credits do not cover more than 10% of the embedded emissions (the National ETS imposes a limit of 5%), and the underlying projects comply with Articles 6.2 or 6.4 of the Paris Agreement. No additional requirement is set on the use of domestic carbon credits.[19]

Regarding carbon prices paid under China's **pilot regional ETS**, although regional ETS are on principle eligible for CBAM discounts, they might fail to meet the requirement under Recital 8 of the proposed legislation, that the carbon pricing scheme (CPM) must apply to "all operators of the relevant sectors". Operators joined the regional ETS at the request of the government, but without legislation forcing all operators of their sectors to join it.

In contrast to the National ETS (and the regional schemes), **China's voluntary carbon market** based on offsets does not provide free allocation. However, according to Recital 8 of the proposed text, offsets might only be counted towards CBAM obligations insofar as they are used in a scheme that is "binding in nature and imposes compliance obligations on all operators active in the relevant sectors" of the third country, rather than used on a voluntary basis. This should in principle rule out offsets purchased under the voluntary carbon market.

Suppliers will need to provide evidence for the carbon price paid. According to the draft implementing regulation from May 2026, the following applies:

If emissions are based on default values, the carbon price paid must be based on default values;

- If based on actual data, they can be based on either default values or on actual data;
- If based on actual data, evidence:
    - must be provided by an independent person who meets the qualification requirements listed in Art 9 of the IR. E.g. they must be independent of the operator and the national authorities;
    - is listed in Annex I section 3.5 of the proposed implementing regulation:
        - Total reported emissions under the CPM;
        - Official records of compliance units surrendered in the registry;
        - Evidence that the compliance units are still valid at the end of the reporting period;
        - If using average auctioning price: evidence from authorities of the weighted average auctioning price;
        - If using average secondary market price, evidence of the published average exchange price;
        - If using actual cost of compliance units purchased, evidence of the quantity of compliance units in the account at the end of the reporting period;
        - Evidence of rebates: official confirmation of date and amount refunded, record of payment, audited financial statements showing monetary value of refund.

2.1.5.2 Green certificates

In China, a market of tradable Green Electricity Certificates market was introduced, mainly for ESG, renewable energy targets, and carbon neutrality claims.

Green certificates will **not be eligible as evidence of zero-carbon indirect emissions**, because a Green Electricity Certificate only proves that renewable electricity was generated somewhere, not that it was physically used by a specific factory at a specific time.

In order to claim the use of renewable electricity, the CBAM requires proof of physical electricity delivery, time matching, and a direct link between generation and consumption, which Green Electricity Certificates cannot demonstrate.

[19] Recital 12 of the legislative proposal on carbon price paid in third countries.

According to the proposed legislation, green certificates **will not count as carbon price paid under the CBAM either**. Annex I.3 of the proposed legislative text allows carbon prices paid for indirect emissions to count toward CBAM obligations, and requires indirect emissions paid in the country to count towards indirect emissions under the CBAM (Annex I.3.2), so **this would only concern imports of cement, fertilisers and agglomerated ores**, for which indirect emissions are covered by the CBAM. However, Annex I.3.2 only takes into account such payments if made as compliance with CPM that also cover indirect emissions. Which is not the case, as indirect emissions were removed from the National ETS in its third compliance cycles.

Finally, green certificates **cannot count toward CBAM obligations as domestic carbon credits**, because domestic carbon credits only count toward CBAM compliance if they are paid under a CPM in the third country which cover all operators which is not the case for the National ETS.

2.1.5.3 Direct links to renewables or power purchase agreements (PPA)

The use of renewable energy can be claimed in the reporting of embedded emissions. This must be justified either by the existence of a direct link between generation and consumption, or a PPA.

In case of a direct link, the following evidence must be provided:[20]

a) a single line diagram demonstrating the existence of a direct technical link between the installation in which the imported good is produced and the electricity generation source;
b) data from a smart metering system demonstrating that the amount of electricity for which the actual emissions are claimed was produced by the installation producing electricity connected by the direct technical link, and demonstrating the time during which the electricity production occurred, with reference to measurement periods not exceeding an hour;
c) data from a smart metering system demonstrating that the amount of electricity for which the actual emissions are claimed, was delivered, within the same measurement period not exceeding one hour, to an installation connected by the direct technical link and producing a CBAM good;
d) where the direct technical link connects multiple installations producing electricity with one or multiple installations producing CBAM goods, a contract between the operators of the two installations requiring the delivery of at least the amount of electricity for which the actual emissions are claimed from one installation to the other.

In case of a PPA, the following must be provided:

a) contractual evidence of a PPA directly concluded between generation plant and CBAM good manufacturing plant for the physical delivery of electricity;
b) data from a smart metering system demonstrating that a given amount of electricity was produced by the installation producing electricity and demonstrating the period of time of production;
c) data from a smart metering system demonstrating that an equivalent amount of electricity was delivered, within the same measurement period which shall not exceed one hour, to the installation producing CBAM goods;
d) written documentation, either from transmission system operators, public authorities or from other sources of relevant public and reliable information, demonstrating a physical grid connection between the installation producing electricity and the installation producing CBAM goods.

2.1.6 Purchase of CBAM certificates

Purchase obligations were modified by the CBAM regulation 'omnibus amendment'. **By 31 March 2027**, and every subsequent quarter, importers will be required to ensure that the number of CBAM certificates held in their account is **equivalent to 50% of the emissions embedded** in the goods they

[20] Annex D.4.3 of IR 2025/2547.

have imported since the start of the year, minus the SEFA and discount applicable for emissions already paid in countries of origin. **Default values without mark-ups** can be used to calculate the amount.

From 1 February 2027, National Competent Authorities will sell CBAM certificates on a **common central platform**. Pursuant to IR 2025/2548, the price of CBAM certificates will be published directly in the accounts of declarants **immediately after the end of each quarter in 2026** based on the weighted average EU ETS auction price of that quarter (the price for Q1, €75.36, was published on 7 April), and after the end of each week from 2027 onwards, based on the weekly average. Declarants will also be able to sell back unused certificates to their NCA. CBAM certificates covering 2026 imports must be surrendered by **30 September 2027**.

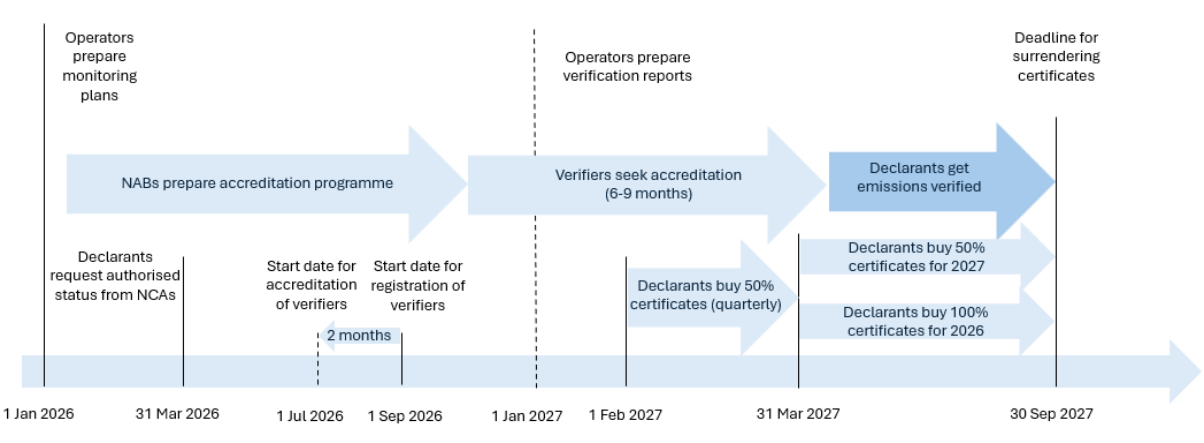


Figure 9 Timeline of CBAM Compliance

2.1.7 Embedded emissions reporting

Emission reports need to contain the quantity of each emission sources, such as fuels and other process inputs, as well as their associated emission factors. They must be reported with minimum required frequency (unless this would cause unreasonable costs, see below). Emission factors of process inputs can be estimated using different methods, with different accuracy levels: in increasing order are Type I standard values (e.g. from IPCC guidelines), Type II standard values (e.g. from the latest national inventory), proxy data with correlation satisfying "good industrial practice", or laboratory analysis.

Emission reporting is ruled by IR 2025/2547. It stipulates that "Monitoring and reporting of emissions shall aim for the **highest achievable accuracy**, unless that is technically not feasible or incurs unreasonable costs".[21] The definition of "unreasonable" cost is:

- if those costs relate to equipment, its depreciated value over its lifetime exceeds the improvement of estimated uncertainty (or 1% of the emissions if unavailable) times €80/tCO_2e
- if they relate to the improvement of the monitoring methodology, they exceed €4,000 per year.

These conditions mirror those that apply to EU ETS installations under the Monitoring and Reporting Regulation (MRR) 2018/2066, but with different thresholds. Article 18 of the MRR defines "unreasonable" equipment costs above €20/tCO_2 and methodology improvement costs above €2,000 (or €500 for low-emission installations).

The hierarchy in data accuracy also mirrors that of the MRR, which is divided into tiers: **tier 1** data are uniform standard factors, **tier 2a** data are country-specific, **tier 2b** data use proxy data with "good engineering practice" correlations, and **tier 3** data use laboratory analyses.

[21] Implementing Regulation 2025/2547, Annex II, section A2 (monitoring principles), point 8.

2.2 Compliance costs

As explained in section 2.1.2, in theory, monitoring embedded emissions requires little more than a pen and paper. However, compliance requires to spend time preparing documents, tracking the origin of goods and the quantities used, gathering evidence, getting it checked by an accredited third party and submitting information to the CBAM registry.

2.2.1 Embedded emissions: actual data vs default values

As explained in section 2.1.4, compliance costs greatly depend on the volume of embedded emissions reported by declarants for imported products. These volumes may be very different depending on whether they are based on default values or reported and verified based on actual data.

Default values were published in December 2025 in IR 2025/2621 (and amended in July 2026 in IR 2026/1740), for each country and product. These values were set at levels widely recognised as high, **increased by a mark-up of 10%, 20%, and 30% for 2026, 2027, and 2028 and beyond** to ensure the CBAM's environmental integrity (except for fertilisers, to which only 1% is applied). If reliable data are unavailable, default values will be based on the **average emission intensity of the 10 highest values** of countries for which data are available.

The high level of default values was criticised on 1 January 2026 by China's Ministry of Commerce, who called them "unfair and discriminatory treatment for China".[22] The high values might seem surprising as Annex IV of the CBAM regulation says they should be "set at the **average emission intensity** of each exporting country". However, this is somehow contradicted by the IR's statement that the CBAM's objective "would be compromised if importers of goods (…) were allowed to apply default values that are lower than the actual emissions".[23] We understand that the resulting approach was to average out emission intensities:

- within the most emission-intensive process for each product and country,
- made from the most unfavourable combination of inputs.

This might explain why the default value for flat-rolled steel products (CN code 7208) is 3.187 tCO_2 per tonne of product compared to 1.84 in a previous JRC study from 2023. Steel wire (code 721710) is at 3.169 despite the usually high level of scrap content, still considered as emission-free by the methodology in place. Sandbag's CBAM Simulator estimates the difference between costs based on default values or actual data. For example, as shown on Figure 10, in 2034 CBAM fees due per tonne of Chinese HRC will be €392 if declared based on default values, compared to only €128 if based on actual data (and compared to €114 carbon costs for EU manufacturers).

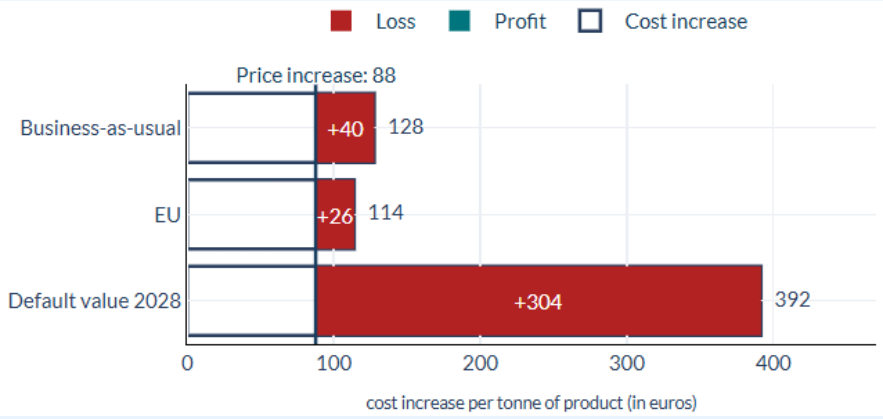


Figure 10 Unitary carbon costs in 2034 for Chinese and EU producers ("business-as-usual" = based on actual data reflecting average country values)

[22] Ministry of Commerce of the People's Republic of China (Jan 2026) Answers to questions from journalists on CBAM.
[23] Recital 3 of Implementing Regulation 2025/2621.

In its December 2025 review report, the Commission indicated that those values will be revised "in 2027 or early 2028, once enough data has been collected". According to Art. 7 of IR 2025/2547, default values should be **reviewed "by December 2027 at the latest"**.

According to Annex IV(7) of the CBAM Regulation, "where declarants for goods produced in a third country, a group of third countries or a region within a third country can demonstrate, on the basis of reliable data, that **alternative region-specific adaptations of default values are lower** than the default values determined by the Commission, such region-specific adaptations can be used". It is however unclear what kind of evidence is required to demonstrate such values, and we understand that they would only apply to the declarant who requests those adaptations.

Another way of amending default values might be through diplomatic dialogue. After the India-EU trade deal was announced on 28 January 2026, an EU official was quoted as mentioning the possibility of a "technical dialogue" which would cover exchanges of information on default values.[24]

2.2.2 Administrative costs

In its December 2025 impact assessment, the European Commission estimated compliance costs for companies, based on a survey, "including the purchase and surrender of CBAM certificates, audit costs and costs related to IT, the training of staff and capacity building of product suppliers (to obtain accurate data necessary for CBAM compliance)". Table 6 shows the costs reported, with a low-high range (reflecting the 25%-75% quartiles) of €5,400 - €81,900.

Table 6 annual compliance costs, in euros (source: European Commission)

	25% quartile (default values)	75% quartile (actual data)
Annual costs related to activities	€5,400	€19,900
Other annual costs (IT maintenance, legal, training)	€0	€61,900
Total annual cost per importer	€5,400	€81,900

The report mentions that the high range mostly concerns companies "that likely intend to estimate the actual emission values (in contrast with using default values)".

Although the Commission's impact assessment tries to correlate compliance costs with annual volumes of imported goods, we understand that costs are driven by other factors, such as the variety of imported goods, complexity of manufacturing processes and value chains.[25] We also understand that operational costs to suppliers, related to the periodical reporting of data and preparation of emissions reports, would need to be added to these amounts.

In comparison, a Dutch government study estimated EU ETS administrative costs for Netherlands-based companies to be €21m, broken down as €11.6m internal and €9.4m external costs. The largest reported costs are the activities required to measure emissions and third-party verification of annual emissions reports, both of which are similar to the CBAM, and the work involved in preparing and administering applications for free allocation – which is not.[26] The country had 826 installations covered by the EU ETS in 2024, so that is 25,400 euros per installation, on average.

CBAM costs are therefore estimated as comparatively higher, maybe because each importer needs to report embedded emissions coming from several installations, each of which having to undergo MRV.

[24] Carbon Pulse (27 Jan 2026), Brussels resists pressure to dilute EU's CBAM in India Trade Deal.
[25] This was confirmed in an interview with sustainability auditor Applus Laboratory, Shanghai.
[26] Panteia (2026), Onderzoek regeldruk Europese emissiehandelssysteem.

The above table does not include one-off costs, which some survey respondents estimated at up to €129,000. They are presumably high for small to medium size companies, for which data quality may be poor, or for an enterprise resource planning system (ERP) which needs to be heavily adjusted to the CBAM's system boundaries, if not outright installed.

2.2.3 Breakeven point

These relatively high fixed costs create an expensive "entry ticket" to use actual data that is only worth paying, if imported volumes are high enough. Figure 11 represents the break-even point for importing Chinese steel hot-rolled coils (CN code 7208) between using the default value of 3.187 tCO_2 per tonne of steel (plus markup) and actual values assumed to be 1.60 tCO_2. The break-even point goes down from close to 550 tonnes of steel in 2026 to 350 tonnes in 2034, as the SEFA factor and markup become more favourable to actual data. However, it remains high on a recurrent basis, let alone in the first year of reporting.

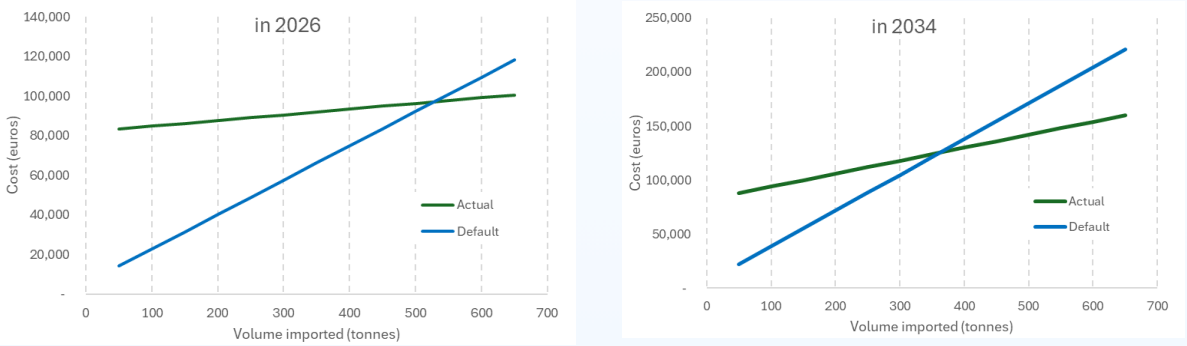


Figure 11 Cost of importing steel hot-rolled coils using default values vs. actual data

The above calculations do not include costs related to the claiming of carbon price paid in China, the procedure for which is described in section 2.1.5.

We, however, believe that this complex process will rarely be required in practice. Low emission plants will have their emissions more than covered by free allocation so they will not be eligible to any discount from CBAM fees. In contrast, high emission plants will tend to export less to the EU, so they will likely not need to fulfil CBAM compliance. For the rest, the effective carbon price paid (= price – free allocation) is likely to be very low, so relying on a default value might not make much difference compared to claiming the actual price paid.

2.2.4 Impact of Chinese ETS

Even though the Chinese ETS is unlikely to significantly reduce financial obligations under the CBAM due to its free allocation, it might help reduce the MRV burden for industrial firms covered by it. As Chinese producers emitting over 26,000 tCO_2e annually have to report their emissions every year, this data collection exercise could be made useful for MRV under the CBAM.

However, in the short run, the data collected under the Chinese ETS is unlikely to be very helpful. The accounting, reporting and verification guidelines were published by the Ministry of Ecology and Environment in September 2024 and January 2025, covering emissions dating back from 2024. The scheme allows to use default values as emission intensity, which means many companies only reported their emissions based on activity levels data.

2.3 Mitigating negative impacts

This section aims to give "play by the rules" advice, to comply with the CBAM at minimal cost.

2.3.1 Get the timing right

Figure 9 provides a timeline of the different steps of CBAM procedures. Importantly, if an operator intends to use actual data, they would have to draft a **monitoring plan** now. This is not a retrospective exercise, as this document must explain how emissions data is calculated and controlled.

Considering that EU ETS accredited verifiers will receive their CBAM accreditation before other verifiers, and that they will be able to outsource verification to their international branches, a safe move would be to **approach EU ETS verifiers who have offices in China**. Some companies offer "pre-verification" services, which has no official value but could save time ahead of the company receiving accreditation.

An important aspect is the requirement and timing of verification along the supply chain. If a complex good uses precursors from external suppliers, precursors must have their emissions verified prior to those of the complex good. The complex good manufacturer must therefore make sure that precursor manufacturers are going to get their emissions verified (which is more likely if they export to the EU directly) in time to feed into the complex good's emissions report. A safe approach to avoid default values would therefore **be to source precursors from suppliers directly exporting to the EU**, as those suppliers will likely take the necessary steps to get their emissions verified.

2.3.2 Prepare for monitoring

There is currently no template or guidance publicly available explaining how to prepare monitoring plans. Thus, operators have to rely on their understanding of IR 2025/2547. This act lists all production routes and corresponding system boundaries, inputs, and relevant precursors. It also prescribes how to keep track of quantities of inputs consumed and how frequently they should be measured. A series of detailed **guidance documents** published on 14 August 2026 provides more user-friendly explanations.

A useful tool to calculate embedded emissions is the **communication template**, which is an Excel workbook published on the European Commission's CBAM webpage for the transitional period, but whose calculations are still relevant for the definitive period.

To help handle the MRV process, many consultants have started offering a range of services from training to dedicated IT platforms, as well as various levels of assistance. A popular (and relatively cheap) service consists of reviewing quarterly monitoring reports used by declarants in the CBAM's transition period (until 2025) and suggesting improvements in methodology, data collection and calculations. Some companies, especially those already active on the EU ETS verification market, offer "pre-verification" services, which consist of delivering unofficial certificates of compliance ahead of those companies receiving accreditation. Pre-verification allows to mitigate the risk of verification failure, even though consultants doing pre-verification do not usually take responsibility for subsequent failure of actual verification.

One challenge for operators who make complex goods involving many precursors, is the collection and combination of emission data from a large number of sources. Operators also have the possibility to log their emissions data in a dedicated portal called O3CI (see screenshot in Figure 12) and make specific information visible to selected declarants. For each installation, the goods produced can be attributed emissions and production routes.

Private firms also propose IT platforms connecting importers and suppliers, so another challenge might be to manage data dispersed in multiple environments and avoid duplicating tasks. While the Commission's O3CI platform has the necessary features to store and share emissions data, other platforms add functionalities such as calculators of embedded emissions, CBAM fees simulators or even legal assistance, and claim to be more user-friendly.

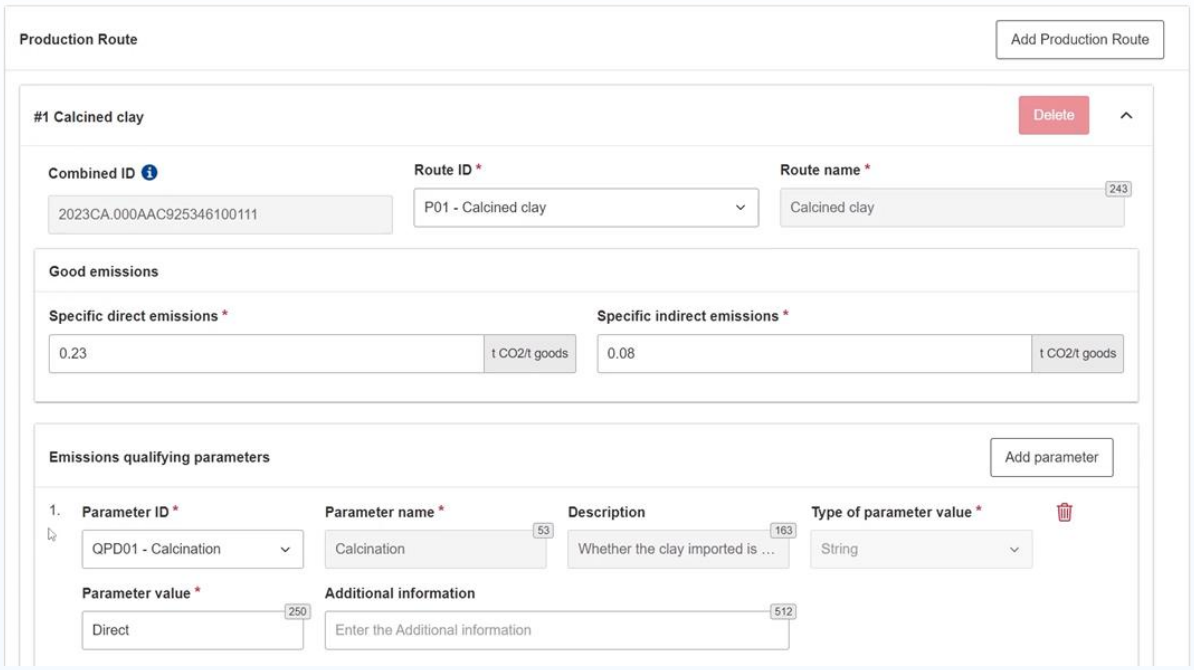


Figure 12 Screenshot of the CBAM's operator portal O3CI

2.3.3 Purchasing and hedging

Importers of CBAM goods have to pay for certificates, but the exact number of certificates required is not known until an emission report is produced at the end of each year following the delivery of goods and even possibly amended by third-party verification. This may occur over a year after the contractual sale of the goods. This then raises the questions of who should buy which instruments, when, and how many should be bought?

CBAM liabilities are borne by importers, but those are likely to "transfer" part of this risk to their suppliers through **contractual guarantees**, thus suppliers might need to manage it.

For example, in Table 7, the CBAM liability borne for the sale of 1,000 tonne of CBAM goods is €39,156 based on real data, but could climb to €150,000, based on default values, if real data fail to pass third-party verification. Although suppliers do not bear CBAM costs, importers might claim back the difference through contractual clauses, in case of failure to verify data. Examples of such agreements are starting to emerge, as private firm CBAMBOO launched a template for a pass-through agreement,[27] and some business associations were reported to provide similar templates to their members.

Volume risk management may create **confidentiality issues**. Unless importers have fully covered their exposure to MRV failure, they could require access to emissions data before buying CBAM goods from suppliers, to improve their confidence in the final liability amount, even though these data are not needed in CBAM declarations. Suppliers who don't want to share this data will therefore need to provide sufficient guarantees to importers, e.g. through **cash deposits or bank letters of credit**.

Price risk is important with CBAM certificates, because the large number of parameters driving EUA prices, including political ambition, which is very difficult to predict. Any strategy based on speculation over the future evolution of EUA prices is therefore risky, and, instead, acquisition strategies should focus on hedging risks.

[27] CBAMBOO (2026), Eliminate CBAM risk with the CBAMBOO PACC.



Figure 13 EU ETS allowance futures prices (for December 2026 delivery) over 12 months

Uncertainty over the number of certificates ("**volume risk**") can be greatly reduced (although not completely eliminated) through a robust monitoring plan and regular measurements of the exporting plant's inputs and outputs. In addition, a transfer of volume risk should be done onto the suppliers of precursors. Alternatively, CBAM costs can be estimated more safely without any measurements by using default values, but these values tend to be higher than if measured from actual data, and lead to higher CBAM costs.

Price risk should be addressed by locking in the price **at the selling date** of CBAM goods rather than their delivery, in order to lock in the profit margin expected from each sale. For sales with delivery **in 2026**, the price of certificates is determined by the quarter of delivery (not sale), so the price risk between sale and delivery cannot really be hedged through buying EUAs. However, some brokers propose purchase contracts of CBAM certificates at prices equal to the current EUA price plus a risk premium. These products, sometimes called "CBAM swaps", allow to fix CBAM certificate prices as soon as CBAM products are sold to EU buyers and can therefore be correctly factored into the price of the goods sold. However, that does not remove volume risk, and the risk premium might be expensive, so the exporter might want to consider whether they prefer to pay it or bear the price risk themselves.

For sales happening **from February 2027 onwards**, certificate prices can be locked in by acquiring CBAM certificates at the time of selling the goods.

Another aspect is **cash management**. Locking in the price of certificates by acquiring them at the time of sale would use up cash, so an alternative is to enter into forward contracts. These contracts allow to fix the price now for delivery at a later date (e.g. December 2028), which is less capital-intensive. They can then be unwound before expiry when purchasing actual certificates (e.g. at the end of the quarter of delivery of the goods), by only paying (or receiving) the difference between the initial set price and the market price at the date of unwinding. Note that forward contracts are not entirely cash-free because they usually require an initial deposit. There are no CBAM forward contracts available yet but some hybrid instruments exist.

For goods sold in 2027 and onwards, cash payments for certificates cannot be delayed until the yearly compliance date (in September of each year), because declarants will have to hold at least 50% of their CBAM obligations at the end of each quarter. These obligations have to be estimated from the previous year's verified data or default values. In 2027, actual data will likely not be available until the third quarter, thus the 50% holding will likely be based on to default values for the first two quarters. Given the high level of default values, a 50% holding might cover 100% or more of the actual liability, if the declarant chooses to use verified data, before being corrected in the third quarter. The temporary excess spending in the first two quarters thus requires extra cash.

This is illustrated in Table 7, where a margin of €30,000 expected from a product sale creates a temporary negative balance of €-5,544. Cash management only concerns importers, but importers might require extra security from their suppliers, or may increase markups as a result.

Table 7 Cashflows for an importer of 1,000 tonnes of CBAM goods in 2027

Date	Action	Cashflow	Balance
Mar-27	Sell 1,000t steel 7208 at €600 + estimated CBAM (emission intensity 1.60, SEFA 1.11) + 5% markup	669,156	669,156
	Pay supplier	**-600,000**	69,156
	Quarter end: purchase certificates covering 50% emissions, default value 3.169, SEFA 1.30	-74,700	-5,544
Sep-27	Sell excess certificates: claim 50% emissions based on 2026 verified data (emission intensity 1.60, SEFA 1.11)	55,122	49,578
Sep-28	Purchase remaining certificates	-19,578	30,000

Finally, there is currency risk. In case of an MRV failure, if importers claim back CBAM liabilities in September 2027 for sales having occurred up to 21 months in the past, these liabilities will likely be claimed in euros, at a potentially different exchange rate. Conversely, if a cash deposit was made in euros as guarantee and reimbursed upon successful MRV, the RMB value of the returned euro amount may not match that of the initial deposit. This risk is real but relatively small compared to volume risk.

2.3.4 Incompliance

Penalties apply if the number of CBAM certificates surrendered does not correspond to the emissions embedded in the goods imported during the preceding calendar year (deadline 30 September of each year for the preceding year).[28] In that case, the CBAM carries the same penalty as the EU ETS, which is **€100 per tonne** of unreported CO_2-equivalent emissions in addition to the outstanding number of CBAM certificates considered in violation. If a person other than an authorised CBAM declarant imports goods into the customs territory of the European Union without complying with the CBAM Regulation, a penalty **three to five times** the previously mentioned penalty shall be applied corresponding to the severity of the infringement.

Beyond incompliance, there is also a risk of delivering invalid emissions reports that third-party verifiers will not want to verify. This will lead to the application of punitive default values, leading to higher CBAM costs. One China-based CBAM consultant described the compliance exercise as not being treated seriously enough "as a form-filling exercise" due to "organisational misalignment" and a "lack of data governance", using unreliable data, thereby creating a huge workload of manual data reconstruction.[29] A better organised approach might therefore help reduce final bills.

It should be noted that extra costs related to failed verification will fall entirely on importers, i.e. EU-based entities. However, these entities will seek to transfer these costs to their suppliers, e.g. through specific contractual provisions (as mentioned in 2.3.3), negotiating discounts, or simply changing suppliers.

2.3.5 Circumvention / Resource shuffling

The rules that applied during the transition period created a number of reallocation channels, not necessarily intentional or fraudulent, allowing to reduce CBAM liabilities without benefiting the climate:

[28] Article 6 of the CBAM Regulation.
[29] Shutong Chen (2026) Key Challenges in CBAM Implementation — A China Supply Chain Perspective.

1) **Metal feedstock:** The CBAM methodology considers steel and aluminium scrap as zero-carbon (even pre-consumer scrap). A simple way to reduce CBAM fees is therefore to increase the content of scrap in exported products. For steel, non-scrap metallic feedstock such as direct reduced iron (DRI) is usually much less emission intensive than pig iron, so CBAM liabilities can also be lowered by substituting one with the other.
2) **Clinker content:** Cement products made with less clinker are less emission-intensive, so cement imports could reduce CBAM costs by blending clinker with fly ash, blast furnace slag, or pozzolans.
3) **Biomass:** Reallocating the use of biomass as fuel from other applications to producing CBAM-covered goods, allows to lower CBAM liabilities.
4) **Renewable PPAs:** Indirect emissions can be significantly reduced through the use of renewables power purchase agreements (PPAs).
5) **Selective production routes:** In the transition period, if different production routes are used to produce a type of good within the same installation, operators could declare the lower-emission routes for exported goods.
6) **Multi-product CN codes:** Some product categories identified by CN codes actually refer to several types of products. For example, category 7308 (Structures and parts of structures of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel) groups together long and flat steel products that typically have very different emission intensities. In the transition period, a company could therefore produce 10% high-emission products and 90% low-emission products of this same group, and export the high-emission ones to the EU declaring the low average emission intensity of the whole group.

Whilst some of these reallocation channels are still in place, many have been closed off. Channel 5) is partly closed: in the revised methodology, where different production routes are used to produce a type of good within the same installation, the embedded emissions of those goods are to be calculated as the **weighted average** of emissions produced in the various production routes. For example, if steel pipes are produced within an installation from both BF-BOF steel (with high emissions) and scrap-EAF steel (with low emissions), the emission intensity of the exported good must take into account the weighted average of the high and low emission precursors. Operators are still allowed to calculate emission routes separately, if they can prove a commercial reason to do so, other than minimizing CBAM costs (as illustrated in Figure 14).[30]

If precursors are produced and fully consumed within the same installation as several complex goods (similar to the bubble approach in the transition period), the different CN codes can still be grouped under one single process.[31]

Conversely, if goods produced by an installation are different in shape and size but share the same precursors in types, quantities and proportions, they should all be considered as sharing the same multi-functional process.[32] It is no longer possible to attribute lower emissions to metal goods with lighter downstream processes (casting, forging…) than to goods with heavier ones.

[30] Implementing regulation 2025/2547, Art. 4(7).
[31] Implementing regulation 2025/2547, Art. 4(9).
[32] Annex II, A4 of Implementing Regulation 2025/2547.

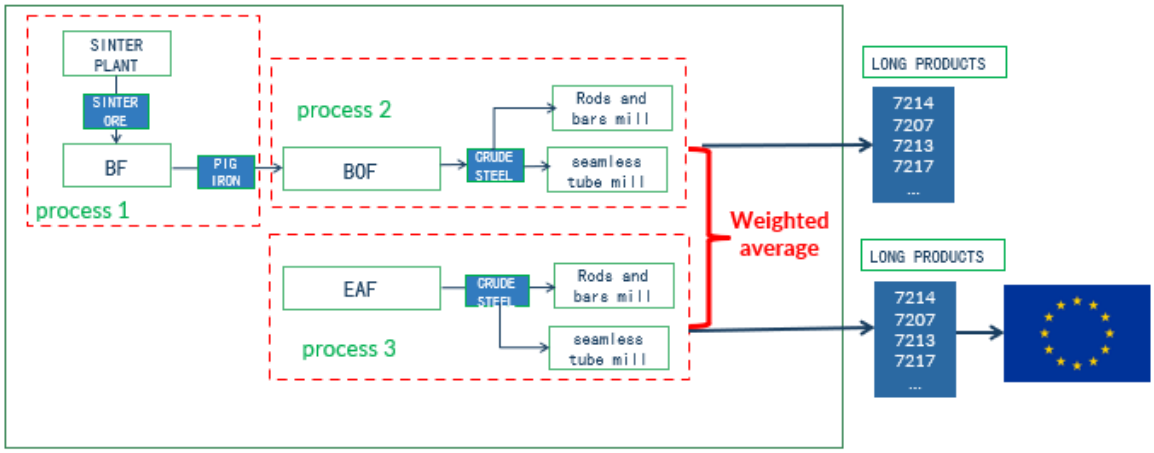


Figure 14 Installation producing the same goods from two different routes

Reallocation channel 6) is only partly closed. From 2026 onwards,[33] to prevent misreporting, emissions from an installation attributed to exported goods should be based on functional units. For cement and fertilisers, functional units are tonnes of clinker and nitrogen, respectively, contained in those exported goods. For other goods, functional units are the quantities of goods produced under the same CN code, which rules out strategically grouping different product types together. However, even 8-digit CN codes tend to differentiate using criteria such as shape or function that do not impact emission intensity, whereas other criteria (e.g. high-strength vs. low-strength steel) have a large impact on emission intensity but no CN code distinction.

More reallocation channels will be closed under the Commission's December 2025 amendment proposal. Pre-consumer scrap will have attributed emissions, which will reduce opportunities for channel 1), although post-consumer scrap will still have no attributed emissions.

Regarding channel 4), the validity of PPAs in emissions reporting has been restricted. PPAs must demonstrate real physical delivery, through a certified physical grid connection and using smart metering at both ends (production and use) with hourly matching.[34]

A few reallocation channels remain, however they have become more costly and might not be worth betting on for the future, as more restrictions may be adopted. In the proposed anti-circumvention amendment, the Commission will be given additional delegated powers to quickly tackle **new circumvention channels**, with the possibility to refine categories (which could close down channel 6) completely). In its review report, the Commission wrote that in 2026-27, it will "advance work on additional anti-circumvention measures" and "amending rules for calculating the embedded emissions of electricity".

2.3.6 Developing low-carbon supply-chains

A more sustainable way of reducing CBAM obligations would be to decarbonise China's industrial production. Whereas Europe will subject its entire industry to carbon pricing, CBAM rules will only apply charges to imported products, so it will only require a transformation of the size of Chinese EU exports (6.6m to 10m tonnes of steel, 0.7m to 1.2m tonnes of aluminium) to significantly reduce the CBAM bill.

For some sectors, this transformation is already in motion. **In the iron and steel sector**, steelmaking company Baowu Group started production at its Zhanjiang hydrogen-ready DRI plant with 1m tonne annual capacity,[35] which it can then combine with scrap to produce steel and achieve emissions of less

[33] Implementing regulation 2025/2547, Art. 4(6).
[34] Implementing Regulation 2025/2547, Art. 4(8) and Annex II, D.4.3.
[35] Tenova (9 Jan 2024), First-ever DRI production for Baowu in China.

than 0.30 tCO_2 per tonne.[36] The project's hydrogen supply is being secured by Baowu's Yangjiang Green Hydrogen Industrial Park,[37] whose construction started in January 2026. China is also advancing hydrogen-based steelmaking through projects such as the HBIS Zhangxuan Technology Hydrogen Metallurgy Demonstration Project, a hydrogen-ready DRI project with a planned capacity of 1.2 Mtpa that uses hydrogen-rich coke oven gas and is compatible with future green hydrogen integration.

As Chinese flat steel exports to the EU are only 2.5 million tonnes per year, and 5.4 million tonnes if we count the content of downstream goods, if blended with 50% scrap, it would only take roughly two to five large-scale hydrogen-ready DRI projects, such as Baowu's Zhanjiang plant or the HBIS Zhangxuan Hydrogen Metallurgy Demonstration Project, to replace all of China's EU flat steel exports with virtually CBAM-free steel. Long steel exports can already be virtually CBAM-free if made from 100% scrap.

On **polymers**, chemical company Vioneo announced in January 2026 that it will build a facility with 300,000 tonnes annual capacity of polyethylene and polypropylene from green methanol derived from biogenic carbon dioxide. Vioneo chose China for its ability to supply affordable green methanol.[38] China is already developing this value chain, including the "Liquid Sunshine" project by China Coal Erdos Energy Chemical, a 100 kt/year green methanol facility using wind and solar power to produce green hydrogen. It is also advancing integrated hydrogen-chemical projects such as the Datang Duolun 150 MW system, which supplies green hydrogen to coal-to-methanol and polypropylene production and reduces over 500,000 tonnes of CO_2 annually.

China is also scaling green ammonia and fertiliser production, including large-scale projects such as the 600,000 tonnes/year green ammonia facility in Jilin City.[39] National Energy Group Ningdong Renewable Hydrogen Carbon Reduction Demonstration Zone produces around 3,080 tons of green hydrogen annually. As these renewable hydrogen-based systems scale, fertilisers can be produced with near-zero operational CO_2 emissions. This raises the possibility that China's fertiliser exports could progressively shift toward a near-zero emissions profile, particularly for ammonia-based fertiliser.

3 Impact at country level

3.1 Scope

The impact of the CBAM will depend on assumptions made over the policy's coverage (products, emissions). We assume that for each product, the emission intensity of goods matches the country average.

Given the many possible evolutions of the CBAM, we created the current scope and five possible extensions of emissions covered by the scheme:

- The CBAM's current scope
- Extension covering the 180 new downstream goods proposed by the Commission
- Taking into account emissions from pre-consumer scrap.
- Extension to upstream products (precursors): ferro-silicon, lime and coke (for steel products), pre-bake anode and alumina (for aluminium products).
- Extension to indirect emissions (from electricity use);
- Extension to new products: 9 selected categories of refinery products (naphtha, gasoline, kerosene, diesel, HO marine DSL, DMF RMF, LPG, HSFO, Others), 12 chemicals (ethylene, propylene, butadiene, butene, benzene, toluene, xylenes, styrenes, vinyl chloride monomer, methanol, monoethylene glycol, ethylene oxide) and 7 polymers (polyethylene (low density),

[36] BHP (11 May 2025), BHP and China Baowu celebrated successful commercial-scale DRI trials using BHP's Pilbara iron ores.
[37] China Hydrogen Bulletin (27 Jan 2026), 80,000 tons Green Hydrogen, this Project Will Bring Tectonic Shift to Hydrogen Ecosystem along China's Southern Coastline.
[38] C&en (27 Jan 2026) Vioneo moves project to China; GSK to buy Rapt Therapeutics for $2.2 billion.
[39] Jilin Provincial Commercial Information Center.

polyethylene (high density), polypropylene, polystyrene, plolyvinyl chloride, poliurethane, polyethylene terephthalate).

3.2 Impacts after full CBAM ramp-up

The following calculations are assumed to be for the period after the full phase out of free allocation in the EU ETS for products covered by the CBAM. The calculations were done using Sandbag's in-house modelling, based on average country emission intensity estimates following the methodology used by Sandbag's CBAM Simulator.

In 2025, China exported 11.2m tonnes of CBAM goods to the EU across 559 products of CN8 categories under the current scope or 64 CN4 categories. After full ramp-up of the CBAM (in 2034), we estimate the CBAM fees due on these products to be 1,385 million euros. The proposed downstream extension would add 5.9m tonnes of goods into the CBAM scope, across 169 products and **632 million euros** to the CBAM bill, and extending to new sectors would add an additional **94 million euros**.

Table 8 represents the 40 top products sorted in decreasing order of CBAM fees in the case of full extension of the scheme (both downstream and to new products) but keeping the current emissions scope (no pre-consumer scrap, no new precursors and no indirect emissions). Of these, 13 are the result of the downstream extension (represented in bold) and only 3 are products from new sectors (in orange). These 40 products capture 90% of total fees across all products.

Table 8 China's 40 most exposed products to CBAM fees

CN4	Descriptions CN4	CBAM fees (mn€)	% product price	Product type
7308	Structures (excluding prefabricated buildings of heading 9406) and parts of structures, of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel	184	8%	Long steel
7207	Semi-finished products of iron or non-alloy steel	162	23%	Long steel
3102	Mineral or chemical fertilisers, nitrogenous	154	50%	Fertilisers
7326	Other articles of iron or steel	142	4%	Flat steel
7210	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, clad, plated or coated	123	17%	Flat steel
9403	**Other furniture and parts thereof**	**120**	**4%**	**Long steel**
7318	Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter pins, washers (including spring washers) and similar articles, of iron or steel	97	6%	Long steel
8431	**Parts suitable for use solely or principally with the machinery of headings 8425 to 8430**	**75**	**4%**	**Flat steel**
7228	Other bars and rods of other alloy steel; angles, shapes and sections, of other alloy steel; hollow drill bars and rods, of alloy or non-alloy steel	63	11%	Long steel
7225	Flat-rolled products of other alloy steel, of a width of 600 mm or more	57	10%	Flat steel
8418	**Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat pumps other than air-conditioning machines of heading 8415**	**55**	**3%**	**Flat steel**
8450	**Household or laundry-type washing machines, including machines which both wash and dry**	**55**	**4%**	**Flat steel**
8708	**Parts and accessories of the motor vehicles of headings 8701 to 8705**	**45**	**2%**	**Combined metal**
7214	Other bars and rods of iron or non-alloy steel, not further worked than forged, hot-rolled, hot-drawn or hot-extruded, but including those twisted after rolling	43	17%	Long steel

8716	**Trailers and semi-trailers; other vehicles, not mechanically propelled; parts thereof**	**37**	**5%**	**Combined metal**
7307	Tube or pipe fittings (for example, couplings, elbows, sleeves), of iron or steel	34	3%	Long steel
9401	**Seats (other than those of heading 9402), whether or not convertible into beds, and parts thereof**	**33**	**3%**	**Long steel**
7217	Wire of iron or non-alloy steel	31	12%	Long steel
7610	Aluminium structures (excluding prefabricated buildings of heading 9406) and parts of structures; aluminium plates, rods, profiles, tubes and the like, prepared for use in structures	29	4%	Aluminium
7325	**Other cast articles of iron or steel**	**28**	**7%**	**Flat steel**
7616	Other articles of aluminium	28	2%	Aluminium
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 % or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils	26	4%	Refinery
7606	Aluminium plates, sheets and strip, of a thickness exceeding 0,2 mm	22	6%	Aluminium
7219	Flat-rolled products of stainless steel, of a width of 600 mm or more	22	9%	Flat steel
8302	**Base-metal mountings, fittings and similar articles suitable for furniture, doors, staircases, windows, blinds, coachwork, saddlery, trunks, chests, caskets or the like; base-metal hat-racks, hat-pegs, brackets and similar fixtures; castors with mountings of base metal; automatic door closers of base metal**	**21**	**2%**	**Aluminium**
7216	Angles, shapes and sections of iron or non-alloy steel	21	14%	Long steel
7229	Wire of other alloy steel	20	14%	Long steel
3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, polyallyl esters and other polyesters, in primary forms	19	30%	Polymers
8424	**Mechanical appliances (whether or not hand-operated) for projecting, dispersing or spraying liquids or powders; fire extinguishers, whether or not charged; spray guns and similar appliances; steam or sandblasting machines and similar jet projecting machines**	**17**	**2%**	**Flat steel**
7304	Tubes, pipes and hollow profiles, seamless, of iron (other than cast iron) or steel	16	8%	Long steel
7312	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel, not electrically insulated	16	5%	Long steel
3903	Polymers of styrene, in primary forms	15	25%	Polymers
7306	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	15	8%	Flat steel
7323	**Table, kitchen or other household articles and parts thereof, of iron or steel; iron or steel wool; pot scourers and scouring or polishing pads, gloves and the like, of iron or steel**	**13**	**3%**	**Long steel**
8544	**Insulated (including enamelled or anodised) wire, cable (including coaxial cable) and other insulated electric conductors, whether or not fitted with connectors; optical fibre cables, made up of individually sheathed fibres, whether or not assembled with electric conductors or fitted with connectors**	**13**	**1%**	**Aluminium**
8425	**Pulley tackle and hoists other than skip hoists; winches and capstans; jacks**	**12**	**5%**	**Flat steel**
7305	Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406,4 mm, of iron or steel	12	16%	Flat steel
7224	Other alloy steel in ingots or other primary forms; semi-finished products of other alloy steel	11	16%	Long steel

7208	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated	11	23%	Flat steel
7209	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, cold-rolled (cold-reduced), not clad, plated or coated	11	24%	Flat steel

Prices of CBAM goods are expected to rise in the EU as a result of the phasing out of free allocation of emission permits for industrial installations covered by the EU ETS. Figure 15 and Figure 16 show the impact per type of product. CBAM fees represent the payments to be paid by importers to acquire CBAM certificates, whereas net payment costs are the overall economic balance of acquiring the certificates and earning more revenues due to higher prices in the EU. For the iron and steel sector, we have separated long steel and flat steel products, as they tend to have very different emission intensities both in China and Europe. The "other steel" category includes non-steel products like direct reduced iron. The "mixed metals" category includes products potentially made from both steel and aluminium.

Net CBAM costs for Chinese CBAM imports (taking into account revenues from higher prices in the EU) are estimated at **935 million euros**. With the downstream extension, they would increase by **352 million euros**. New sectors would add an additional **19 million euros**.

For most of these goods, CBAM fees (based on estimated actual data) represent less than 20% of the value of the goods, except for fertilisers (up to 50%), polymers (up to 30%), and five basic steel products, for which it is between 7-25%. The high value for fertilisers is explained by the relatively high emission intensity we used for Chinese ammonium sulphate (1.15 tonnes of CO_2e per tonne of product), based on JRC values. Aluminium goods have little exposure in the current scope (less than 36% of the goods' value), but extension to indirect emissions would increase that exposure five-fold, from €105m to an additional €348m.

Downstream extension would mostly impact flat steel products, which would see their coverage nearly doubled. Net costs are highest for long steel products, reflecting the low impact expected from the CBAM on the price of those products in the EU, as free allocation for these products is currently very limited. CBAM costs on long steel products will need to be mostly absorbed by importers, without much compensation from rising EU prices. However, CBAM fees on aluminium's indirect emissions may be largely compensated by rising EU prices caused by the end of the state aid currently given as compensation to carbon costs.

Table 9 compares the carbon costs applied to imports (under the CBAM), and EU-made products (under the ETS), and the resulting net costs for imports assuming 80% of ETS costs are passed through to EU market prices.

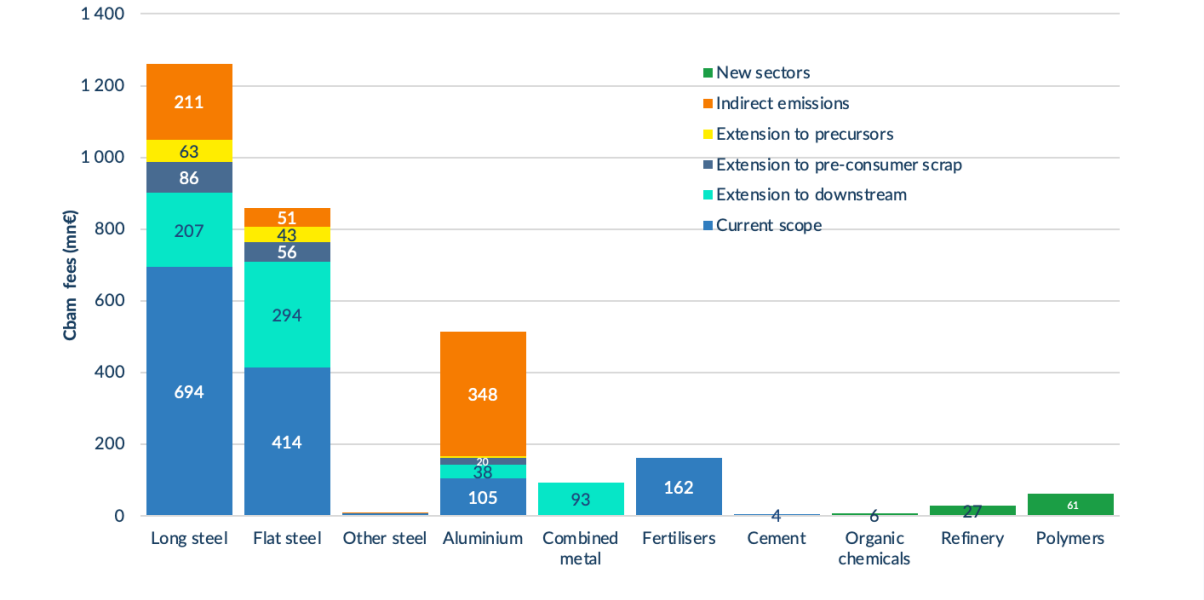


Figure 15 CBAM fees under different scopes

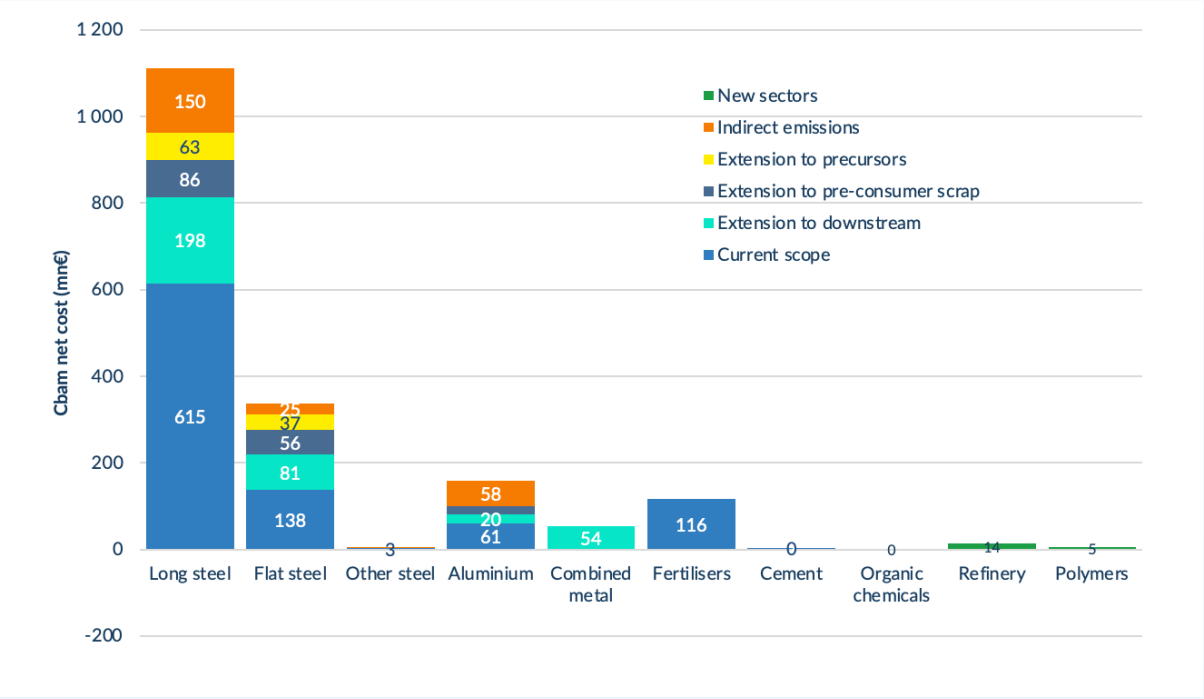


Figure 16 Net CBAM costs under different scope

Table 9 Unit costs (Chinese CBAM costs vs. EU ETS costs)

Product	cost increase in EU (€/t)	price increase in EU (€/t)	CBAM fees China (€/t)	CBAM net cost China (€/t)
Long steel (7207)	**19**	**15**	**140**	**126**
Current scope	6	5	108	103
Extension to pre-consumer scrap	0	0	15	15
Extension to precursors	0	0	10	10
Indirect emissions	13	10	8	-3

Flat steel (7208)	**123**	**98**	**167**	**69**
Current scope	109	88	133	45
Extension to pre-consumer scrap	0	0	18	18
Extension to precursors	2	2	12	10
Indirect emissions	11	8	3	-5
Aluminium (7601)	**710**	**567**	**702**	**134**
Current scope	87	70	148	78
Extension to pre-consumer scrap	0	0	33	33
Extension to precursors	10	8	8	0
Indirect emissions	613	490	513	23
Cement (2523)	**56**	**45**	**119**	**74**
Fertilisers (3102)	**35**	**28**	**99**	**71**

Figure 17 and Figure 18 represent CBAM fees and net costs estimated in the case of an eligible Chinese carbon price paid of €20 per tonne of CO_2e. A comparatively low carbon price (compared to the EU's €80) appears sufficient to create significant negative net costs.

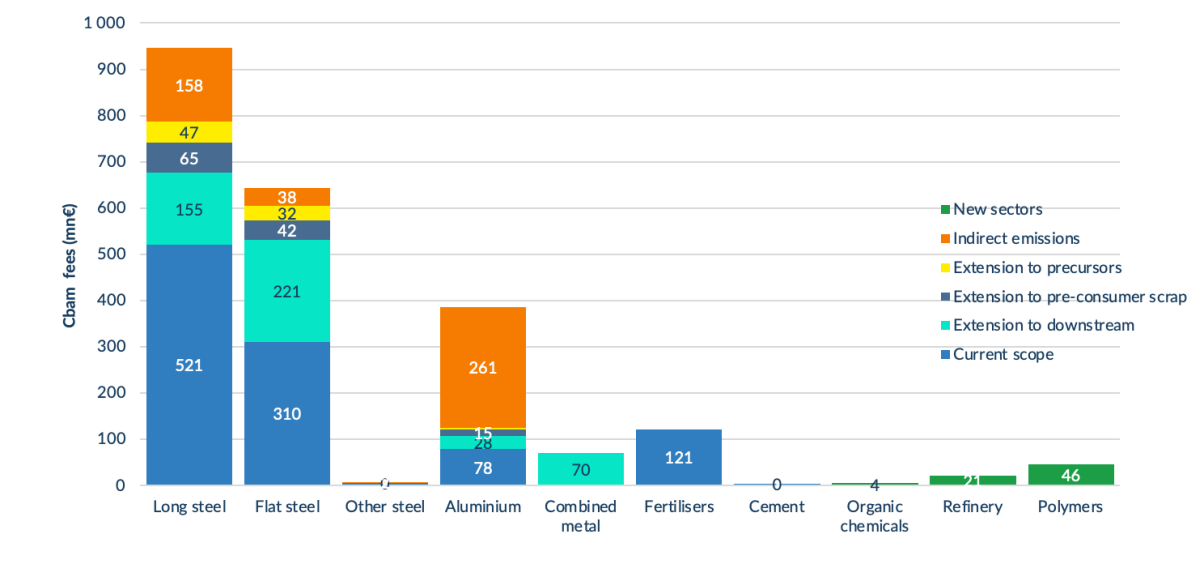


Figure 17 CBAM fees under different scenarios for a carbon price of €20

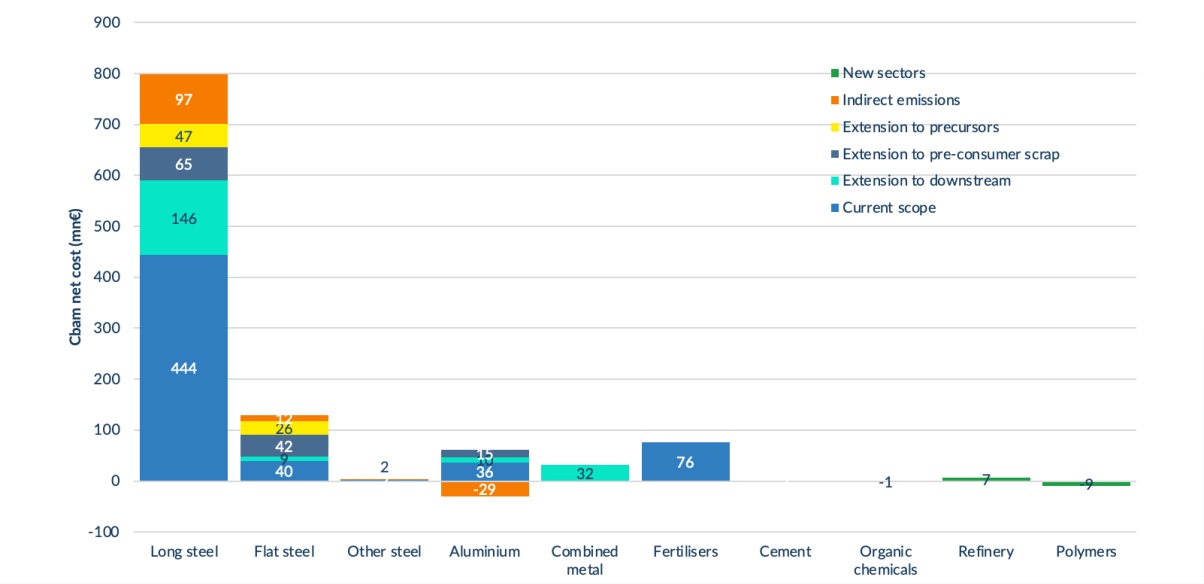


Figure 18 Net CBAM costs under different scenarios for a carbon price of €20

3.3 Impact during ramp-up phase (2026-34)

The CBAM's implementation timeline is spread over 8 years, from 2026-2034, to gradually replace free allocation as protection against carbon leakage in Europe. Section 2.1.4 explains how a discount will be applied to the number of CBAM certificates needed to take into account free allocation, and Figure 19 illustrates the proportion of free allocation that will still be given to EU factories during that period, compared to what it would have been without the CBAM.

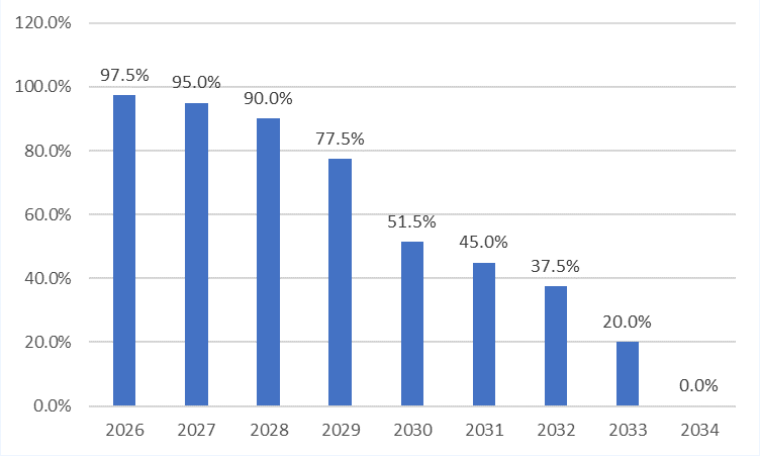


Figure 19 CBAM factor = free allocation in the EU ETS as proportion of product benchmarks

Source: European Commission

Figure 20 shows the amount of CBAM fees collected year by year, per product type, over the 2026-34 period, in the current scope of the CBAM. It is based on the value of CBAM benchmarks published by the Commission in December 2025, which will be updated very soon.

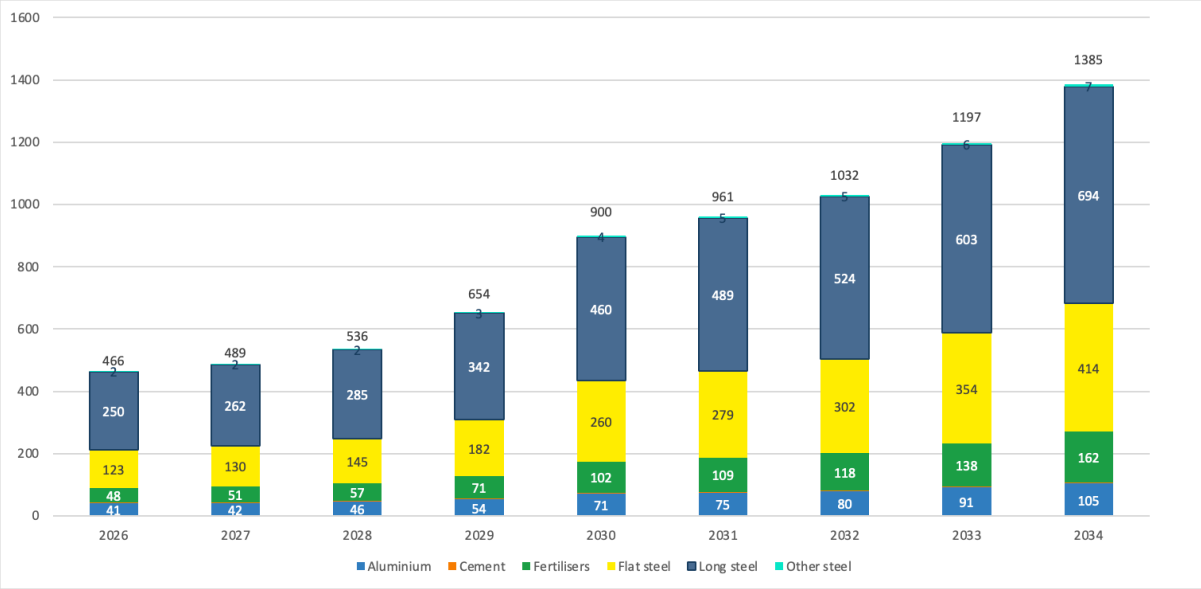


Figure 20 CBAM impact across sectors over the ramp-up phase (2026-234)[40] under the current scope of the CBAM.

3.4 Impacts under an ambitious decarbonisation pathway

We have developed an "ambitious scenario" based on the emission intensities of the projects described in section 2.3.6.

In the *ambitious scenario*, we assume exports of flat steel that is produced via hydrogen-based DRI with 50% scrap (0.607tCO_2/t) and of long steel via 100 % scrap EAF (0.08 tCO_2/t). We also assume steel facilities procure renewable electricity through PPAs, reducing indirect emissions intensity by 50%. Aluminium production is assumed to rely on renewable electricity (0 tCO_2/t scope 2), while polymers and fertilisers are respectively produced from green methanol and green ammonia (0 tCO_2/t).

Table 10 revisits the 40 top products sorted by decreasing order of CBAM fees under this new *ambitious scenario*, similar to the business-as-usual emission intensity overview in Table 8. These 40 products now cover 92% of the CBAM fees due for all imports and include 15 downstream goods (**in bold**) and 2 products from new sectors (in orange).

Table 10 Chinese 40 CN4s products most exposed to CBAM fees in the *ambitious scenario*[41]

CN4	Descriptions CN 4	CBAM Fees (mn€)	% product price	Product type
7308	Structures (excluding prefabricated buildings of heading 9406) and parts of structures, of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel	52	2%	Long steel
7610	Aluminium structures (excluding prefabricated buildings of heading 9406) and parts of structures; aluminium plates, rods, profiles, tubes and the like, prepared for use in structures	29	4%	Aluminium
7326	Other articles of iron or steel	28	1%	Flat steel
7616	Other articles of aluminium	28	2%	Aluminium
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 % or more of petroleum oils or of oils	26	4%	Refinery

[40] CBAM fees are calculated using the actual benchmark values published by the Commission early 2026. Those benchmarks represent the reduction applied to the CBAM in relation to free allocation in the EU ETS. The estimates also account for product-specific production routes in China.
[41] These 40 products capture 95% of total fees across all products.

	obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils			
7210	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, clad, plated or coated	23	3%	Flat steel
7606	Aluminium plates, sheets and strip, of a thickness exceeding 0,2 mm	22	6%	Aluminium
8302	**Base-metal mountings, fittings and similar articles suitable for furniture, doors, staircases, windows, blinds, coachwork, saddlery, trunks, chests, caskets or the like; base-metal hat-racks, hat-pegs, brackets and similar fixtures; castors with mountings of base metal; automatic door closers of base metal**	**21**	**2%**	**Aluminium**
8708	**Parts and accessories of the motor vehicles of headings 8701 to 8705**	**20**	**1%**	**Combined metal**
8431	**Parts suitable for use solely or principally with the machinery of headings 8425 to 8430**	**20**	**1%**	**Flat steel**
8716	**Trailers and semi-trailers; other vehicles, not mechanically propelled; parts thereof**	**17**	**2%**	**Combined metal**
7318	Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter pins, washers (including spring washers) and similar articles, of iron or steel	15	1%	Long steel
8418	**Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat pumps other than air-conditioning machines of heading 8415**	**15**	**1%**	**Flat steel**
8450	**Household or laundry-type washing machines, including machines which both wash and dry**	**15**	**1%**	**Flat steel**
8544	**Insulated (including enamelled or anodised) wire, cable (including coaxial cable) and other insulated electric conductors, whether or not fitted with connectors; optical fibre cables, made up of individually sheathed fibres, whether or not assembled with electric conductors or fitted with connectors**	**13**	**1%**	**Aluminium**
7607	Aluminium foil (whether or not printed or backed with paper, paperboard, plastics or similar backing materials) of a thickness (excluding any backing) not exceeding 0,2 mm	11	5%	Aluminium
7225	Flat-rolled products of other alloy steel, of a width of 600 mm or more	10	2%	Flat steel
7207	Semi-finished products of iron or non-alloy steel	10	1%	Long steel
7219	Flat-rolled products of stainless steel, of a width of 600 mm or more	9	3%	Flat steel
9403	**Other furniture and parts thereof**	**8**	**0%**	**Long steel**
7325	**Other cast articles of iron or steel**	**8**	**2%**	**Flat steel**
7205	Granules and powders, of pig iron, spiegeleisen, iron or steel	6	10%	Other steel
7614	Stranded wire, cables, plaited bands and the like, of aluminium, not electrically insulated	6	6%	Aluminium
3105	Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, phosphorus and potassium; other fertilisers; goods of this chapter in tablets or similar forms or in packages of a gross weight not exceeding 10 kg	5	8%	Fertilisers
7228	Other bars and rods of other alloy steel; angles, shapes and sections, of other alloy steel; hollow drill bars and rods, of alloy or non-alloy steel	5	1%	Long steel
8424	**Mechanical appliances (whether or not hand-operated) for projecting, dispersing or spraying liquids or powders; fire extinguishers, whether or not charged; spray guns and similar appliances; steam or sandblasting machines and similar jet projecting machines**	**4**	**1%**	**Flat steel**
7214	Other bars and rods of iron or non-alloy steel, not further worked than forged, hot-rolled, hot-drawn or hot-extruded, but including those twisted after rolling	4	2%	Long steel
7604	Aluminium bars, rods and profiles	4	4%	Aluminium
2902	Cyclic hydrocarbons	4	6%	Organic chemicals

7306	Other tubes, pipes and hollow profiles (for example, open seam or welded, riveted or similarly closed), of iron or steel	4	2%	Flat steel
7307	Tube or pipe fittings (for example, couplings, elbows, sleeves), of iron or steel	4	0%	Long steel
2523	Portland cement, aluminous cement, slag cement, supersulphate cement and similar hydraulic cements, whether or not coloured or in the form of clinkers	4	33%	Cement
8425	**Pulley tackle and hoists other than skip hoists; winches and capstans; jacks**	**3**	**1%**	**Flat steel**
8309	**Stoppers, caps and lids (including crown corks, screw caps and pouring stoppers), capsules for bottles, threaded bungs, bung covers, seals and other packing accessories, of base metal**	**3**	**1%**	**Aluminium**
8428	**Other lifting, handling, loading or unloading machinery (for example, lifts, escalators, conveyors, teleferics)**	**3**	**0%**	**Flat steel**
8704	**Motor vehicles for the transport of goods**	**3**	**1%**	**Combined metal**
9401	**Seats (other than those of heading 9402), whether or not convertible into beds, and parts thereof**	**2**	**0%**	**Long steel**
7305	Other tubes and pipes (for example, welded, riveted or similarly closed), having circular cross-sections, the external diameter of which exceeds 406,4 mm, of iron or steel	2	3%	Flat steel
7208	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, hot-rolled, not clad, plated or coated	2	4%	Flat steel
7209	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, cold-rolled (cold-reduced), not clad, plated or coated	2	4%	Flat steel

Under this ambitious scenario, we estimate the CBAM fees due on these products at **303 million euros**, which is 59% less than the business-as-usual case. Downstream extension would add **173 million euros** to the CBAM bill. Extension to new sectors would add an additional **33 million euros**.

Net CBAM costs (taking into account revenues from higher prices in the EU) would become negative, at **147 million euros**, becoming a profit. Downstream extension would add an additional **-107 million euros** (i.e. more profit), and new products would lead to **-42 million euros extra costs**.

With the availability and affordability of its technological solutions, Chinese industry seems well equipped to benefit from the CBAM in the long run.

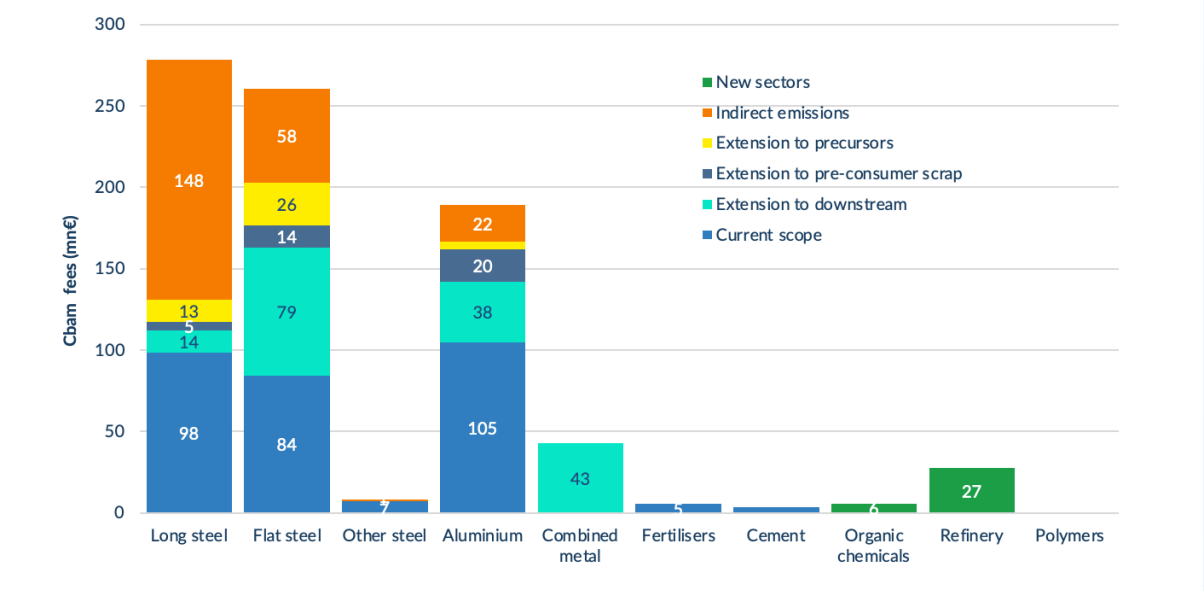


Figure 21 CBAM fees under different scenarios

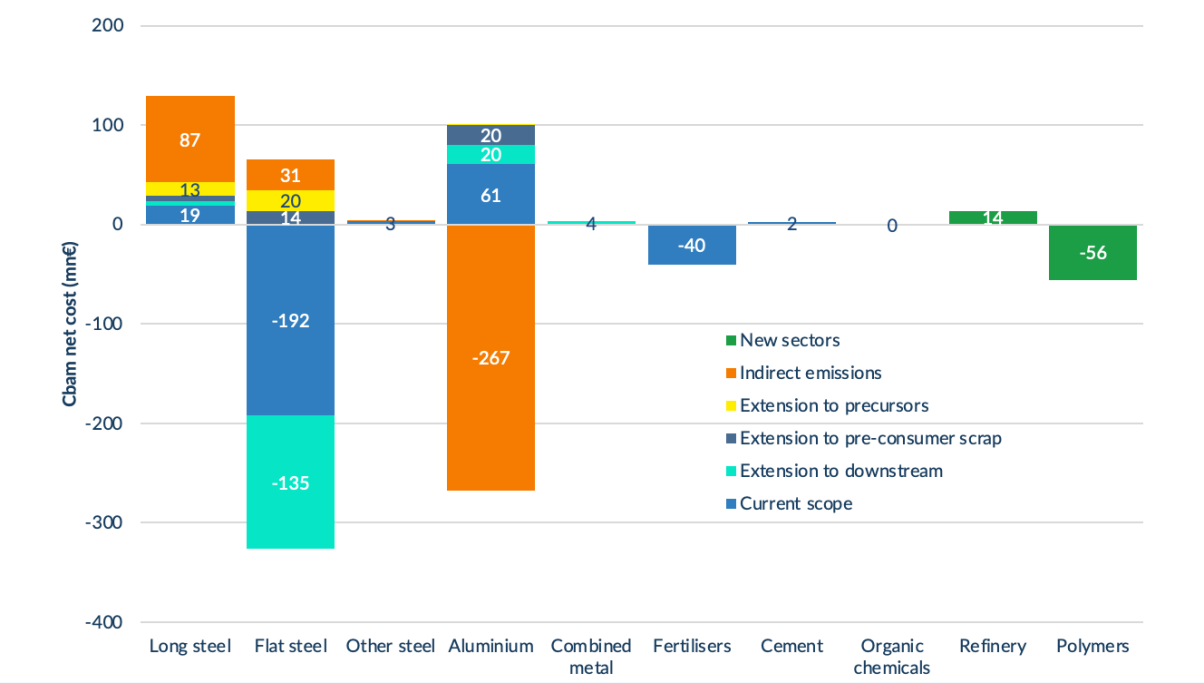


Figure 22 Net CBAM costs under different scenarios

Table 11. Unit costs (Chinese CBAM costs vs. EU ETS costs) under the ambitious scenario

Product	Cost increase in EU (€/t)	Price increase in EU (€/t)	CBAM fees China (€/t)	CBAM net cost China (€/t)
Long steel (7207)	**19**	**15**	**20**	**5**
Current scope	6	5	7	2
Extension to pre-consumer scrap	0	0	1	1
Extension to precursors	0	0	2	2
Indirect emissions	13	10	11	1
Flat steel (7208)	**123**	**98**	**47**	**-51**
Current scope	110	88	23	-64
Extension to pre-consumer scrap	0	0	4	4
Extension to precursors	2	2	7	5
Indirect emissions	11	9	12	4
Aluminium (7601)	**710**	**568**	**189**	**-379**
Current scope	87	69	148	78
Extension to pre-consumer scrap	0	0	33	33
Extension to precursors	10	8	8	0
Indirect emissions	613	490	0	-490
Fertilisers (3102)	**35**	**28**	**0**	**-28**
Cement (2523)	**56**	**45**	**115**	**70**

3.5 Effects of a system based on MRV

Even though the CBAM's financial impact on the Chinese economy is low, the change in trade flows it creates may be material. In this report, we provided aggregated amounts for CBAM compliance costs

and concluded that these costs can even turn negative, showing very favourable scenarios where only a few large projects generate profits by originating all CBAM goods exported to the EU.

Although such scenarios seem to benefit China's economy, they would create major changes in value chains by decoupling EU-exporting facilities from the rest of the economy. This is partly because, although the EU is the destination of only 1% of China's CBAM steel, a factory making a component used to make steel has to get its entire emissions monitored and verified, and will enjoy economies of scale if a large share of its output ends up being exported to the EU. In contrast, exporting small volumes might not be worth the effort. Such decoupling of EU-exporting factories from others could complicate access to the EU market for smaller exporters.

For downstream goods, the use of MRV and actual data is more challenging, so even the larger facilities might need to use default values. This would even out the playing field between production plants but increase overall CBAM liabilities. Alternatively, the development of a robust MRV system within China's carbon trading scheme could help reduce the additional reporting required by the CBAM. The evidence of robust data created by this scheme could also help securing lower CBAM default values and overall CBAM liabilities.

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