Monitoring and reporting of embedded emissions in the transitional CBAM period

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European Commission / DG TAXUD / C2 Unit

Monitoring and reporting in the transitional CBAM period

1. **Reporting**
2. **CBAM methodology**
3. **Iron and steel example**

Monitoring and reporting in the transitional CBAM period

1 Reporting

What are the reporting obligations in the transitional period?

October 2023 – December 2025

CBAM report containing the following:

- Total quantity of goods imported during the preceding quarter
- Total embedded direct and indirect emissions
- The carbon price due in the country of origin for the embedded emissions

Report to be submitted quarterly

No verification of emissions by EU-accredited verifier

No CBAM certificates

How to submit a report?

Who is responsible for the reporting?

- The reporting declarant
- **Same as the authorised CBAM declarant but no authorisation** needed yet

How to submit a report?

- **Gain access to the CBAM transitional registry** – request log-in via portal
- Fill out **mandatory fields** in the registry
- Indicate if reporting is **by importer or on behalf of an importer**
- Submit the report **no later than 1 month after the quarter**

Is there flexibility for the submission?

- **Yes** – A report can be modified **2 months after the reported quarter**
- For the first two CBAM reports (due January and April 2024), modification is accepted until **July 2024** (deadline of third report)
- After the deadlines possibility to request reopening for correction

What to submit?

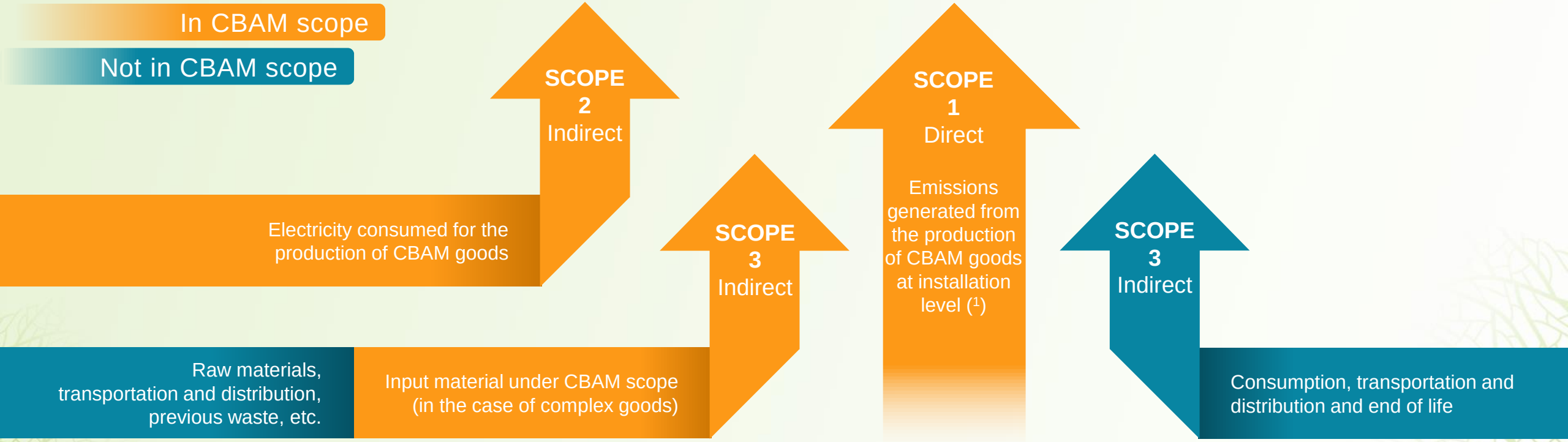
Role of third-country operators of installations

- **Monitor and collect data** on embedded emissions –Possibility to use templates and guidance docs provided by the Commission
- **Communicate** data to reporting declarants – Possibility to use templates provided by the Commission
- Is verification needed: **Not yet**!

What information is necessary to be communicated for the reporting

- **Information on the goods**: Quantity / Type identified by CN code (8-DIGIT) / Country of origin
- **Info on the installation**: Company name / Address / Location / Geo coordinates
- **Info on the production**: Routes / Parameters
- **Information the emissions:** Specific direct and specific indirect
- **Information on carbon price paid** at production country (also for precursors)

What is the scope for emissions during the transitional period?



#EUGreenDeal

(1) Direct emissions include emissions from the production of heating and cooling, even if that production takes place outside the installation.

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2 CBAM methodology

Key Terms

Simple goods

- goods produced from fuels and raw materials considered to have zero embedded emissions under CBAM

Complex goods

- goods produced from other CBAM goods (either simple or other complex goods)

Aggregated goods category

- group of CBAM goods with different CN codes but similar characteristics
- for each aggregated goods category and production route: provisions on system boundaries (inputs, outputs and corresponding emissions), emission monitoring and relevant precursors

Production process

- chemical or physical processes carried out in parts of an installation to produce goods under an aggregated goods category and its specified system boundaries

Production route

- specific technology used in a production process to produce goods

Steps to determine specific embedded emissions

Step 1. Define the system boundaries associated with the production processes

Step 2. Identify relevant parameters and methods, then carry out monitoring

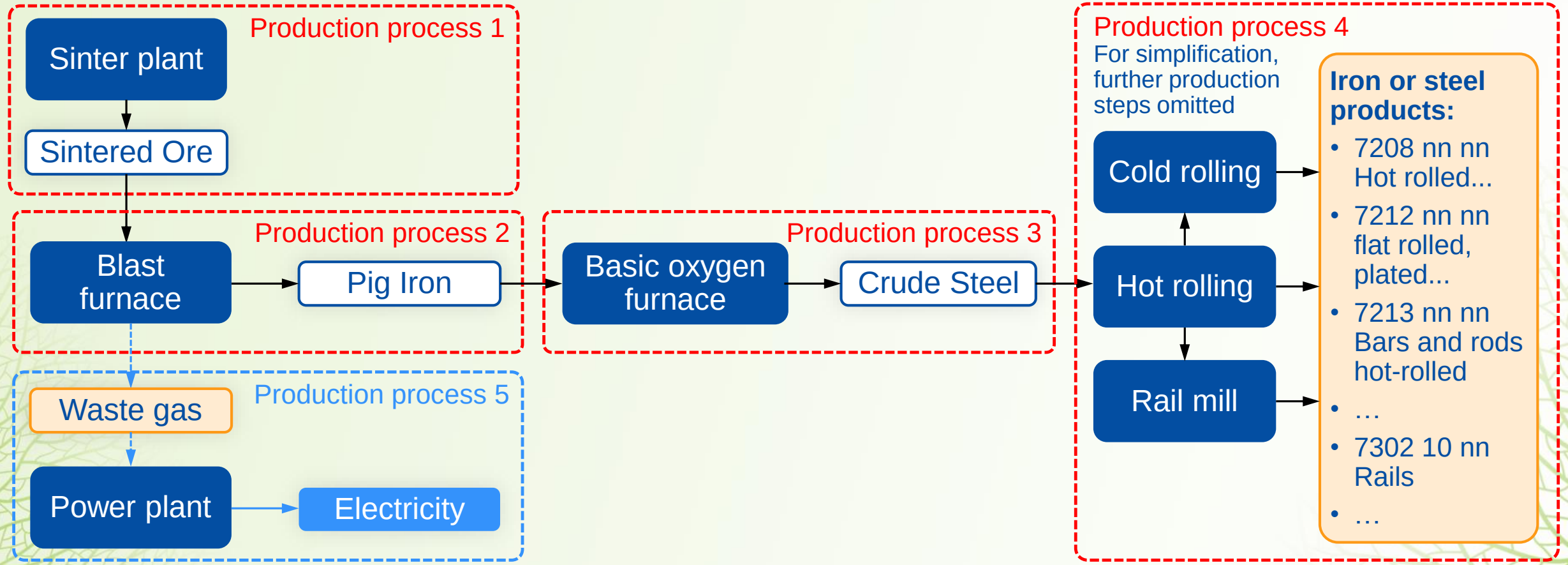
Step 3. Attribute emissions to production processes and then to goods

Step 4. Add the specific embedded emissions of relevant precursors

Step 5. Determine the specific embedded emissions of CBAM goods

Step 1: Define the system boundaries – Example

Carbon steel production, blast furnace route – Definition of separate production processes



Step 2: Monitoring – General

Direct emissions from fuels and materials

- Standard method, mass balance, continuous emissions monitoring

Electricity produced, if relevant

Direct emissions related to heat flows, if relevant

- Determine heat flows
- Emissions = heat flow × corresponding emission factor

Indirect emissions related to electricity consumption

- Determine electricity consumption for the production of CBAM goods

Waste gases, if relevant

- Determine flows and calorific values

Precursors, if relevant

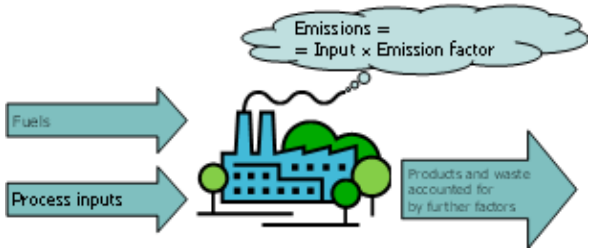
- Determine precursor consumption

Step 2: Monitoring – Direct emissions

1 Calculation-based methodology

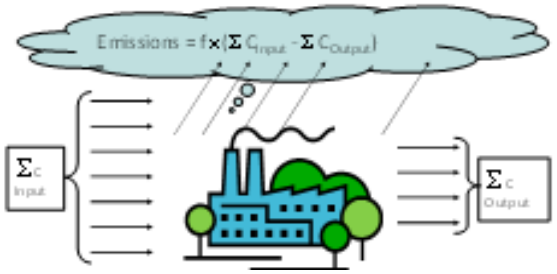
Standard method

- determine quantities of fuels and input materials consumed
- determine calculation factors such as net calorific value and emission factor
- determine emissions by multiplying consumption with calculation factors



Mass balance

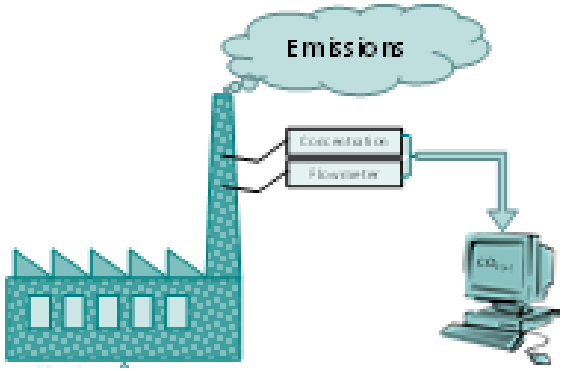
- determine carbon content in all fuels and input materials
- determine carbon content in all output materials
- determine emissions as difference between inputs and outputs
- typically relevant where carbon remains in the goods produced (e.g. steel).



2 Measurement-based methodology

Continuous emissions monitoring system

- measure GHG concentration directly in the stack or using extractive procedures (e.g. for nitrous oxide)
- measure flue gas flow
- determine emissions



Step 2: Monitoring – Other methods (flexibilities)

1. **Other monitoring and reporting methods** until 31 December 2024, if similar coverage and accuracy of emissions data:
   - A carbon pricing scheme where the installation is located.
   - A compulsory emission monitoring scheme where the installation is located.
   - An emission monitoring scheme at the installation which can include verification by an accredited verifier.
2. **Other referenced methods** including default values until 31 July 2024
3. **Estimation of up to 20%** of the total embedded emissions in the case of complex goods (includes the use of default values)

Step 3: Attribution of direct emissions

Attributed direct emissions of the production process

Emissions related to the attribution of measurable heat exported

Correction for exported waste gases

Emissions related to electricity production

$$AttrEm_{dir} = DirEm^{*} + Em_{H,import} - Em_{H,export} + WG_{corr,import} - WG_{corr,export} - Em_{el,produced}$$

Directly attributable emissions as linked to source streams (exceptions for heat and waste gases)

Emissions related to the attribution of measurable heat imported

Correction for imported waste gases

Step 3: Attribution of indirect emissions

Attributed indirect emissions of the production process

Emission factor of electricity

$$AttrEm_{indir} = E_{el,cons} \times EF_{el}$$

Electricity consumed

Emission factor of electricity

1) General case: use of default values
- average emission factor of the country of origin, based on IEA data
- other emission factors based on publicly available data (average emission factor or CO_2 emission factor)

2) Use of actual emission factors, in the case of:
- direct technical connection or
- power purchase agreement

Steps 4 & 5: Precursors and calculation of specific embedded emissions

For simple goods (Step 5):

$$SEE_g = \frac{AttrEm_g}{AL_g}$$

- $AttrEm_g$: Attributed emissions (direct or indirect)
- SEE_g: Specific embedded emissions (direct or indirect)
- AL_g: Amount of goods produced

For complex goods using precursors as input (Steps 4 and 5):

$$SEE_g = \frac{AttrEm_g}{AL_g} + \sum_{i=1}^{n} m_i \cdot SEE_i$$

- SEE_g: Specific embedded emissions (direct or indirect) of the precursors
- $AttrEm_g$: Specific embedded emissions (direct or indirect)
- m_i: Amount of precursors used per goods produced

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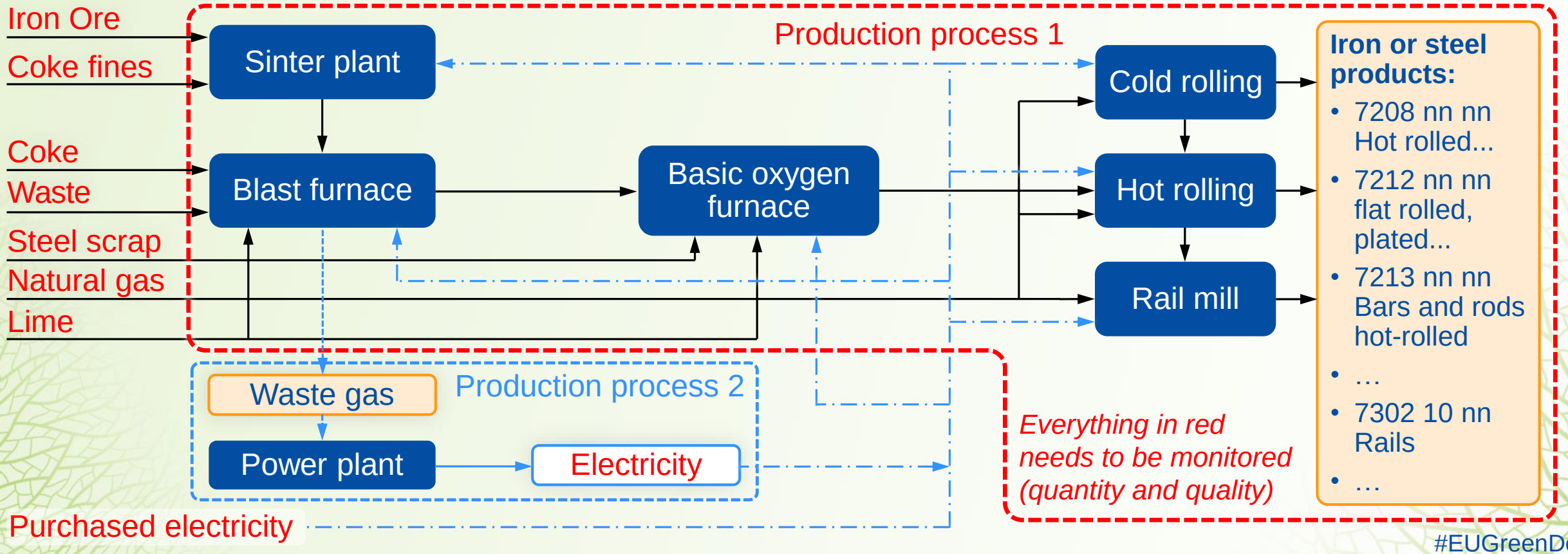
3 Iron and steel example

Worked iron & steel example (1/6)

Carbon steel production, blast furnace route – complete monitoring approach



Worked iron & steel example (2/6)

Mass balance to determine direct emissions

AD = Activity data, CC = carbon content

Inputs	AD (tonnes)	CC	Bio fraction	Emissions (t CO_2)*	Comments
Coke fines	50 000	88,0%		161 216,0	
Iron ores	5 600 000	0,023%		4 719,2	
Coke	2 200 000	88,0%		7 093 504,0	
Plastics waste	70 000	68,4%	16%	147 270,8	Biomass fraction = 28 052 t CO_2
Scrap (external)	800 000	0,210%		6 155,5	
Scrap (internal)	200 000	0,180%		1 319,0	
Lime calcined	280 000	0,273%		2 800,0	
Natural gas	170 000	75,0%		467 160,0	
Other inputs	40 000	10,0%		14 656,0	
Sum				**7 898 800,6**	

Outputs	AD (tonnes)	CC	Bio fraction	Emissions (t CO_2)*	Comments
Steel	-4 800 000	0,180%		-31 657,0	
Slags	-1 000 000	0,030%		-1 099,0	
Sum				**-32 756,2**	
Total direct emissions of the installation				**7 866 044,4**	

* *Using a factor of 3,664 t CO_2 / t C*

Worked iron & steel example (3/6)

Determination of total attributed direct emissions (correction for waste gas export)

			t CO_2 / year	Comment
Total direct emissions of the installation			7 866 044	From previous slide
	AD (TJ)	EF (Natural gas)		
Deduction for waste gases	-12 800	56.1	-478 959	Takes into account a correction factor of 0,667
Total attributed direct emissions of the production process for crude steel products			**7 387 085**	

Worked iron & steel example (4/6)

Determination of indirect emissions

Input	AD (MWh)	Emission factor (t CO_2 / MWh)	Comments
Electricity from the grid (25%)	414 711	0,628	Mix of 50% coal, 30% natural gas, rest renewable energy sources
Electricity from waste gas combustion (75%)	1 244 133	0,576	Emission factor slightly higher than for natural gas
Total electricity consumption	1 658 844	0,589	Weighted average of the emissions factors for the electricity from the grid and from waste gas combustion
Indirect emissions		**Indirect emissions (t CO_2)**	
Total indirect emissions		977 059	

Worked iron & steel example (5/6)

Goods produced in the reporting period

Products	Activity level (AL)	Units
Precursors		
Pig iron	4 000 000	t / year
Crude steel	5 000 000	t / year
Iron or steel products		
Sheets	3 500 000	t / year
Bars	800 000	t / year
Rails	500 000	t / year
Total goods produced	**4 800 000**	**t / year**
Internal scrap	200 000	t / year

Worked iron & steel example (6/6)

Specific embedded emissions SEE under the simplified "bubble" approach for iron or steel products

Total amount of goods produced (steel products)	4 800 000	t / year
Total direct emissions of the production process for steel products	7 387 085	t CO_2 / year
Total indirect emissions of the installation	977 059	t CO_2 / year
Specific direct embedded emissions	1.539	t CO_2 / steel product
Specific indirect embedded emissions	0.203	t CO_2 / t steel product
Specific total embedded emissions	**1.742**	**t CO_2 / t steel product**

The Carbon Border Adjustment Mechanism

Thank you for your attention!

If you have any questions, please contact us:

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