



TECHNICAL GUIDANCE FOR VIETNAMESE INDUSTRIES ON HOW TO REPORT UNDER CARBON BORDER ADJUSTMENT MECHANISM (CBAM)

July 2024

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ACRONYMS AND ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
CBAM	Carbon Border Adjustment Mechanism
CN	Combined Nomenclature
DRI	Directly reduced iron
EC	European Commission
ETS	Emissions Trading System
EU	European Union
EU ETS	EU Emission Trading System
GDP	Gross Domestic Product
GHG	Greenhouse gas
HS	Harmonized System
IT	Information technology
MOIT	Ministry of Industry and Trade
Mt	Million tonnes
NK	Nitrogen-potassium
NP	Nitrogen-phosphorus
NPK	Nitrogen-phosphorus-potassium
PCF	Product carbon footprint
PVN	Petrovietnam
tCO ₂ eq	Tonne CO ₂ equivalent
UNFCCC	United Nations Framework Convention on Climate Change
USAID	US Agency for International Development
VNCA	Vietnam Cement Association
VSA	Vietnam Steel Association

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INTRODUCTION

The primary objective of this technical guidance document is to enable Vietnamese enterprises to understand the European Union's (EU) Carbon Border Adjustment Mechanism (CBAM) and how Vietnamese export-oriented enterprises can respond. The document offers advice on calculating and registering greenhouse gas (GHG) emissions. It also provides guidance on complying with the CBAM regulations, including advice for businesses and organizations on how to enhance their GHG management practices.

Vietnamese businesses have the opportunity to enhance their competitiveness in the global marketplace and have a positive impact on the environment by reducing GHG emissions of goods exported abroad. The Government of Vietnam is helping businesses take advantage of these opportunities by sharing information about the new CBAM requirements, including in Vietnamese.

The US Agency for International Development (USAID) is collaborating with the Ministry of Industry and Trade (MOIT) to create information about CBAM and other climate change reporting standards that support the Government of Vietnam's efforts to enhance private sector competitiveness. MOIT, in particular, seeks to increase information about CBAM in Vietnamese.

USAID funded the following document on how to navigate CBAM requirements through the USAID INVEST initiative and engaged a consortium led by RCEE-NIRAS to do so. The technical guidance document was prepared by RCEE-NIRAS after consulting with Vietnamese business associations to ascertain their information requirements and priorities. The document is organized into 5 parts:

- **Background on CBAM**, including roles and responsibilities of importers and exporters and the timeline for implementation of this mechanism.
- **Potential impact on Vietnamese industry**. This includes a review of sectors covered by CBAM – such as aluminum, cement, fertilizer, and steel – and the extent to which Vietnamese exports could be affected by the new requirements.
- **CBAM regulations during the transition phase**. This section summarizes responsibilities of importers and exporters and the EU's timeline for implementing each component of CBAM.
- **Monitoring and Reporting**. The EU is developing a system by which parties can monitor and report on compliance with CBAM. This section summarizes the EU guidance available to date.
- **Recommendations** for how Vietnamese enterprises and government agencies can prepare for implementation of CBAM.

The Appendices include a list of key references on CBAM as well as relevant extracts from EU's CBAM guidance documents.

CHAPTER 1: BACKGROUND ON THE EUROPEAN UNION CARBON BORDER ADJUSTMENT MECHANISM

1.1. Purpose and objective of CBAM

CBAM is a policy instrument intended to mitigate the risk of carbon leakage associated with the EU's climate policies, such as the EU Emissions Trading System (EU ETS) which caps greenhouse gas (GHG) emissions of European enterprises. The policy aligns with the EU's ambition to attain climate neutrality by 2050 at the latest, and to reduce net GHG emissions by a minimum of 55% by 2030.¹ CBAM's primary objective is to lessen the emissions of products imported into the EU by imposing a fee that is determined by the level of GHG emissions during the production process. It is designed to prevent carbon 'leakage', which occurs when companies relocate production to countries outside the EU that have less stringent environmental regulations.

CBAM targets sectors within the EU ETS that are at the highest risk of carbon leakage, rather than specific nations. It concentrates on the GHG emissions associated with products imported into the EU from the cement, aluminum, hydrogen, fertilizers, iron and steel, and electricity sectors. It also regulates certain downstream products and input materials from these industries. The six sectors were chosen for their high GHG emission intensity, and would eventually account for more than 50% of EU ETS-covered industry emissions once CBAM is fully phased in. CBAM may be expanded to other EU ETS sectors².

1.2. Definition of CBAM participants and CBAM products

The definition and roles of each CBAM participant are provided in the *Guidance Document on CBAM Implementation for Importers of Goods into the EU*³ and *Guidance Document on CBAM*

*Implementation for Installation Operators Outside the EU*⁴. These documents are available online at the European Commission Taxation and Customs Union website for CBAM.⁵

The key participants are:

¹ The EU's "Fit for 55" Package. European Commission. July 14, 2021.

<https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55/#what>

² Carbon Border Adjustment Mechanism (CBAM): Questions and Answers. European Council. Last updated on 31 January 2024. https://taxation-customs.ec.europa.eu/system/files/2023-12/Questions%20and%20Answers_Carbon%20Border%20Adjustment%20Mechanism%20%28CBA%20M%29.pdf

³ Guidance Document on CBAM Implementation for Importers of Goods into the EU. European Commission, May 2024. https://taxation-customs.ec.europa.eu/document/download/bc15e68d-566d-4419-88ec-b8f5c6823eb2_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20importers%20of%20goods%20into%20the%20EU.pdf

⁴ Guidance Document on CBAM Implementation for Installation Operators Outside the EU. European Commission. December 2023. https://taxation-customs.ec.europa.eu/document/download/2980287c-dca2-4a4b-aff3-db6374806cf7_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20installation%20operators%20outside%20the%20EU.pdf

⁵ European Commission Taxation and Customs Union website on CBAM. https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en#guidance

- **The importer ('reporting declarant').** Defined as the entity that declares goods imported into the EU from the cement, iron and steel, aluminum, chemical (fertilizers and hydrogen), and electricity industries. The importer/declarant checks which imported goods fall under the scope of the CBAM, and then checks and compares the full range of goods imported against the product specifications given in Annex I to the CBAM Regulation (EU) 2023/956⁶ to establish which goods are within CBAM's scope. To facilitate the verification of data regarding goods imported into the EU, the importer must also identify intermediate products called 'precursors'⁷. If the information provided by the exporter does not identify CBAM goods, the importer should request that the exporter either verify the information with a third party or provide clarification concerning the accuracy of the information.
- **The exporter ('operator')** is an installation in a third country (i.e., a country outside the EU) which produces CBAM goods, such as cement or steel, and exports these to the EU. The operator is responsible for **monitoring and reporting the embedded emissions⁸ of goods** they have produced and are exporting to the EU. The operator must establish which goods produced by its installation fall under the scope of the CBAM. To achieve this goal, operators should.
 - Check and compare the full range of goods produced against the product specifications given in Annex I to the CBAM Regulation.⁹ From this comparison, the operator must establish which of the listed goods produced by the installation are within the scope of the CBAM.
 - Operators must (1) identify CBAM product production process boundaries to calculate GHG emissions and determine whether material and energy flows may affect emissions during manufacturing; (2) identify upstream (pre-production) and downstream (i.e., rolling or casting, cleaning and plating steel products) activities on the same process.
 - Operators should split a process that produces multiple CBAM commodities into separate production processes to monitor emissions. Goods produced at different procedures must cover 100% of the reported GHG emissions.
- **Third-party verifiers** will play an essential part in the last phase. However, during the transitional period, verification is a completely voluntary action that operators of

⁶ Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism; Available from:

<http://data.europa.eu/eli/reg/2023/956/oj>

⁷ Precursors are goods that are used in the production process of the main good covered by the CBAM. Relevant precursors for which the embedded emissions should be accounted for, and declared by importers, are listed in Section 3 of Annex II of the CBAM implementing regulation available at: http://data.europa.eu/eli/reg_impl/2023/1773/oj. Precursors are included to avoid "reshuffling" of trade where producers shift trade to the part of the supply chain not covered by the CBAM.

⁸ The concept of 'embedded emissions' accounts for the direct and indirect GHG emissions of the production process at operators as well as the embedded emissions of precursors. A detailed introduction to the concept and calculation of embedded emissions can be found in section 6.1.3 of 'Guidance Document on CBAM Implementation for Importers of Goods into the EU.' European Commission, May 2024.

https://taxation-customs.ec.europa.eu/document/download/bc15e68d-566d-4419-88ec-b8f5c6823eb2_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20importers%20of%20goods%20into%20the%20EU.pdf

⁹ Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism; Available from: <http://data.europa.eu/eli/reg/2023/956/oj>

installations may choose as a means to improve their data quality and prepare for the requirements of the definitive period.

- **CBAM-eligible products** are defined according to their direct and indirect GHG emissions profile (See section 3.1) and categorized according to the **EU's Combined Nomenclature (CN)** product classification system which categorizes commodities by essential criteria and identifies CBAM-eligible sector items. The CN 'product specification' classification system has two parts: a numerical 4, 6, or 8-digit numbering system that reflects product disaggregation; and a written description of each product category's fundamental qualities. The first 6 digits match the international Harmonized System (HS) classification, whereas the last 2 are EU-specific.¹⁰

1.3. CBAM timeline and implementation roadmap

The EU has outlined a phased implementation plan for CBAM, with the initial reporting requirements for imports of certain carbon-intensive goods beginning in October 2023. This will be followed by the gradual introduction of a financial adjustment from 2026 to 2035, giving industries both within and outside the EU time to adapt and decarbonize their operations. Figure 1 and the bullets below describe the key dates of the EU's phased approach to CBAM:

- **May 16, 2023:** European Commission Regulation (EU) 2023/956 of May 10, 2023,¹¹ regarding CBAM, became effective.
- **October 1, 2023 - December 31, 2025: Transition phase.** Importers are required to report in accordance with the provisions of Articles 33, 34, and 35 of Regulation (EU) 2023/956 during this period¹². Within 30 days of the quarter's conclusion, importers in the EU will be required to submit quarterly reports regarding the GHG emissions of specific products that are imported into the EU. The initial round of reports that importers are required to submit concludes on January 31, 2024.
- **By the end of 2025** the European Commission (EC) will evaluate CBAM's operations and may expand its scope to more products and services. Products currently subject to CBAM include iron and steel, aluminum, electricity, cement, fertilizer, and hydrogen. These sectors account for 94% of the EU's industrial emissions.¹³
- **January 1, 2026 - December 31, 2034: Operational phase.** During the operational phase, importers of goods covered by CBAM will have to purchase CBAM certificates. At the same time, the importer submits the number of CBAM certificates corresponding to the amount of GHG emissions contained in the imported products covered by CBAM. Before May 31 of each year, EU importers must declare the quantity of goods and the amount of emissions associated with the goods imported in the previous year. Under the EU ETS, allowances for GHG emissions are allocated through a combination of free allocation (industrial enterprises receive free allowances for their emissions) and auctioning. During the operational phase, the EU will gradually phase out

¹⁰ For the most recent information about the CN, please refer to the EU Taxation and Customs Union website on 'The Combined Nomenclature.' https://taxation-customs.ec.europa.eu/customs-4/calculation-customs-duties/customs-tariff/combined-nomenclature_en

¹¹ Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism; Available from: <http://data.europa.eu/eli/reg/2023/956/oj>

¹² https://www.edps.europa.eu/system/files/2023-07/2023-0752_formal_comments_en.pdf

¹³ <https://www.vietnam.vn/en/sat-thep-la-nganh-chiu-anh-huong-nang-ne-nhat-tu-thue-carbon-cua-eu/>

free allocation of GHG emission allowances under the EU ETS,¹⁴ especially in sectors where the risk of carbon leakage is deemed low and replace them with allowances that need to be purchased through auctions. Figure 2 summarizes the timeline by which the EU is planning to replace free allocation with auctioned allowances and at the same time phasing in payment of CBAM fees.

- **January 1, 2034: Full implementation phase.** From 2034, CBAM will officially operate in full, and industry will no longer be granted free GHG emission allowances and will have to pay 100% of the CBAM fee.

Figure 1. Timeline for operationalizing CBAM

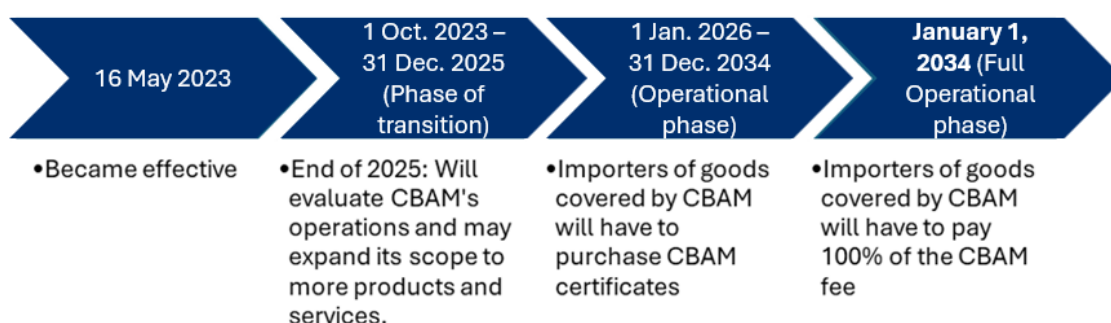
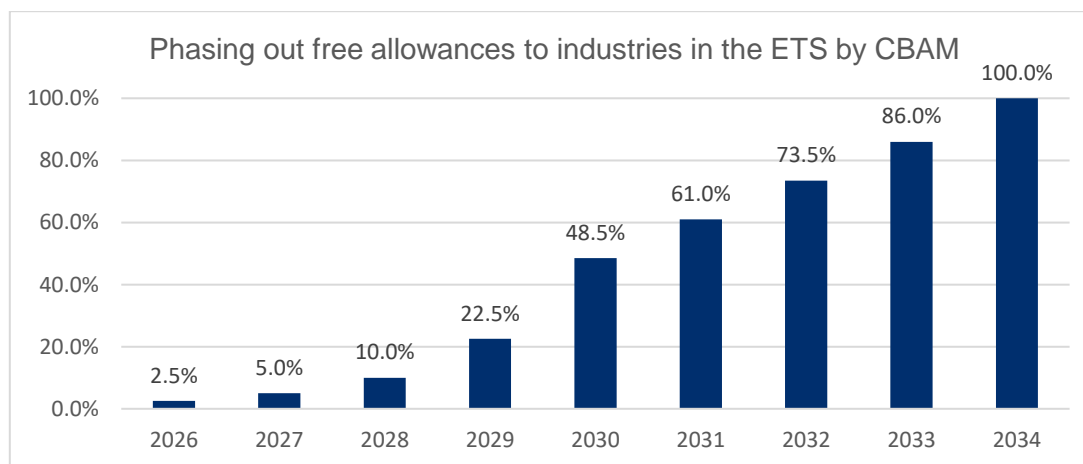


Figure 2. EU timeline for phasing out free allocation of emission allowances and phasing in CBAM (2026 to 2034)¹⁵



1.4. Price of CBAM certificates

The purchase price (or carbon price) for 'CBAM certificates' is not fixed; it is calculated as the weekly average of GHG emission allowances auctioned on the EU ETS. The closing spot

¹⁴ [Allocation to industrial installations. Website of the European Commission \(europa.eu\).](https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/allocation-industrial-installations_en)
https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/allocation-industrial-installations_en

¹⁵ Phase out ratio of free allowances to industries in the ETS - [Climate change: Deal on a more ambitious Emissions Trading System \(ETS\)](#)

price in April 2024 was 71 EUR/tonne CO₂ equivalent (tCO₂eq)¹⁶. CBAM is designed to treat imported goods equally to EU products, using three design features:¹⁷

- The CBAM fee is based on the 'actual value' of embedded emissions expressed as tonnes of CO₂e emissions per tonne of goods. This means that products exported by companies with decarbonized manufacturing processes will result in a lower CBAM payment than those with carbon-intensive production;
- EU producers pay the same allowance price under the EU ETS as the price of the CBAM certificates purchased by importers for the importation of a CBAM good. Consequently, goods produced inside and outside the EU with the same amount of embedded emissions will result in similar carbon prices; and
- If an exporter of a CBAM product is subject to a carbon price in their own country, the EU allows the importer to deduct the value of that carbon price from the CBAM fee.¹⁸ EU's goal is to incentivize other trading nations to adopt carbon pricing¹⁹ along the lines of the Emissions Trading System under design in Vietnam.

While the specific EU ETS allowance and CBAM price will fluctuate over time, they still represent a significant cost. As a result, EU importers may switch to product suppliers inside or outside the EU with lower carbon intensity. Vietnamese exporters could lose market share or bear additional costs related to reducing their product's carbon footprint if the carbon intensity of their manufacturing process is higher than that of other producers inside or outside the EU. Therefore, Vietnamese industry should begin the process of calculating and reporting their GHG footprint and should consider implementing measures to reduce GHG emissions across the supply chain. Products with lower embedded GHG emissions will have a lower CBAM fee than the same product produced with a more carbon-intensive process and thus be more competitive in the EU market.

¹⁶Refer to <https://tradingeconomics.com/commodity/carbon>

¹⁷ Carbon Border Adjustment Mechanism (CBAM): Questions and Answers https://taxation-customs.ec.europa.eu/document/download/013fa763-5dce-4726-a204-69fec04d5ce2_en?filename=CBAM_Questions%20and%20Answers.pdf

¹⁸ Carbon Border Adjustment Mechanism (CBAM): Questions and Answers https://taxation-customs.ec.europa.eu/document/download/013fa763-5dce-4726-a204-69fec04d5ce2_en?filename=CBAM_Questions%20and%20Answers.pdf

¹⁹ Comparing the European Union Carbon Border Adjustment Mechanism, the Clean Competition Act, and the Foreign Pollution Fee Act. Resources for the Future. December 2023. https://media.rff.org/documents/Report_23-18.pdf

CHAPTER 2: IMPACT OF CBAM ON VIETNAMESE EXPORTS

2.1. Review of industries potentially covered by CBAM

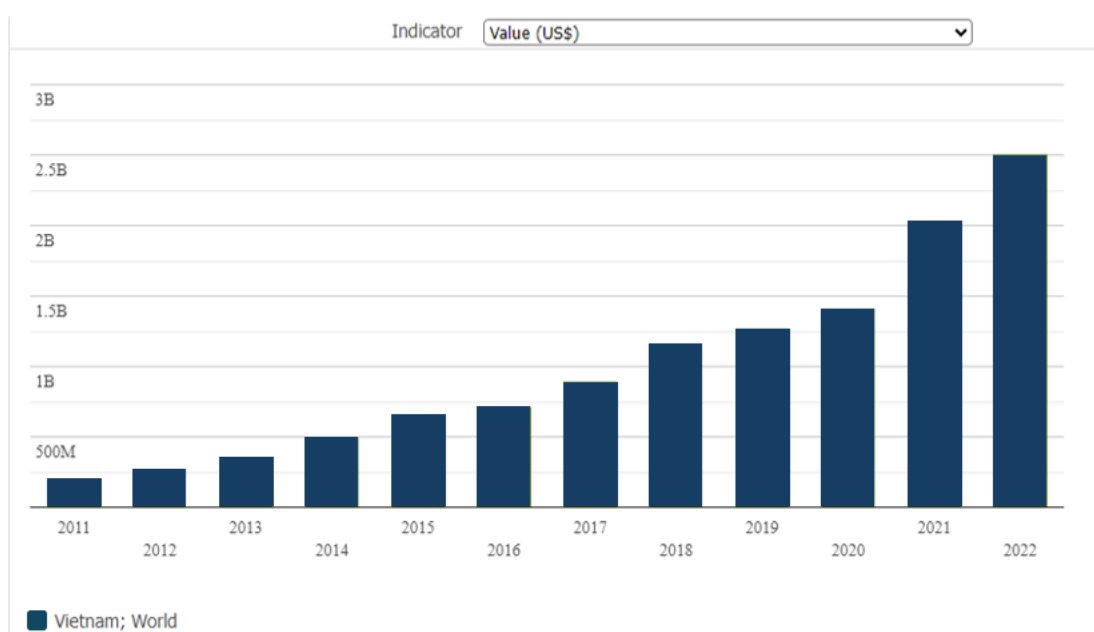
This subsection reviews the export markets of Vietnamese industries subject to CBAM (i.e., aluminum, cement, fertilizer, and steel) to determine the share of existing exports going to the EU. The goal is to determine the potential vulnerability of each of these sectors to the CBAM regulations. The review shows that the aluminum and steel industries will be impacted the most, as the EU represents 14% and 16% of their total export markets, respectively.

2.1.1. Aluminum industry

In 2022, exported aluminum products reached over US\$2,127 million, of which exports to the EU are more than US\$ 307 million, accounting for 14.46%²⁰. This means that the CBAM regulation will have some impact on Vietnam's aluminum industry.

Businesses in the aluminum industry are still entirely reliant on imported aluminum ingots and aluminum billets to manufacture aluminum products, as Vietnam currently lacks the capacity to refine aluminum and doesn't have a domestic aluminum smelting industry.

Figure 3. Annual international trade by Vietnam for exported Aluminum and articles thereof



Source: Adapted from [Vietnam | Imports and Exports | World | Aluminum and articles thereof | Value \(US\\$\) and Value Growth, YoY \(%\) | 2011 - 2022 \(trendeconomy.com\)](#)

In aluminum processing, aluminum electrolysis creates the most GHG emissions. However, Vietnamese enterprises lack solutions to reduce emissions from this process. Aluminum refining also consumes significant energy and generates large GHG emissions due to traditional refining technologies. Most aluminum enterprises in Vietnam are small-to-medium-

²⁰ Trademap.org

sized and face limitations in reducing GHG emissions due to a lack of financial capacity, human resources, and technology.

The domestic aluminum market maintains high demand for traditionally processed aluminum, and consumer awareness of green aluminum is still lacking. Therefore, only a few enterprises are interested in producing green aluminum. According to Decision 01/2022/QĐ-TTĐ, there are 26 aluminum facilities on the government's list of enterprises that are required to conduct GHG inventories and reduce their GHG emissions.²¹ Complying with Decision 01/2022/QĐ-TTĐ will help these companies prepare for the CBAM GHG reporting requirements in case they trade with the EU.

2.1.2. Cement industry

Vietnam has 57 cement factories and 83 production lines. The clinker and cement capacity of these are 95,000,000 and 112,000,000 tonnes/year, respectively²². The total amount of cement exported by Vietnam (including to the EU) during the period from 2018 to 2022 is summarized in table I:

Table 1: Exported cement of Vietnam during period 2018-2022

	2018	2019	2020	2021	2022
Clinker exports (Mt/year)	22.90	22.69	23.21	28.89	15.95
Cement exports (Mt/year)	9.10	11.40	14.81	16.81	15.99

Vietnam's total cement and clinker sales dropped by 6% between 2022 and 2023, reaching 89 Mt in 2023. Exports represented about a third of this amount, but fell less sharply than domestic sales. Vietnam exported 32.6 Mt of cement and clinker in 2023 which is a decrease of 2% compared to 2022.²³

Vietnam's top five cement export markets include the Philippines, Bangladesh, the US, Taiwan, and Malaysia, which collectively accounted for 70% of total cement exports in the first eight months of 2024.²⁴ The EU is also one of Vietnam's export markets, however, both volume and turnover are quite modest. As a result, the Vice Chairman cum Secretary General of the Vietnam Cement Association (VNCA) expects the impact on Vietnam's cement industry won't be significant. Over the past five years, the amount of cement exported to the EU accounted for less than 2% of Vietnam's total cement exports by volume.²⁵

2.1.3. Fertilizer industry

²¹ Decision 01/2022/QĐ-TTĐ promulgates a list of large GHG-emitting enterprises in Vietnam that are subject to GHG emissions reporting and mandated GHG management. Decision 01/2022/QĐ-TTĐ promulgating the list of sectors, greenhouse gas-emitting establishments subject to greenhouse gas inventory. January 2022. [Quyết định 01/2022/QĐ-TTĐ cơ sở phát thải khí nhà kính phải thực hiện kiểm kê khí nhà kính \(thuvienphapluat.vn\)](#)

²² Vietnam's Cement Industry – Current Status and Development Plan https://wtocenter.vn/file/19044/04_cementoverview-and-development-strategy-of-the-cement-sector_vnca.pdf

²³ <https://www.globalcement.com/news/item/16756-vietnam-s-cement-and-clinker-sales-drop-by-6-in-2023>

²⁴ [Cement in Vietnam | The Observatory of Economic Complexity \(oec.world\)](#)

²⁵ <https://vietnambiz.vn/xuat-khau-xi-mang-cua-viet-nam-it-chiu-tac-dong-boi-co-che-cbam-20239291512965.htm#:~:text=Trong%20g%E1%BA%A7n%20n%C4%83m%20g%E1%BA%A7n%20%C4%91%C3%A2y%20%C6%B0%E1%BB%A3ng%20xu%E1%BA%A5t,b%E1%BB%9Fi%20c%C6%A1%20ch%E1%BA%BF%20%C4%91i%E1%BB%81u%20ch%C3%ADnh%20carbon%20c%E1%BB%A7a%20EU.>

Vietnam has more than 800 fertilizer production facilities but only 16 facilities listed among the enterprises required to conduct GHG inventories and GHG emission reduction planning according to Decision 01/2022/QĐ-TTg.²⁶

Domestic fertilizer use is about 10.5 Mt/year, of which about 7.6 Mt are inorganic fertilizers,²⁷ which is the type of fertilizer covered by CBAM. Vietnam produces and exports fertilizers but has not yet exported products using inorganic fertilizers to Europe, and no manufacturers have shown interest in the EU market so far. As a result, CBAM is not expected to have an impact on Vietnam's fertilizer industry. Nonetheless, some big fertilizer producers, especially state-owned companies (Vinachem and PVN subsidiaries), have started to implement GHG emissions reporting across their supply chains.

2.1.4. Steel industry

According to 2020 data from the Vietnam Steel Association (VSA), Vietnam exported about 8.397 Mt of steel of all types, down 35.85% compared to the previous year. The value of these exports reached \$US7.99 billion, down 32.2% compared to 2021. Vietnam's main export markets by turnover include: ASEAN region (42%), EU region (16%), US (8%), Korea (6%), Hong Kong (5%)²⁸. According to VSA, the steel industry is likely to recover slightly in 2024 with an increase of 7% to 21.7 Mt in steel consumption and nearly 29 Mt in steel production.²⁹

The relative share of exports to the EU is growing with about 25-30% of Vietnam's steel exports going to the EU in 2023. That year Vietnam exported over 2.5 Mt of steel to the EU market, nearly doubling from 2022. The potential impact of CBAM on Vietnam's steel industry could therefore be significant.

Besides the CBAM regulations, steel manufacturers must continue to comply with regulations of the Law on Environmental Protection, Decree 06/2022/NĐ-CP and Decision 01/2022/QĐ-TTg, the National Strategy on Climate Change and Vietnam's commitments at COP26.

2.2. CBAM impact on Vietnam industry

At present, CBAM directly impacts four main industries in Vietnam: iron and steel, cement, fertilizer, and aluminum, none of which are strong export sectors to the EU. Therefore, in the short term, Vietnam's overall exports to the EU will not be significantly affected. However, for individual enterprises, the impact on exports may be significant, adding pressure to businesses to decarbonize.

A 2023 assessment of CBAM's impact by 2030 shows that steel exports to the EU may decline, leading to a possible decrease in output of around 0.8%; exports of about 3.7%; and GHG emissions from steel production by about 1 Mt of CO₂e. Similarly, for the aluminum industry, output may decrease by 0.5%, exports may decline, and GHG emission may decrease by 0.2 Mt by 2030.³⁰ Overall, CBAM was estimated to cause an average annual

²⁶ [Quyết định 01/2022/QĐ-TTg cơ sở phát thải khí nhà kính phải thực hiện kiểm kê khí nhà kính \(thuvienphapluat.vn\)](https://thuvienphapluat.vn/Quyết-định-01/2022/QĐ-TTg-cơ-sở-phát-thải-khí-nhà-kính-phải-thực-hiện-kiểm-kê-khí-nhà-kính)

²⁷ <https://trungtamwto.vn/>

²⁸ Overview of Vietnam iron and steel sector towards a decarbonization pathway - https://wtocenter.vn/file/19046/02_steelvietnam-steel-industry-overview-and-trends_vsa14.04.2023.pdf

²⁹ [Việt Nam's steel industry must optimize technology, save energy to promote export to EU \(vietnamnews.vn\)](https://vietnamnews.vn/Viet-Nam-s-steel-industry-must-optimize-technology-save-energy-to-promote-export-to-EU).

³⁰ <https://trungtamwto.vn/>

decrease in GDP of around 100 million USD per year. Vietnam's preliminary GDP is over 350 billion USD. The potential economic impact from CBAM may therefore not be very high.³¹

However, in the long run, the EU may expand the scope of CBAM to include indirect emissions and other sectors as well as products that use a lot of fossil fuels for manufacturing processes. Given the heavy reliance on coal for electricity production in Vietnam, the potential impact on Vietnamese exports could therefore grow. The EU has an official list of carbon leakage-prone sectors and subsectors. The European Commission, Member States, and the European Parliament agreed on the list after an impact assessment and significant stakeholder input. Currently, the EU has added to the list of 63³² industries and sub-sectors considered to be at high risk of carbon leakage during the period of 2021 - 2030, focusing on the following areas:

- Energy and minerals
- Production and processing of some foods (sugar, starch, potatoes, tomatoes)
- Production of some textile products
- Chemicals
- Building sub-sector

After CBAM is implemented, a chain reaction could occur when other developed markets, such as the United States, Canada, and Japan, introduce their own mechanisms to reduce GHG emissions from imports. The United States is considering something similar, and legislation has been proposed through the Clean Competition Act, the first draft of which was issued in July 2021. This legislation is still in draft form and it is unclear if or when it will be enacted.

2.3. Options for responding to CBAM

There are several ways the government and industry can prepare for and respond to CBAM:

2.3.1. Government

- The Government and state management agencies can issue guidelines for enterprises to prepare for CBAM, enhance technical and institutional capacity to adapt to the new system, and engage in constructive dialogue with the EU to clarify rules and help operators adjust to the new reporting requirements.
- In alignment with CBAM, the Government can design the Vietnamese ETS to produce a strong carbon pricing mechanism that minimizes the potential CBAM fees that importers of Vietnamese products must pay to the EU (see section 1.4).
- The government can provide tax incentive packages or credits to support large GHG emitting businesses in transitioning to greener production technologies.

2.3.2. Operators

Manufacturing enterprises in high-risk sectors such as steel, aluminum, oil refining, cement, paper, glass, fertilizers, energy and other impacted sectors that are exporting to the EU market

³¹ <https://trungtamwto.vn/>

³² 'Carbon leakage'. Website of the European Commission. https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/carbon-leakage_en

should have plans to reduce GHG emissions to not exceed average emissions (current or future) of similar products and sectors in the EU and other countries that export to the EU. In the immediate term, businesses need to develop GHG emission inventories and identify ways to reduce emissions at each stage of the entire product value chain taking into account opportunities to also inventory and reduce embedded emissions. Currently, Vietnamese enterprises can only provide information on emissions during the production and processing of goods, while CBAM requires emission data for all input materials used in production.

Businesses must closely monitor the progress of CBAM and proactively prepare response plans to minimize impacts on production and export activities. Preparation for CBAM could include:

- Carefully studying the GHG emission reporting requirements, developing internal procedures and emission calculation systems to serve CBAM reporting.
- Assessing the potential financial impact of CBAM on export activities, including impacts on product advertising and marketing strategies.
- Evaluating trade opportunities if products have lower GHG emissions and are 'greener' compared to the industry average and current competitors.

Although EU importers are responsible for CBAM reporting and fees, to obtain the reporting information, they will require Vietnamese enterprises to provide data on product quantities, emissions embedded in products, costs paid for domestic carbon pricing, etc. Therefore, businesses need to develop GHG emission reports and look for ways to reduce emissions throughout the entire production chain, applying greener production processes and methods where possible.

CHAPTER 3: CBAM REGULATION DURING THE TRANSITION PHASE

3.1. Obligations of parties participating in CBAM

On August 17, 2023, the EU issued Regulation 2023/1773³³ with full instructions on (i) reporting obligations for importers, and (ii) procedures for operators on how to calculate integrated GHG emissions from goods manufactured during the CBAM transition period. This section summarizes the key elements of this guidance focusing on information that must be provided by the operators that manufacture products for export to the EU.

3.1.1. Exporters (or Operators)

Operators must track direct emissions at the installation where the CBAM product is manufactured. When an installation manufactures multiple items, emissions must be assigned to each of these. Operators must also monitor and report to the reporting declarant(s) the quantities of 'relevant precursors' used in manufacturing each product and their embedded emissions. Operators must have embedded emission data from precursor suppliers when buying precursors to make CBAM products. The operator must also monitor and assign indirect emissions from energy generation during the manufacturing of all CBAM items.

Operators must notify importers of any local carbon prices for product manufacturing. This comprises the carbon price per tonne of CO₂e and any free allocation or other financial support, compensation, or rebate per tonne of the CBAM-relevant product. For complicated items, precursor material producers' carbon costs should be considered. For all needed information, operators can use the Commission's Excel spreadsheet communication tool³⁴.

3.1.2. Importers (or reporting declarants)

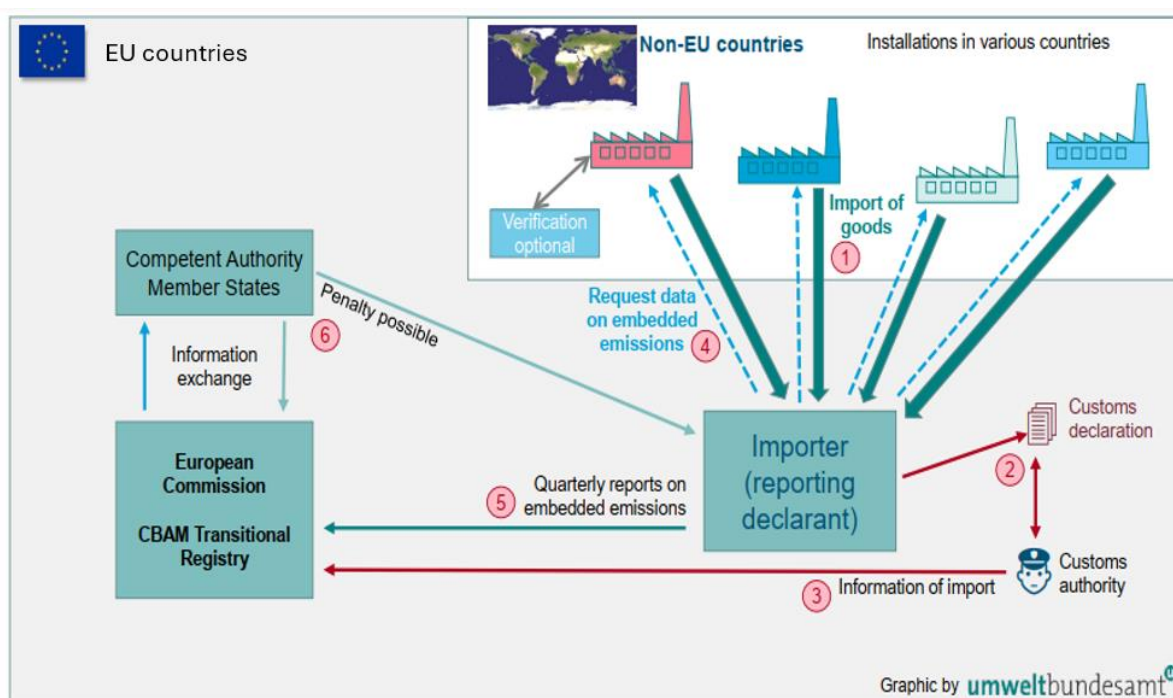
Importers must disclose direct and indirect emissions and any carbon fee due abroad for goods imported in each quarter of a calendar year throughout the transitional period.

Since the importer uses emissions data from elsewhere, the key duty of the importer is to guarantee the imports list and other essential criteria in the CBAM report are complete. The governance system and workflows in the transitional period follow the sequential steps in Figure 4 below.

³³ Commission Implementing Regulation (EU) 2023/1773 of 17 August 2023 laying down the rules for the application of Regulation (EU) 2023/956 of the European Parliament and of the Council as regards reporting obligations for the purposes of the carbon border adjustment mechanism during the transitional period; available at: http://data.europa.eu/eli/reg_impl/2023/1773/oj

³⁴ https://taxation-customs.ec.europa.eu/document/download/3f046f63-a413-4fc0-975b-dd36a873f15e_en?filename=CBAM%20communication%20template%20for%20installations_20230822.xlsx

Figure 4. Reporting responsibilities during the CBAM transition period



Source: Adapted from [Guidance Document on CBAM Implementation for Importers of Goods into the EU. European Commission, May 2024, page 23.](#)

3.2. Reporting period for importer and exporter

From 1 October 2023 to 31 December 2025, the importer must submit quarterly CBAM reports. This report must cover imports from the prior quarter and be submitted within one month. The reporting calendar for the CBAM transition phase is described in Table 2.

Table 2: Due date for submitting quarterly CBAM reports through 2025

REPORTING PERIOD	SUBMISSION DUE BY
2023: October – December	2024: January 31
2024: January – March	2024: April 30
2024: April – June	2024: July 31
2024: July – September	2024: October 31
2024: October – December	2025: January 31
2025: January – March	2025: April 30
2025: April – June	2025: July 31
2025: July – September	2025: October 31
2025: October – December	2026: January 31

Importers must provide the following information in the CBAM report:³⁵

- The total quantity of each type of goods;
- The actual total embedded emissions;
- The total indirect emissions;

The carbon price due in a country of origin for the embedded emissions in the imported goods.

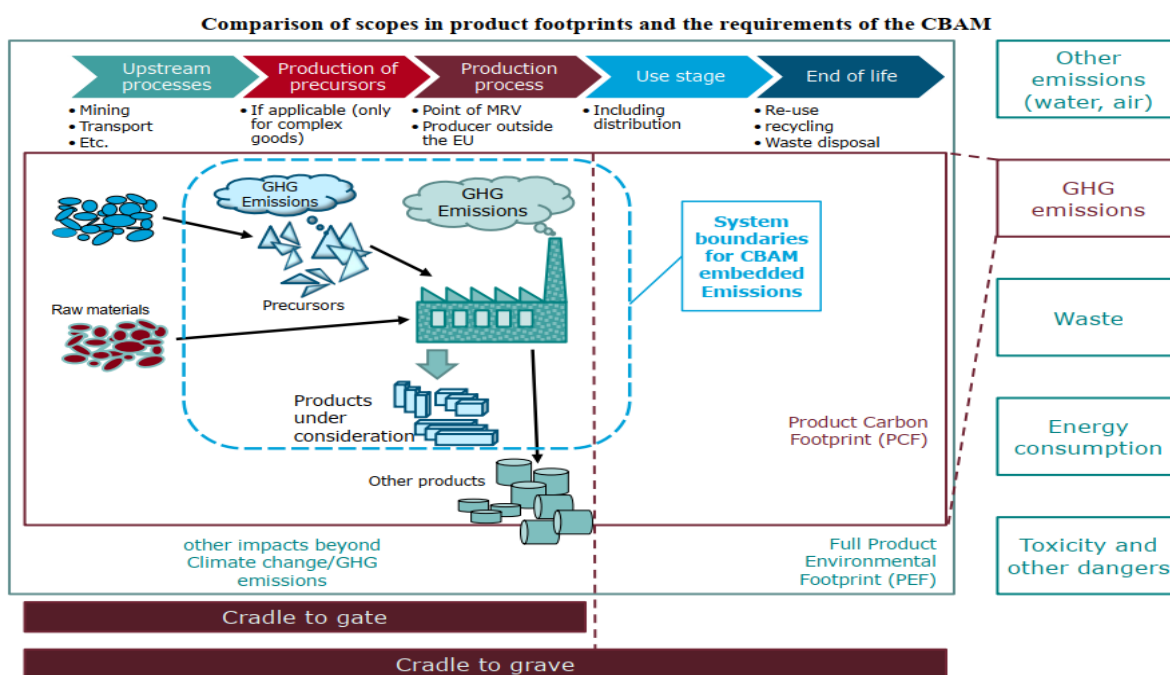
³⁵ Guidance document on CBAM implementation for importers of goods to the EU. 26 March 2024
https://taxation-customs.ec.europa.eu/document/download/bc15e68d-566d-4419-88ec-b8f5c6823eb2_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20importers%20of%20goods%20into%20the%20EU.pdf

CHAPTER 4: MONITORING AND REPORTING OF GHG EMISSIONS-RELATED INFORMATION

4.1. Direct and indirect embedded emissions

During the transition phase, reporting on embedded emissions³⁶ of imported goods must include direct and indirect emissions from production of the good as well as the embedded emissions of any precursors.

Figure 5. Boundary for calculating CBAM emissions



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Source: Adapted from [Guidance Document on CBAM Implementation for Importers of Goods into the EU. European Commission, May 2024, page 70.](#)

The boundary for calculating CBAM emissions under the EU ETS is narrower than when calculating the carbon footprint of products. As illustrated by the blue dotted line in Figure 5, emissions arising from upstream (i.e., raw materials) and downstream (i.e., use and disposal) of the product are not taken into account under CBAM whereas product carbon footprints usually account for these emissions.

Each sector and product has slightly different GHG emission profiles, electricity use, and precursors. Table 3 shows embedded emissions to be reported by each sector. Additional

³⁶ The concept of 'embedded emissions' accounts for the direct and indirect GHG emissions of the production process at operators as well as the embedded emissions of precursors. A detailed introduction to the concept and calculation of embedded emissions can be found in section 6.1.3 of 'Guidance Document on CBAM Implementation for Importers of Goods into the EU.' European Commission, May 2024. https://taxation-customs.ec.europa.eu/document/download/bc15e68d-566d-4419-88ec-b8f5c6823eb2_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20importers%20of%20goods%20into%20the%20EU.pdf

information is provided in the Guidance *Document on CBAM Implementation for Installation Operators Outside the EU*.³⁷

Table 3: Embedded emissions for each category of sector goods³⁸

Issue	CBAM good					
	Cement	Fertilisers	Iron/Steel	Aluminium	Hydrogen	Electricity
Reporting metrics	(per) Tonne of good					(per) MWh
Greenhouse gases covered	Only CO ₂	CO ₂ (plus nitrous oxide for some fertiliser goods)	Only CO ₂	CO ₂ (plus perfluorocarbons (PFCs) for some aluminium goods)	Only CO ₂	Only CO ₂
Emission coverage during transitional period	Direct and indirect					Only direct
Emission coverage during definitive period	Direct and indirect		Only direct, subject to review			Only direct
Determination of direct embedded emissions	Based on actual emissions, but estimations (including default values) can be used for up to 100% of the specific direct embedded emissions for imports until 30 June 2024 (i.e. CBAM reports due until 31 July 2024) and for up to 20% of the total specific embedded emissions for imports until 31 December 2025					Based on default values, unless several cumulative conditions are met
Determination of indirect embedded emissions	Based on actual electricity consumption and default emission factors for electricity, unless conditions are met (i.e. direct technical connection or power purchase agreement). Estimations (including default values) can be used for up to 100% of the specific indirect embedded emissions for imports until 30 June 2024					Not applicable

Source: [Questions and Answers Carbon Border Adjustment Mechanism \(CBAM\)](#), page 19

4.2. Units for reporting embedded emissions

For reporting purposes, embedded emissions data should be rounded to whole tonnes of CO₂e over the reporting period. Parameters used to calculate the reported embedded emissions should be rounded to include all significant digits, to a maximum of five decimal places. The level of rounding required for parameters used in such calculations will depend on the accuracy and precision of the measurement equipment used.

³⁷ Guidance Document on CBAM Implementation for Installation Operators Outside the EU. European Commission. December 2023. https://taxation-customs.ec.europa.eu/document/download/2980287c-dca2-4a4b-aff3-db6374806cf7_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20installation%20operators%20outside%20the%20EU.pdf

³⁸ Questions and Answers Carbon Border Adjustment Mechanism (CBAM) https://taxation-customs.ec.europa.eu/system/files/2023-12/Questions%20and%20Answers_Carbon%20Border%20Adjustment%20Mechanism%20%28CBAM%29.pdf

4.3. Report carbon price

The carbon price payable in the currency of the country of origin must be converted to the euro equivalent, using the average annual exchange rate of the year preceding the reporting due year. This coefficient is provided in the CBAM Transitional Registry³⁹ and in most cases is the annual transition coefficient published by the European Central Bank.

4.4. Reporting template

In general, if the importer receives CBAM goods in the EU, they must request specific embedded emissions of the imported CBAM goods from the traders/operators who will use the template provided by the European Commission to report the specific embedded emissions. The data may be voluntarily verified by a third-party verifier. A quarterly CBAM report will then be submitted to the CBAM Transitional Registry by the importer.

A Vietnamese operator/trader will need to prepare for the process and be familiar with the templates provided by the Commission to report the specific embedded emissions of their product.

³⁹ Transitional Registry and CBAM Declarant Portal. https://www.dehst.de/EN/CBAM/participating-in-cbam/CBAM-declarant-portal/CBAM-declarant-portal_node.html

Figure 6. CBAM report template

Occurs	Data element name	Format	Status	Rules	Condition	Codelists
1..1	Identification number	an..17	M	R0001		
1..1	Name	an..70	M			
1..1	Role	an..5	M		R0026	CL Roles
1..1	---Address		M			
1..1	Member State of establishment	a2	M			CL CountryCodesMemberState
0..1	Sub-division	an..35	O			
1..1	City	an..35	M			
0..1	Street	an..70	O			
0..1	Street additional line	an..70	O			
0..1	Number	an..35	O			
0..1	Postcode	an..17	O			
0..1	P.O Box	an..70	O			
0..1	--Representative		C		R0023 R0024	
1..1	Identification number	an..17	M			
1..1	Name	an..70	M			
1..1	---Address		M			
1..1	Member State of establishment	a2	M			CL CountryCodesMemberState
0..1	Sub-division	an..35	O			
1..1	City	an..35	M			
0..1	Street	an..70	O			
0..1	Street additional line	an..70	O			
0..1	Number	an..35	O			
0..1	Postcode	an..17	O			
0..1	P.O Box	an..70	O			
0..1	--Importer		O		R0022 R0024	
1..1	Identification number	an..17	M			
1..1	Name	an..70	M			
1..1	---Address		M			
1..1	Member State of establishment	a2	P			CL CountryCodesFullList
0..1	Sub-division	an..35	O			
1..1	City	an..35	M			
0..1	Street	an..70	O			
0..1	Street additional line	an..70	O			

Source: Adapted from [CBAM communication template for installations -](#)

CBAM report declarants can download or find the report template in the *CBAM Transitional Registry User Manual*, which fully describes the CBAM quarterly reporting structure. The user manual and report template can be downloaded from the following link: https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en

CBAM report declarants can use the XLS file titled 'CBAM Quarterly Report structure (XLS format)' available at the above link to facilitate the completion of CBAM quarterly reports. The XLS file indicates which fields are optional/required and provides predefined values allowed for specific fields.

APPENDIX 1: CBAM RESOURCES

The following provides a list of key resources and guidance documents that Vietnamese enterprises can use to learn more about CBAM reporting requirements:

- Basic information about CBAM, registration instructions, detailed registration forms for importers - Official website of the European Union, Tax and Customs section. Access link at https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en
- The recording of the webinar provided by the European Commission on October 27, 2023 on the IT Transition Registry for CBAM includes:
 - The webinar presentation covers CBAM and its implementation progress
 - Provide snapshots of IT systems for reporting
 - Frequently asked questions about CBAM Accessed at <https://customs-taxation.learning.europa.eu/course/view.php?id=792§ion=1>
- Instructions for using the CBAM quarterly reporting form for the Cement / Aluminum industry issued by the European Commission on November 23, 2023. Accessed at <https://customs-taxation.learning.europa.eu/course/view.php?id=809§ion=1>
- Instructions for using the CBAM quarterly reporting form for the Fertilizer / Electricity industry issued by the European Commission on November 30, 2023. Accessed at <https://customs-taxation.learning.europa.eu/course/view.php?id=810§ion=1>
- Instructions for using the CBAM quarterly reporting form for the Hydrogen / Iron and Steel industry issued by the European Commission on December 7, 2023. Accessed at <https://customs-taxation.learning.europa.eu/course/view.php?id=814§ion=1>
- Webinar link for National Competent Authorities (NCAs) of EU member states on policy and legal issues related to CBAM. Access at <https://customs-taxation.learning.europa.eu/enrol/index.php?id=808>
- Link to register online for CBAM importers. https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en#where-to-report

APPENDIX 2: TERMS AND DEFINITIONS

- **‘Tonne of CO₂eq or tCO₂eq’** means one metric tonne of carbon dioxide (‘CO₂’) equivalent, or an amount of any other GHG listed in Annex I to the CBAM Regulation (EU) 2023/956⁴⁰ [and Annex II of the Implementing Regulation Annexes] in relation to each of the goods listed in that Annex.
- **‘Direct emissions’** means emissions from the production processes of goods, including emissions from the production of heating and cooling consumed during the production processes, regardless of the location of the production of the heating and cooling.
- **‘Indirect emissions’** means emissions from the production of electricity, which is consumed during the production processes of goods, regardless of the location of the production of the consumed electricity.
- **‘Embedded emissions’** means emissions released during the production of goods, including the embedded emissions of relevant precursor materials consumed in the production process.
- **‘Simple goods’** means goods produced in a production process requiring exclusively input materials and fuels having zero embedded emissions.
- **‘Complex goods’** means goods other than simple goods.
- **‘Specific embedded emissions’** means the embedded emissions of one tonne of goods, expressed as tonnes of CO₂e emissions per tonne of goods.

⁴⁰ [Regulation \(EU\) 2023/956 establishing a carbon border adjustment mechanism. | UNEP Law and Environment Assistance Platform](#)

APPENDIX 3: CBAM GOODS AND PRODUCTION ROUTES

The following provides guidance on how to define the boundary of CBAM products in the iron and steel, cement, aluminum, electricity, fertilizer, and hydrogen. This includes instructions for which parts of the production route to account for and which GHG emissions to monitor.

The guidance is extracted from *Guidance Document on CBAM Implementation for Importers of Goods into the EU*⁴¹ and *Guidance Document on CBAM Implementation for Installation Operators Outside the EU*.⁴²

a. Iron and steel

Operators must record CBAM goods production processes, account for direct and indirect emissions during transitional periods, and express declared imports in metric tonnes. Indirect emissions should be separately reported during the transitional period. The detailed units of production and embedded emissions are shown in the following tables.

Table 4: Unit of production and embedded emissions for iron and steel sector

Product unit of goods	Tonnes (metric), reported separately for each type of sector goods, by installation or production process in the country of origin
Associated activities	Producing, melting or refining iron or steel or ferrous alloys; manufacture of semi-finished and basic steel products
Relevant GHG	Carbon dioxide (CO ₂)
Direct emissions	Tonnes of CO ₂ e
Indirect emissions	Quantity of electricity consumed (MWh), source and emissions factor used to calculate the indirect emissions in tonnes of CO ₂ or CO ₂ e <i>To be reported separately during transitional period.</i>
Unit for embedded emissions	Tonnes of CO ₂ e emitted per tonne of goods, reported separately for each type of goods, by installation in the country of origin

⁴¹ Guidance Document on CBAM Implementation for Importers of Goods into the EU. European Commission, May 2024. https://taxation-customs.ec.europa.eu/document/download/bc15e68d-566d-4419-88ec-b8f5c6823eb2_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20importers%20of%20goods%20into%20the%20EU.pdf

⁴² Guidance Document on CBAM Implementation for Installation Operators Outside the EU. European Commission. December 2023. https://taxation-customs.ec.europa.eu/document/download/2980287c-dca2-4a4b-aff3-db6374806cf7_en?filename=Guidance%20document%20on%20CBAM%20implementation%20for%20installation%20operators%20outside%20the%20EU.pdf

Product unit of goods	Tonnes (metric), reported separately for each type of sector goods, by installation or production process in the country of origin
Associated activities	Producing, melting or refining iron or steel or ferrous alloys; manufacture of semi-finished and basic steel products
Relevant GHG	Carbon dioxide (CO ₂)

For iron or steel products, direct emissions monitoring must include:

- All CO₂ emissions from fuel combustion processes and emissions from exhaust gas treatment processes related to production steps applied at the facility, including: reheating, melting, casting, hot rolling, cold rolling, forging, pickling, annealing, plating, coating, galvanizing, wire drawing, cutting, welding, and finishing iron and steel products.

Relevant input materials:

- Raw steel, if used in production;
- Cast Iron, DRI, if used in the process;
- Ferro Manganese (FeMn), Ferrochrome (FeCr), Ferro Nickel (FeNi) if used in the production process;
- Iron or steel products, if used in the process.

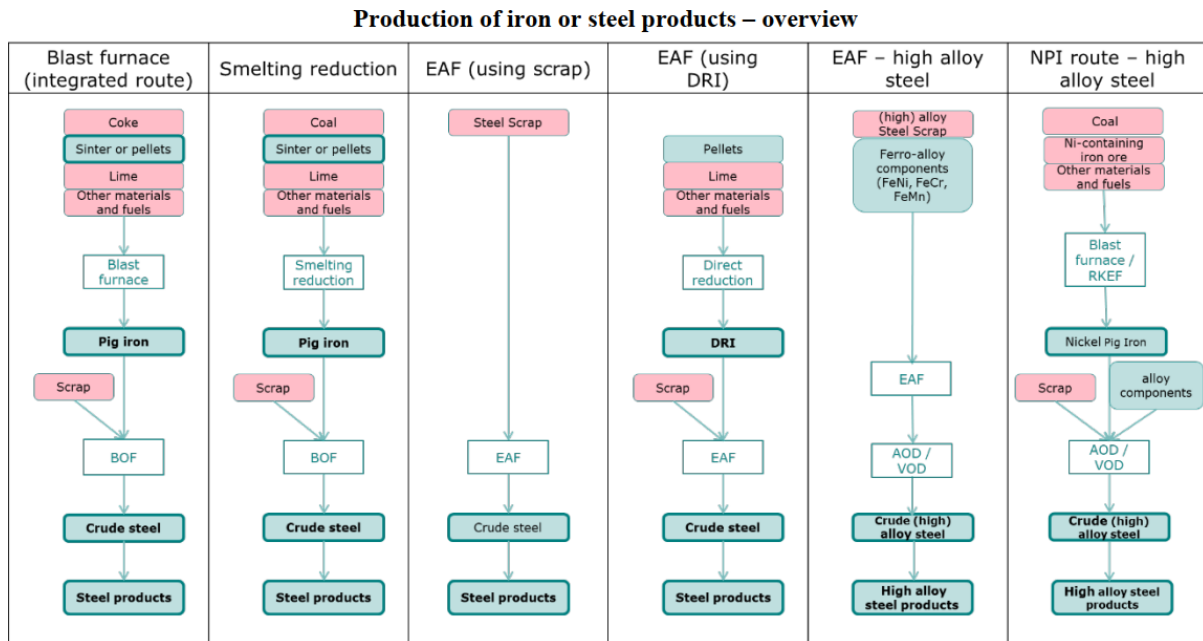
Only input materials listed as relevant precursors to the system boundaries of the production process as specified in the Implementing Regulation are to be considered and defined in the below table:

Table 5: Definition and explanation of relevant production processes and emissions covered

AGGREGATED GOODS CATEGORY	RELATED INPUT MATERIALS (INTERMEDIATE PRODUCTS)
Sintered Ore	None
Ferro alloys (FeMn, FeCr, FeNi)	Sintered ore, if used in the process.
Pig iron (Blast furnace route/Smelting reduction)	Hydrogen, sintered ore, ferro alloys, pig iron/Direct reduced iron (DRI) (the later if obtained from other installations or production processes and used in the process).
DRI	Hydrogen, sintered ore, ferro alloys, pig iron/DRI (the later if obtained from other installations or production processes and used in the process).
Crude Steel (Basic Oxygen steelmaking/ Electric arc furnace)	Ferro alloys, pig iron, DRI, crude steel (the later if obtained from other installations or

	production processes and used in the process).
Iron or steel products	Ferro alloys, pig iron, DRI, crude steel, iron or steel products (if used in the process)

Figure 7: System boundaries and value chain for the production of iron or steel products



Source: Adapted from [Guidance Document on CBAM Implementation for Importers of Goods into the EU. European Commission, May 2024, page 50.](#)

b. Cement

The cement sector must account for both direct emissions and indirect emissions in the transitional period. Indirect emissions are to be reported separately. Emissions should be reported in tCO₂e emissions, per tonne of good output. The detailed units of production and embedded emissions are shown in the following table.

Table 6: Unit of production and embedded emissions for cement sector

INDUSTRIAL SECTOR	CEMENT
Product unit	Tonnes (metric), reported separately for each type of CBAM good produced, by the installation or production process in the country of origin
Associated activities	Producing cement clinkers and calcined clays, grinding and blending cement clinker to produce cement

Relevant GHG	Carbon dioxide (CO ₂)
Direct emissions	Tonnes of CO ₂ e
Indirect emissions	Quantity of electricity consumed (MWh), source and emissions factor used to calculate the indirect emissions in tonnes of CO ₂ or CO ₂ e. <i>To be reported separately during transitional period.</i>
Unit for embedded emissions	Tonnes of CO ₂ e emissions per tonne of good, reported separately for each type of CBAM good, by the installation or production process in the country of origin.

Calcined clay

Calcined clay may be used as a clinker substitute. Kaolinitic clay that is calcined (metakaolin) can be added to cement in place of clinker in varying proportions in order to modify the properties of the cement mixture.

The CN code for calcined clay (CN code 2507 00 80) includes other clays too, which are not calcined and so are not subject to the CBAM; in this case the quantities of non-calcined clay imported are still reported, but with zero embedded emissions and without monitoring requirements for the producer.

For calcined clays, direct emissions monitoring should include:

- All processes directly or indirectly related to the manufacturing process, such as raw material preparation, mixing, drying, calcination and exhaust gas cleaning.
- CO₂ emissions from fuel combustion as well as from raw materials, if relevant.

Related materials: None

Clinker cement

Cement clinker is produced in clinker plants (kilns) by the thermal decomposition of calcium carbonate to form calcium oxide, followed by the clinkering process in which the calcium oxide reacts at high temperatures with silica, alumina and ferrous oxide to form a clinker. Grey and white clinkers may be produced depending on the temperature of the process and purity of raw materials.

For clinker cement, direct emissions monitoring will include:

- Limestone calcination and other carbonates in raw materials, conventional fossil fuel furnace fuel, alternative fossil fuel and raw material substitutes for furnaces, biomass furnace fuel (such as waste-derived fuels), non-furnace fuels, carbon content excluding carbonates in limestone and shale, or alternative raw materials such as fly ash used in raw meal in furnaces, and raw materials used for exhaust gas filtration.

Related input materials: None

Cement

Cement (apart from aluminous cement) is defined as a complex good as it is produced from relevant precursor cement clinker and possibly calcined clay. Cement clinker is ground and blended with certain other constituents to produce the finished cement product.

For cement, direct emissions monitoring will include:

- CO₂ emissions from fuel combustion are related to the drying of materials.

Related input materials: clinker cement; calcined clay (if used in this process).

Aluminous Cement

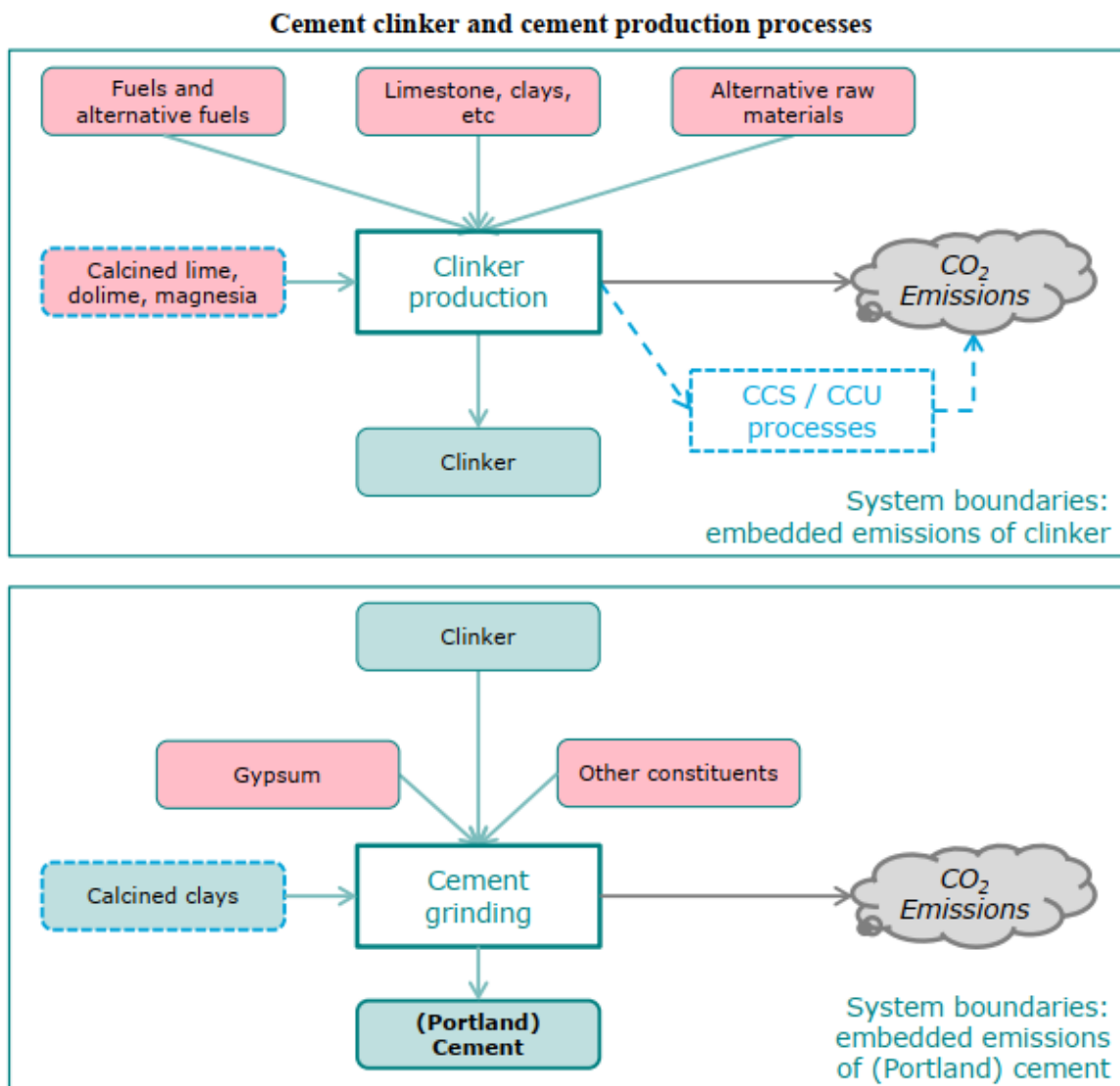
Aluminous cement is regarded as a simple good as it is produced directly from aluminous clinker by a continuous production process and is ground without the addition of further additives. Any emissions associated with the production of aluminous cement constituents such as alumina (from bauxite) are deemed to be out of scope for the CBAM.

For aluminous cement, direct emissions monitoring should include:

- CO₂ emissions from fuel combustion are directly or indirectly related to this process.
- Treat emissions from carbonates in raw materials, if present, and purify the emissions.

Related input materials: None

Figure 8. System boundaries of cement clinker and cement production processes



Source: Adapted from *Guidance Document on CBAM Implementation for Importers of Goods into the EU*. European Commission, May 2024, Page 32.

c. Aluminum

The aluminum sector should account for both direct emissions and indirect emissions in the transitional period. Indirect emissions are to be reported separately. Emissions should be reported in tCO₂e emissions per tonne of output. The detailed units of production and embedded emissions are shown in the following table.

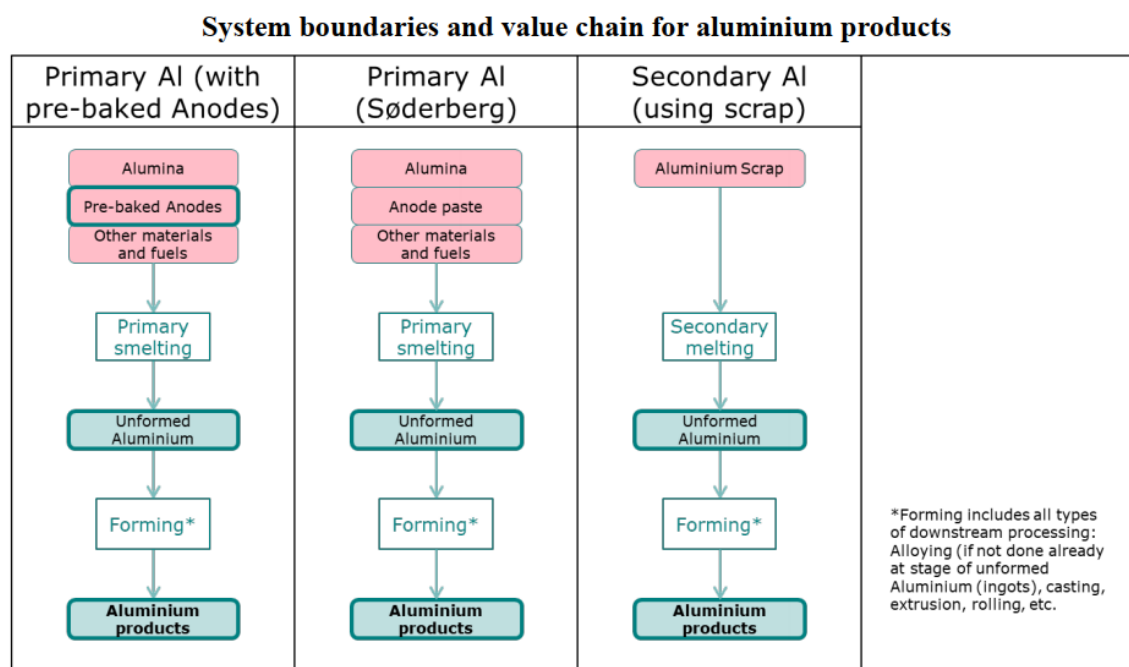
Table 7: Unit of production and embedded emissions for aluminum sector

INDUSTRIAL SECTOR	ALUMINUM
Product unit	Tonnes (metric), reported separately for each type of sector goods, by installation or production process in the country of origin
Associated activities	Producing unwrought aluminum from alumina, or secondary raw materials (aluminum scrap), by metallurgical, chemical or electrolytic means; manufacture of semi-processed and basic aluminum products.
Relevant GHG	Carbon dioxide (CO ₂) and perfluorocarbons (CF ₄ and C ₂ F ₆)
Direct emissions	Tonnes of CO ₂ e
Indirect emissions	Quantity of electricity consumed (MWh), source and emissions factor used to calculate the indirect emissions in tonnes of CO ₂ or CO ₂ e <i>To be reported separately during transitional period</i>
Unit for embedded emissions	Tonnes of CO ₂ e emissions per tonne of goods, reported separately for each type of good, by installation in the country of origin.
Aggregated Goods Category	Related input materials (Intermediate products)
Unwrought aluminum Primary aluminum Secondary aluminum	None for primary aluminum For secondary aluminum – unwrought aluminum from other sources, if used in the process
Aluminum Products	Unwrought aluminum (differentiated between primary and secondary aluminum if known), other aluminum products (if used in the production process)

Unwrought aluminum is produced by several production routes ('primary aluminum' for electrolytic smelting, 'secondary aluminum' for the melting/recycling of scrap) as metal ingots, blocks, billets, slabs or similar. It is defined as a 'simple good', as the raw materials (carbon anodes and alumina for primary aluminum, scrap for secondary aluminum) and fuels used in its manufacture are themselves considered to have zero embedded emissions.

The aluminum goods listed above include most types of aluminum product manufactured. Aluminum products are defined as complex goods as they include the embedded emissions from the precursor unwrought aluminum.

Figure 9. System boundaries and value chain of aluminum products



Source: Adapted from [Guidance Document on CBAM Implementation for Importers of Goods into the EU. European Commission, May 2024, page 63.](#)

d. Electricity

For electricity, only direct emissions are monitored and reported,

For electricity, direct emissions monitoring will include:

- Any combustion emissions and process emissions from exhaust gas treatment.

Relevant input materials: none

e. Fertilizer

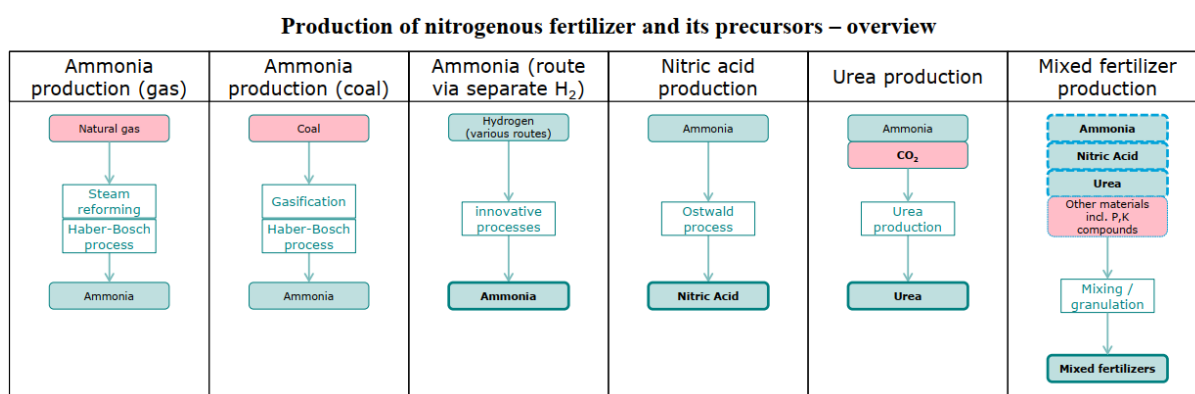
The fertilizer industry must account for both direct and indirect emissions during the transition period. Indirect emissions must be reported separately. The quantity of goods belonging to the nitrogen-containing fertilizer industry declared to be imported into the EU must be expressed in tonnes. The detailed units of production and embedded emissions are shown in the following table.

Table 8: Unit of production and embedded emissions for fertilizer sector

INDUSTRIAL SECTOR	FERTILIZER
Product unit	Tonnes (metric), reported separately for each type of sector goods, by installation or production process in the country of origin
Associated activities	Producing chemical precursors for nitrogenous fertilizer production, producing nitrogenous fertilizers by physical mixing or chemical reaction, and processing into their final form
Relevant GHG	Carbon dioxide (CO ₂) and nitrous oxide (N ₂ O)
Direct emissions	Tonnes of CO ₂ e
Indirect emissions	Quantity of electricity consumed (MWh), source and emissions factor used to calculate the indirect emissions in tonnes of CO ₂ or CO ₂ e <i>To be reported separately during transitional period</i>
Unit for embedded emissions	Tonnes of CO ₂ e emissions per tonne of goods, reported separately for each type of goods, by installation in the country of origin
Aggregated Goods Category	Related input materials (Intermediate products)
Ammonia <i>Haber Bosch with steam reforming</i> <i>Haber Bosch with gasification</i>	Hydrogen, if separately produced for use in the process
Nitric Acid	Ammonia (as 100% ammonia)
Urea	Ammonia (as 100% ammonia)
Mixed fertilizer	If used in the process: ammonia (as 100% ammonia), nitric acid (as 100% nitric acid), urea, mixed fertilizers (in particular salts containing ammonium or nitrate).

Urea is used as a precursor in mixed fertilizer production but may also be used as a convenient fertilizer on its own due to its high nitrogen content. Mixed fertilizers comprise all kinds of nitrogen (N) containing fertilizers, including ammonium nitrate, calcium ammonium nitrate, ammonium sulfate, ammonium phosphates, urea ammonium nitrate solutions, as well as nitrogen-phosphorus (NP), nitrogen-potassium (NK) and nitrogen-phosphorus-potassium (NPK) fertilizers.

Figure 10. System boundaries and value chain to produce nitrogenous fertilizer and its precursors



Source: Adapted from *Guidance Document on CBAM Implementation for Importers of Goods into the EU*. European Commission, May 2024, Page 41.

f. Hydrogen

The hydrogen sector must account for both direct and indirect emissions in the transitional period. Indirect emissions are to be reported separately. Emissions should be reported in tCO₂e emissions per tonne of output. The detailed units of production and embedded emissions are shown in the following table.

Table 9: Unit of production and embedded emissions for Chemicals – Hydrogen sector

INDUSTRIAL SECTOR	CHEMICALS – HYDROGEN
Product unit	Tonnes (metric) pure hydrogen, reported separately by installation or production process in the country of origin
Associated activities	Producing hydrogen by steam reforming or partial oxidation of hydrocarbons, water electrolysis, Chlor-Alkali electrolysis or production of sodium chlorate
Relevant GHG	Carbon dioxide (CO ₂)
Direct emissions	Tonnes of CO ₂ e
Indirect emissions	<p>Quantity of electricity consumed (MWh), source and emissions factor used to calculate the indirect emissions in tonnes of CO₂ or CO₂e</p> <p><i>To be reported separately during transitional period</i></p>

Unit for embedded emissions	Tonnes of CO ₂ e emitted per tonne of good, reported separately for each type of good, by installation in the country of origin
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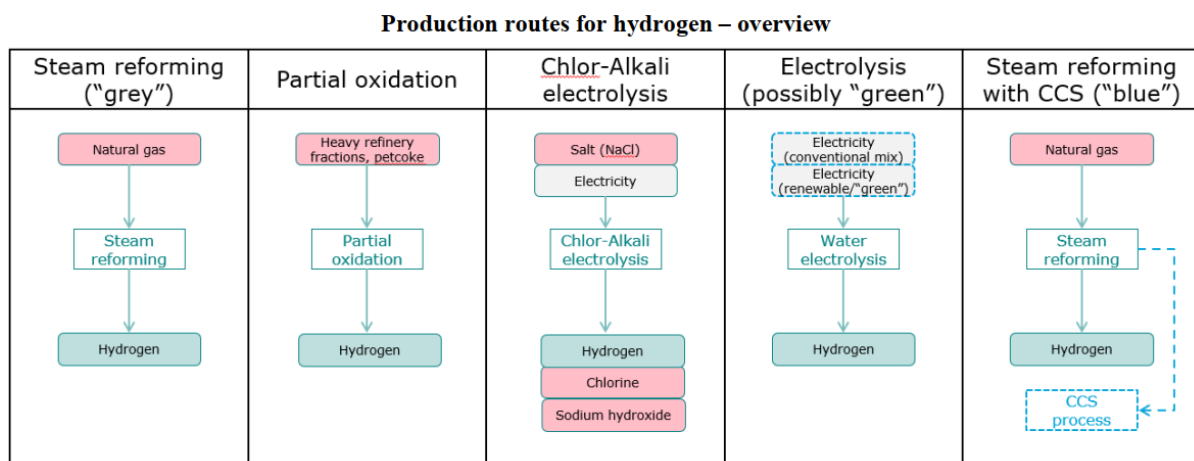
Due to its emission-free raw materials and fuels, hydrogen is a simple commodity.

Hydrogen precursors are unavailable. Hydrogen can be produced separately for use as a chemical feedstock in other processes including ammonia, pig iron, and DRI.

Hydrogen can be produced from plastic trash. However fossil fuels are the main source. Large industrial processes like ammonia production use hydrogen production machines.

The system boundaries for direct emissions monitoring encompass all hydrogen generation processes and fuels.

Figure 11. System boundaries of different production routes for hydrogen



Source: Adapted from [*Guidance Document on CBAM Implementation for Importers of Goods into the EU. European Commission, May 2024, Page 36.*](#)

APPENDIX 4: CBAM GOODS AND PRODUCTION ROUTES

a. Method for calculating direct emissions

The following provides the method operators and importers should use for calculating direct GHG emissions.

$$Em_{Inst} = \sum_{i=1}^n Em_{calc,i} + \sum_{j=1}^m Em_{meas,j} + \sum_{k=1}^l Em_{other,k}$$

In there:

Em_{Inst} is the amount of direct emissions

$Em_{calc,i}$ is the amount of emissions from source i calculated using the calculation method (tonnes of CO₂e)

$Em_{meas,j}$ is the amount of emissions from emission source j determined by measurement method (tonnes of CO₂e)

$Em_{other,k}$ is the amount of emissions determined by another method (tonnes of CO₂e)

b. Method for calculating indirect emissions

The following provides the method operators and importers should use for calculating indirect GHG emissions.

$$AttrEm_{indir} = Em_{el} = E_{el} \cdot EF_{el}$$

In there:

$AttrEm_{indir}$ is the indirect emissions of a production process (tonnes of CO₂e)

Em_{el} is the amount of emissions related to the electricity produced or consumed (tonnes of CO₂e)

E_{el} is the electricity consumed (MWh or TJ)

EF_{el} is the emission factor for the electricity used (tCO₂/MWh or tCO₂/TJ)