Whitepaper on

CBAM Definitive Period Requirements

(Update as on 18 Feb 2026)

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1 Introduction

With CBAM entering new definitive period, there are many queries in the market, some from EU importers to exporters, some from exporters' management and marketing department and some from the DQS clients' internal teams who are managing CBAM. This note has been specifically prepared to help them understand the current situation and how DQS can support them.

We have clarified some of these queries in a webinar conducted on 20 January 2026 and will be covering another part on the webinar planned on 17 March 2026.

2 The content of the note

We are specifically focusing on the following:

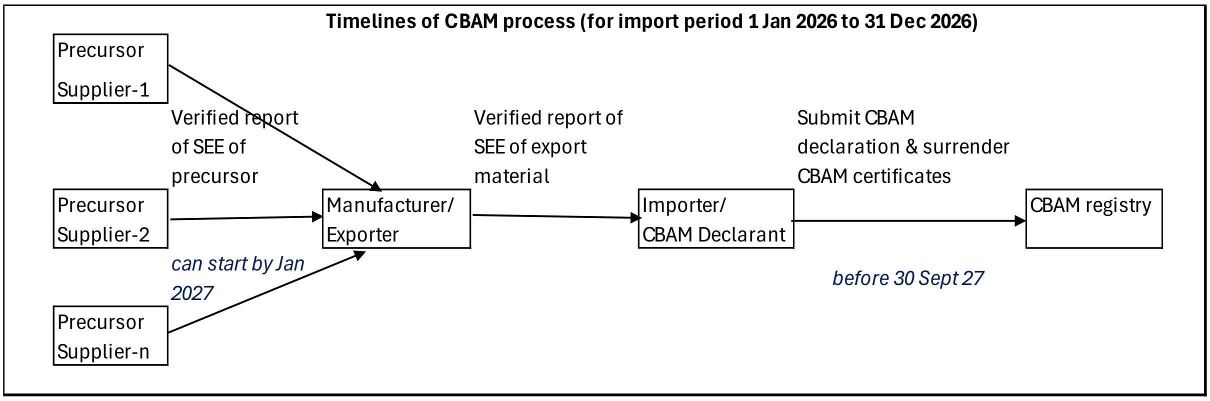
1) Importer's requirement during the definitive period and how to address them
2) How to calculate the financial impact of CBAM
3) What additional documentation the exporters and their suppliers must be having for complying with the CBAM requirements
4) How DQS can support

3 General requirements for Definitive period

- For the Iron & Steel and Aluminum industries, only SEE direct (Specific Embedded Emission – direct) data is required and for all financial-related matters, only this value will be used.
- **Annual reporting** must be done for the following:
    - **GHG emission report** – by CBAM goods producer, which will contain the SEE direct value and calculation/monitoring details
    - **GHG verification report** – by Accredited verifier, which will confirm the conformity of claims made in GHG emission report and provide the final verified SEE values
    - **Annual CBAM declaration** report – by importer/CBAM declarant, which will have the details of the import made by them and various details of their imported goods
    - The CBAM declarant must also purchase and surrender CBAM certificates to the CBAM registry. CBAM certificate price depends on EU ETS (EU Emission trading Scheme, in place since 2006) average market price of EU allowances. Number of certificates to be purchased depends on the following:
        - SEE direct of imported goods (if verified value not available country specific default value to be considered)
        - Quantity of imported goods and country of origin
        - Benchmark value of specific emissions of the **imported material** (materials are identified by their CN codes which correspond to the initial 6-10 digits of HSN codes)
        - Benchmark SEE of the **precursors** of the imported material and their mass fraction contribution (tons of precursor material used per ton of production of imported material)
        - CBAM factor and Cross sectoral correction factor, which changes with time.
        - Whether any default values used in SEE calculation of imported material.
- General timeline for the above:

- Importers to purchase and surrender CBAM certificates and also submit the CBAM declaration to CBAM registry – 30 September 2027 (it will by 31 of May for subsequent years)
- The Importer must obtain the verified GHG emission report from exporters before the above date and along with the corresponding Verification report for the same material.
- Exporters to complete the GHG emission report (SEE calculation) and get them verified before submitting to importers.
- To prepare the GHG emission report (SEE calculation), exporters to obtain verified SEE certificate from the precursor suppliers for period January 2026 to December 2026.
- Precursor suppliers to exporters must prepare their GHG emission report and get them verified – starting from Jan 2027 onwards

The same flow is represented below as:



- If supplied SEE data is not verified, country specific default values to be considered for the same material
- Verifiers (Verification bodies) need to be accredited from National Accreditation Agencies (NAC) qualified for providing accreditation of CBAM. NACs of only EU member states are authorized to accredit verification bodies.
- Accreditation criteria were formed and approved by EU on 20 November 2025 and published on the CBAM website on 17 December 2025. EU ETS approved verifiers **do not** qualify automatically for CBAM verification.

4 Importer's requirement during the definitive period and how to address them

a) Mostly, the importers are asking for quarterly 'verified' data starting from Q1 2026. Their queries revolve around the accreditation status of the verifier.

To the above query the following is our response:

DQS is currently in the process of applying for CBAM accreditation. The accreditation rules were approved by the European Commission on 20 November 2025 and were released only on 17 December 2025. Consequently, all verification bodies are presently in the process of obtaining accreditation.
*Please note that CBAM accreditation must be obtained separately, and registration as an EU ETS verifier **does not** automatically qualify an organization for CBAM verification. The*

legal requirement for a verification certificate from an accredited verifier applies to the annual CBAM certificate for the year 2026, which can be issued only from January 2027.

b) Please note that quarterly data is not a legal requirement of EU CBAM registry.
However, importers need to know the SEE value quarterly basis to estimate their financial liability. They are expected to purchase at least 50% of their CBAM certificate liability every quarter to reduce the year-end financial shock.
Hence, DQS is offering unaccredited verification services during this period to help clients to share a realistic SEE value with their customers/importers.

5 How to calculate the financial impact of CBAM

Every importer/CBAM declarant is required to purchase CBAM certificates from their respective country's 'National Competent Authority' and submit them to CBAM registry.

The financial load then depends on the number of CBAM Certificates to be purchased and the price of each certificate.

5.1 Price of CBAM Certificate:

CBAM certificate price is linked to the EU ETS allowance price.
The price equals the average price of EU ETS allowances, ensuring parity between EU producers and non-EU exporters.
Price calculation mechanism is different for the first year of definitive period as defined below:

- For 2026:
  The European Commission will publish a quarterly average EU ETS price, released within one week after the end of each quarter.
- From 2027 onwards:
  The price will shift to a weekly average publication, making the pricing more dynamic and closely aligned with market movements.

5.2 Number of CBAM Certificates:

Unit equivalence of CBAM certificate can be defined as:
1 CBAM certificate = 1 tonne of CO_2e

Number of CBAM certificates required is calculated as:

= (SEE of material – SEFA of material)* quantity imported

Were,
SEE =Specific embedded emission of material (for Iron & Steel and Aluminum Industry on SEE_{direct} to be used)

SEFA = Specific embedded free allocation of material.

Exporters are already aware of the SEE calculation method, which remains almost same as it has been in the transition period (with minor modifications in definitive period).

Details of SEFA calculation are presented in Annexure 1. The examples presented in Annexure 1 also show the CBAM certificate cost per ton of material exported.

6 Additional Documentation for CBAM Compliance

6.1 Documentation requirements

Document requirements have increased with CBAM entering definitive period. It is expected that the Exporters/manufacturers will maintain:

1) Approved Monitoring Plan

A formally documented and approved plan describing how emissions are monitored, calculated, and reported at the installation. It defines system boundaries, methodologies, responsibilities, and data management procedures.

2) Documented Control System and SOPs (Standard operation procedures)

A structured internal control framework covering risk assessment, data flow activities, quality checks, and corrective actions to prevent misstatements and ensure accuracy of emissions data.

3) Defined System Boundaries

A clear description of all processes, emission sources, fuels, materials, and precursors included within the scope of monitoring, aligned with CBAM sector-specific rules for iron and steel.

4) Defined Production Routes and Process Flow Diagrams (PFD)

Formal identification and documentation of the specific steelmaking route(s) used in the installation (e.g. BF-BOF / EAF / DRI / Smelting Reduction).
A complete visual representation of the process flow diagrams (PFD), indicating the material and energy flows. Outsourced processes to be indicated suitably in the PFD.

5) Risk Assessment & Internal Audit Records (if any)

Documented evaluation of potential risks of data errors or non-compliance, along with periodic internal audits and corrective actions to demonstrate ongoing governance and regulatory control.

6.2 Verifiers Expectation

Verifiers are expected to verify following documentation in addition to the supporting documents of activity data:

A. Installation & Identification Documents

- Operator name, registration number
- Installation name
- CBAM Registry installation ID
- UN/LOCODE
- Full address & geo-coordinates

- Reporting period confirmation

B. Monitoring Plan (Core Document)

Verifiers will require:

- Approved Monitoring Plan (latest version)
- Version control history
- Description of:
    - Production processes & routes & PFD
    - System boundaries applied
    - Attribution methodology of emissions to goods
    - If used,
        - Treatment of scrap, alloys, graphite (mass balance method)
        - Treatment of biomass (if used)
        - Treatment of waste gases (BFG, COG, converter gas)
        - Heat imports/exports
        - CO_2 capture (if applicable)
    - Indirect emissions methodology
    - Control system description (risk assessment & data control system)

C. Exporter/manufacturer's Emissions Report

Verifiers will request:

- Full emissions report
- Summary version
- Declarant-specific addendum (if applicable)
- Free allocation adjustment data
- Embedded emissions per good
- Indirect emission share (actual vs default)

D. Internal Control & Governance Documents

- Data flow activities documentation
- Control system documentation
- Risk assessment
- Error correction records
- Evidence of corrections of misstatements
- Management approval of emission report

6.3 Activity Data & Calculation verification

As part of Activity Data & Calculation verification process, verifiers are expected to check the following records, as and where applicable:

1. Fuel & Reducing Agent Records

- PNG consumption
- Natural gas consumption
- LPG consumption
- Fuel oil consumption
- Coal or other fuel consumption
- Biomass (if used)
- Waste gases (BFG, COG, converter gas)
- Electrode consumption (EAF)
- Electrode paste (where applicable)
- Coke, coal, PCI coal etc reducing agent consumption

2. Production Data and Precursor consumption data

- Quantity of semi-finished and finished products.
- Quantity under each CN code
- Functional unit (tonnes).
- Traceability to the precursors
- Precursor consumption data

3. Emission Factor & Laboratory Data

- Net calorific values (NCV)
- Emission factors
- Oxidation factors, Conversion factors
- Lab analysis reports, (where sampling is done)
- Sampling protocols
- Calibration certificates
- Uncertainty assessments

4. Precursor Documentation (Very Important for Iron & Steel)

If precursors are purchased or sourced externally:

- CN code
- Country of origin
- Reporting period
- Specific embedded emissions (direct + indirect)

- Verification report of precursor installation
- Verifier accreditation details

5. Indirect Emissions (Electricity)

- Electricity consumption per process
- Source of electricity
- Smart meter data (if actual values used)
- Evidence supporting actual emission factor eligibility
- Default factor usage documentation

6. Mass Balance Calculations (for steel making)

- Carbon input vs carbon output of melting furnace
- Carbon in slag/waste
- Carbon in off-gases

  (Required under Iron & Steel system boundaries)

Process Materials

- Limestone, dolomite, magnesite
- Carbonates
- Fluxes
- Scrap inputs
- Alloys

6. Continuous Emissions Monitoring (Applicable only for those who are monitoring CO2 emission through actual measurement of stack data)

- CEMS data
- Calibration logs
- Maintenance records
- Measurement point documentation

7 How DQS Can Support During the Definitive Period

In addition to data verification services, DQS proposes to support exporters through structured **quarterly CBAM readiness assessments**, enabling early identification of gaps and financial exposure.

As part of this quarterly review, DQS will provide the following additional services:

- **Review of the SEE Calculation Methodology**
  Assessment of the Specific Embedded Emissions (SEE direct) calculation approach to ensure alignment with the latest CBAM Implementing Regulations, updated guidance documents, benchmark publications, and interpretation notes issued by the European Commission.
- **Review of Specific Embedded Free Allocation (SEFA) Calculation**
  Independent review of SEFA computation, including correct application of CBAM factor, CSCF factor, benchmark values (actual vs default), and mass share of precursors, ensuring accuracy of financial impact estimation.
- **Review of Monitoring Plan and Supporting Documentation**
  Gap assessment of the approved Monitoring Plan, system boundaries, production routes, control system, and supporting records to ensure continued compliance with updated CBAM requirements and readiness for annual accredited verification.

8 Annexure 1: SEFA Calculation for Material

Like SEE calculation, SEFA also has two parts:

- Free Allowance for the installation's emission, and
- Free Allowance for the precursor's emission

It is material specific (CN code specific) and depends on the year of calculation.

The method for calculating SEFA is presented below:

$$\mathbf{SEFA_{g,y} = SFA_{Process\ g,y} + \sum m_i * SEFA_{i,yi}} \quad \text{...(Eq A1)}$$

Where,

$SFA_{process\ g,y}$ = Process/installation related specific Free allocation in year 'y' for production of goods 'g' (t of CO_2e/ t of goods)

$SEFA_{i,yi}$ = Specific Embedded Free Allocation for precursor 'i' in year 'yi' (t CO_2e/ t of precursor)

m_i = quantity of precursor 'i' consumed for production of 1 t of goods 'g' (t of precursor/t of goods)

Calculation method for $\mathbf{SFA_{Process}}$ is as defined below:

$$\mathbf{SFA_{Process\ g,y} = CBAM_y * CSCF_y * BM^*_g} \quad \text{...(Eq A2)}$$

$CBAM_y$ = CBAM factor referred in Directive 2003/87/EC for year 'y'

$CSCF_y$ = Cross sectoral correction factor for the year 'y'

BM^*_g = process related CBAM benchmark for production process yielding goods 'g' (t CO2e/ t of goods)

CBAM factor changes with time and it has been defined as below:

Year	CBAM factor
2026	97.5%
2027	95.0%
2028	90.0%
2029	77.5%
2030	51.5%
2031	39.0%
2032	26.5%
2033	14.0%
2034	0.0%

For 2026 exports, CBAM factor can be considered as 97.5%. Please note, the factor decreases with time, and no benefit of free allowances will be available from year 2034.

Cross Sector Correction factor also changes with time and the published information shows:

Year	CSCF factor
2026	1
2027	0.978
2028	0.956
2029	0.934
2030	0.912

Since the factor is '1' for 2026, there is not much impact of this factor for the exports for this year.

The benchmark value of material (BM_g) is to be obtained from the published data at CBAM website. There are two types of Benchmarks for same material code:

- $\mathbf{BM^*_g}$ represents the benchmark value which is to be considered when SEE is reported based on **actual** production data (after verification).
- $\mathbf{BM_g}$ represents the benchmark value which is to be considered when SEE is reported based on **default** value.

Hence, if default values are considered for SEE calculation, then the specific free allocation calculation should consider default benchmark values following the equation provided below:

$$\mathbf{SEFA_{g,y} = CBAM_y * CSCF_y * BM_g} \quad \text{..(Eq A3)}$$

$CBAM_y$ = CBAM factor referred in Directive 2003/87/EC for year 'y'

$CSCF_y$ = Cross sectoral correction factor for the year 'y'

BM_g = Default CBAM benchmark (t CO2e/ t of goods)

If SEE is calculated using default values for selected precursors then the SEFA of those selected precursors only should consider default benchmark values.

A sample of the benchmark table is presented below:

CN code	CN Description	Column A BMg* [tCO2e/t]	Column B BMg [tCO2e/t]
72210090	Bars and rods of stainless steel, hot-rolled, in irregularly wound coils, containing by weight < 2,5% nickel	0,109	1,225 (1) 1,187 (2)
72221111	Bars and rods of stainless steel, not further worked than hot-rolled, hot-drawn or extruded, of circular cross-section of a diameter of >= 800 mm, containing by weight >= 2,5% nickel	0,109	1,225 (1) 1,187 (2)

Where: (1)...Value is to be used for production years 2026-27

(2)... Value is to be used for production years 2028-30

As presented in the table above column A represents benchmark values for a particular material (here identified by CN code) when reported SEE is based on actual data. Column B represents benchmark values for same material if default values were considered while doing SEE calculation.

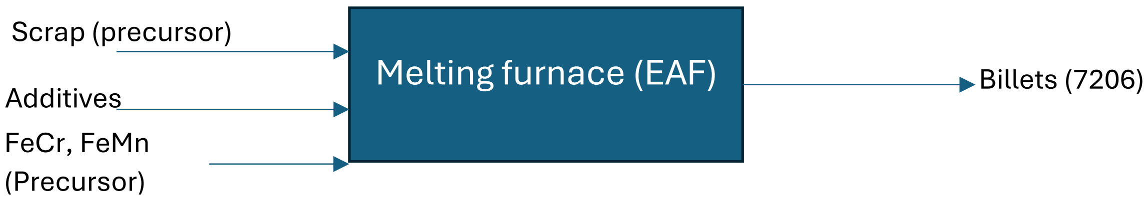
The benchmark values are listed in the following document at CBAM website:

https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202502620

(Commission Implementing Regulation (EU) 2025/2620 of 16 December 2025 laying down rules for the application of Regulation (EU) 2023/956 of the European Parliament and of the Council as regards the calculation of the free allocation adjustment to the number of CBAM certificates to be surrendered)

8.1 Example 1: Calculation of Financial impact for a simple one step process:

Let’s define the process of production of billets in a melting furnace where the process flow diagram is as shown below:



Step 1: Get the product data

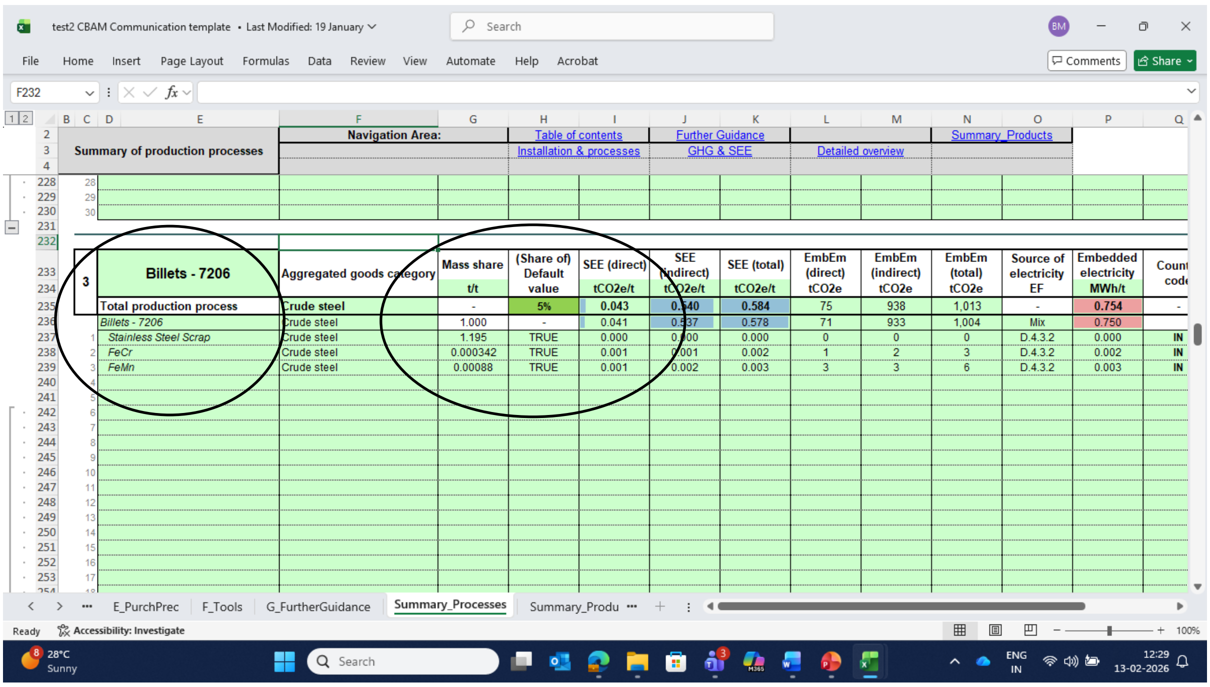
We need to collect the following data from the Communication template:

1) What is the SEE $_{direct}$ value of the material (CN code 7206)
2) What are the individual precursors used and their respective CN codes
3) What are the mass share* of the individual precursors**
4) Which precursor has used default value, if any

* mass of precursor consumed per ton of product produced

** in case same CN code material has two different sources and actual SEE of one source is known but other source has used default value, then the mass fractions to be considered separately for separate sources

All the above data is available in the material ‘Communication Template’ at the ‘Summary process’ sheet. A sample is shown below:



	Billets - 7206	Aggregated goods category	Mass share t/t	(Share of) Default value	SEE (direct) tCO2e/t	SEE (indirect) tCO2e/t	SEE (total) tCO2e/t	EmbEm (direct) tCO2e	EmbEm (indirect) tCO2e	EmbEm (total) tCO2e	Source of electricity EF	Embedded electricity MWh/t	Count code
3	Total production process	Crude steel	-	5%	0.043	0.540	0.584	75	938	1,013	-	0.754	-
	Billets - 7206	Crude steel	1.000	-	0.041	0.537	0.578	71	933	1,004	Mix	0.750	
1	Stainless Steel Scrap	Crude steel	1.195	TRUE	0.000	0.000	0.000	0	0	0	D.4.3.2	0.000	IN
2	FeCr	Crude steel	0.000342	TRUE	0.001	0.001	0.002	1	2	3	D.4.3.2	0.002	IN
3	FeMn	Crude steel	0.00088	TRUE	0.001	0.002	0.003	3	3	6	D.4.3.2	0.003	IN

From the above sample Communication template (CT), following data was extracted:

Table TE-1: Product SEE data

Billets - 7206	**Mass share**	**(Share of) Default value**	**SEE (direct)**
	t/t		tCO_2e/t
Total production process	-	0.0528	0.043
Billets - 7206	1	-	0.041141
Stainless Steel Scrap	1.194747	TRUE	0
FeCr	0.000342	TRUE	0.000803
FeMn	0.000882	TRUE	0.001491

The relevant values to be used in the calculations are highlighted in yellow

Step 2: Calculate SEFA

Applying Equation A1 in this case we know that:

$$SEFA_{g,y} = SFA_{Process\ g,y} + \sum m_i * SEFA_{i,yi}$$

For the test case the above equation can be interpreted as:

$$SEFA_{billets,2026} = SFA_{Process\ billets,2026} + m_{FeMn} * SEFA_{FeMn,2026} + m_{FeCr} * SEFA_{FeCr,2026} \text{ ....(Eq E-1)}$$

Iron Scrap is also a precursor; since no emissions are attributed to scrap, free allocation is also considered as nil.

Step 2.1: Calculate SFA

Applying Equation A2 in this case

$$SFA_{Process\ billet,2026} = CBAM_{2026} * CSCF_{2026} * BM^{*}_{billet} \text{ ....(Eq E-2)}$$

The benchmark values sourced from the published data for the product and the precursors are provided below:

Table TE-2: Product Benchmark data

Product Description	**CN Cod**	**Bench mark value** BM^{*}_{g}	BM_g	
Crude steel (billet)	7206	0.150 (C)	1.288 (C)	(C) Steel based on BF/BOF
		0.027 (D)	0.424 (D)	(D) Steel based on DRI/EAF
		0.027 (E)	0.027 (E)	(E) Steel based on Scrap/EAF
FeMn	7202 1	1.361 (1)	1.361 (1)	(1) for 2026-27
		1.277 (2)	1.277 (2)	(2) for 2028-30
FeCr	7202 4	1.142 (1)	1.142 (1)	
		1.106 (2)	1.106 (2)	

the relevant data for test case calculation is highlighted in yellow.

Applying the CBAM factor, CSCF value for year 2026 and benchmark value from Table TE-2 to Equation Eq E-2 we get:

$SFA_{Process\ billet,2026} = 0.975 * 1.0 * 0.027$
$= 0.026325\ t\ CO_2e/t$ ....(Eq E-3)

Step 2.2: Calculate SEFA of precursors

Since default values are considered for the precursors FeMn and FeCr (refer Table TE-1), we need to apply Equation A3 in this case.

$SEFA_{g,y} = CBAM_y * CSCF_y * BM_g$ ....(Eq E-4)

We select the default benchmark values from Table TE-2 for both the precursors and apply the same on equation E-4 to get:

$SEFA_{FeMn,2026} = 0.975 * 1 * 1.361$
$= 1.326975\ t\ CO_2e/t$ ....(Eq E-5)

$SEFA_{FeCr,2026} = 0.975 * 1 * 1.142$
$= 1.11345\ t\ CO_2e/t$ ....(Eq E-6)

Step 2.3: Calculate SEFA of material

Substituting the calculated values from Eq E-3, Eq E-5 and Eq E-6 to the Eq E-1 we get:

$SEFA_{billets,2026} = 0.026325 + 0.000882 * 1.326975 + 0.000342 * 1.11345$
$= 0.0278\ t\ CO_2e/\ t$ of billet ....(Eq E-7)

Step 3: Calculate number of CBAM certificates required

We know that:

Number of CBAM certificate is calculated as:
= (SEE of material – SEFA of material)* quantity imported

Where,
SEE =Specific embedded emission of material (for Iron & Steel and Aluminium Industry on SEE_{direct} to be used)
SEFA = Specific embedded free allocation of material.

For this example we select the SEE_{direct} value of the material from table TE-1 and SEFA from Equation Eq E-7 to get Number of CBAM certificate (N_{CBAM}) for 1 tonne of material exported:

$N_{CBAM} = (0.043 - 0.0278) *1 = 0.0152\ t\ CO_2e$ ....Eq E-8

Step 4: Calculate financial impact per tonne of material exported

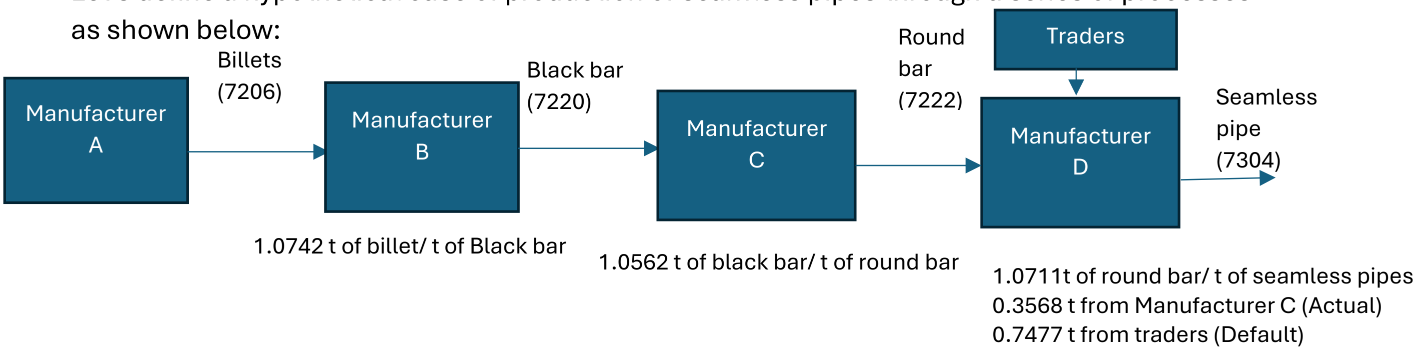
Obtain average EU allowances auction price from internet (to be published by EU commission for CBAM purpose from April 2026).

For CBAM certificate price of €88, the certificate cost of 1 tonne of material exported for this example will be

Cost of 1 CBAM certificate =N_{CBAM} * Certificate price = 0.0152 *€88 =€ 1.33

8.2 Example 2: Calculation of Financial impact for a Multi step process:

Let's define a hypothetical case of production of seamless pipes through a series of processes as shown below:



Here, the seamless pipe (CN code 7304) producer buys his raw material round bar (CN code 7222) partly from manufacturer C and partly from trader who does not declare the production source of the material. Each manufacturer in the supply chain buys their precursor from another manufacturer like 'C' buys black bar (CN code 7220) from 'B' and 'B' buys billets (7206) from 'A'. Each case they consume more precursor to produce their product. The conversion ratios are presented in the diagram.

The same example can also be used for one manufacturer with backward integration of processes. Where the precursors are the raw materials for billet production and black bar, round bar are the intermediates with final product as seamless pipes.

We also assume that every manufacturer shown here (manufacturer A, B and C) calculate their SEE and provide their Communication template to their customers.

For calculation of Number of CBAM certificates, we first calculate SEFA of the products.

To calculate SEFA of Seamless pipes, manufacturer D will require SEFA of round bar, they can ask the same data from Manufacturer C. Similarly, to calculate SEFA of round bar, manufacturer C must ask this value from Manufacturer B and it continues up to the simple process of billet production.

Step 1: Gather relevant SEE data and Benchmark data

From the communication templates of the products we know that:

For Seamless pipes"

SEE_{direct} = 5.485 t CO_2e/ t of Seamless pipes

1.0711t of round bar/ t of seamless pipes
$m_{roundbar,C}$ =0.3568 t from Manufacturer C (Actual)
$m_{roundbar,trader}$ =0.7477 t from traders (Default)

For round bar manufactured by C

$m_{blackbar}$ = 1.0562 t of black bar/ t of round bar

For bright bar manufactured by B

m_{billet} = 1.0742 t of billet/ t of black bar

The relevant benchmark values from published data of CBAM shows:

Table TE3 Benchmark values of precursors and products

		Bench mark value		
Product Description	**HSN Code**	**BM^{*}_{g}**	**BM_{g}**	
Black bar	72201100	0.073	1.189 (1)	(1) for 2026-27
			1151 (2)	(2) for 2028-30
Round bar	72222011	0.109	1.225 (1)	
			1.187 (2)	
Seamless pipes	73041100	0.057	1.173 (1)	
			1.135 (2)	

The relevant benchmark values are highlighted in yellow

Step 2: In steps calculate the SEFA of intermediate products and finally the exported product

This calculation will be done in steps starting from billet (for those manufacturers who have backward integration up to steel production, can use the same methodology)

Step 2.1 Calculate SEFA of billet:

To start with, we calculate the billet SEFA following the process mentioned in Example 1.

Let us assume that Example 1 was for the Manufacturer A, then we know the SEFA of billets (CN code 7206) as presented in Eq E-7 as:

$$SEFA_{billets,2026} = 0.0278 \text{ t } CO_2e/\text{ t of billet}$$

Step 2.2 Calculate SEFA of black bar:

Using the mass share data and SEFA of precursor billet (as mentioned in step 1 of this exercise) and knowing the fact that SEE of black bar is actually calculated we can refer the actual benchmark data from Table TE-3 and calculate SEFA of black bar as below:

$$SEFA_{black\ bar,2026} = SFA_{Process\ blackbar,2026} + m_{billet} * SEFA_{billet,2026}$$

$$SEFA_{black\ bar} = 0.073 + 1.0742 * 0.0278$$

$$= 0.1028 \text{ t } CO_2e/\text{t of black bar}$$

Step 2.3 Calculate SEFA of round bar:

Similar to Step 2.2, using the mass share data of black bar, SEFA of black bar (calculated in step 2.2) and the fact that SEE of round bar manufactured by 'C' is actually calculated, we can calculate SEFA of round bar manufactured by 'C' using table TE-3 data:

$$SEFA_{roundbar} = SFA_{Process\ roundbar} + m_{blackbar} * SEFA_{blackbar}$$

$$SEFA_{round\ bar,C} = 0.109 + 1.0562 * 0.1028$$

$$= 0.2175 \text{ t } CO_2e/\text{t of black bar}$$

Step 2.4 Calculate SEFA of product seamless pipes:

Since, manufacturer D sources precursor from two different sources and one of them (trader) does not provide the actual SEE value, default benchmark value was used for calculation of SEFA of the precursor sourced from trader.

For Manufacturer D, Equation Eq-A1 can be expressed as:

$$SEFA_{s\ pipes} = SFA_{Process\ s\ pipes} + m_{roundbar,C} * SEFA_{roundbar,C} + m_{roundbar,trader} * SEFA_{roundbar,trader}$$

Where,

$SFA_{process\ s\ pipes}$	= Manufacturer 'D's process/installation related specific free allocation of seamless pipes (to be calculated using actual Benchmark data of seamless pipes provided in TE-3)
$m_{roundbar,C}$	= mass share of round bar used from manufacturer C (data collected as per step 2.1)
$SEFA_{roundbar,C}$	= Specific embedded free allocation of round bar produced by C (this is calculated in step 2.3)
$m_{roundbar,trader}$	= mass share of round bar used from trader
$SEFA_{roundbar,trader}$	= Specific embedded free allocation of round bar procured from traders (to be calculated using default benchmark values of round bar, provided in table TE-3)

Replacing the actual data in the equation above the SEFA of seamless pipes can be calculated as:

$$SEFA_{s\ pipes} = 0.057 + (0.3568*0.2175) + (0.7477*(0.975*1*1.173))$$

$$= 0.98973\ t\ CO_2e/\ t\ of\ seamless\ pipes$$

Here, $SEFA_{roundbar,trader}$ was calculated as:

$$SEFA_{roundbar,\ trader} = CBAM_y * CSCF_y * BM_{roundbar}$$

Step 3: Calculate number of CBAM Certificates required per tonne of material exported

As we know from previous chapters:

Number of CBAM certificate (N_{CBAM}) for seamless pipes is calculated as:

= (SEE of seamless pipes – SEFA of seamless pipes)* quantity imported

For 1 tonne of seamless pipe exported for this example,

$$N_{CBAM} = (5.485 - 0.98973)*1 \quad = 4.495\ t\ CO_2e$$

Step 4: Calculate financial impact per tonne of material exported

Considering CBAM certificate price of €88, the certificate cost of 1 tonne of material exported for this example will be

Cost of 1 CBAM certificate = N_{CBAM} *** Certificate price = 4.495 *€88 =€ 395**