EUROPEAN COMMISSION
DIRECTORATE-GENERAL
CLIMATE ACTION

Directorate B - European and International Carbon Markets

Guidance Document n°2
on the harmonized free allocation methodology for the EU ETS post 2020

Guidance on allocation methodologies at installation level

Version issued on 19 September 2018 for comments

Prepared for the meeting of the Expert Group on Climate Change Policy on 2 October 2018

Table of contents

1 Introduction

1.1 Status of the Guidance Documents

This guidance document is part of a group of documents, which are intended to support the Member States, and their Competent Authorities, in the coherent implementation throughout the Union of the allocation methodology for the fourth trading period of the EU ETS (post 2020) established by the Delegated Regulation of the Commission XX/XX on "Transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of the EU ETS Directive" (FAR) .

The guidance does not represent an official position of the Commission and is not legally binding. However this guidance aims to clarify the requirements established in the EU ETS Directive and the FAR and is essential to understanding those legally binding rules.

This draft guidance document is based on a draft provided by a consortium of consultants (SQ Consult, Umweltbundesamt) and builds on the guidance documents developed for phase 3[1]. It takes into account the discussions at several meetings of the Expert Group on Climate Change Policy and written comments received from stakeholders and experts from Member States.

The guidance papers do *not* go into detail regarding the procedures that Member States apply when issuing greenhouse gas emissions permits. It is acknowledged that the approach to setting the installation boundaries laid down in GHG emissions permits differ between Member States.

1.2 Background of the FAR Guidance Documents

Specific topics were identified within the FAR that deserve further explanation or guidance. The FAR guidance documents intend to address these issues as specifically and clearly as possible. The Commission considers it necessary to achieve the maximum level of harmonisation in the application of the allocation methodology for Phase 4.
The FAR guidance documents aim at achieving consistency in the interpretation of the FAR, to promote harmonisation and prevent possible abuse or distortions of competition within the Community. The full list of those documents is outlined below:

- Guidance document no. 1 – general guidance: this guidance gives a general overview of the allocation process and explains the basics of the allocation methodology.
- Guidance document no. 2 – guidance on allocation methodologies: this guidance explains how the allocation methodology works and its main features.
- Guidance document no. 3 – data collection guidance: this guidance explains which data are needed from operators to be submitted to the Competent Authorities and

[1] by a consortium of consultants (Ecofys NL, Fraunhofer ISI, Entec).

how to collect them. It reflects the structure of the data collection template provided by the EC.

- Guidance document no. 4 – guidance on NIMs data verification: this guidance explains the verification process concerning the data collection for the National Implementation Measures[2].
- Guidance document no. 5 – guidance on carbon leakage: it presents the carbon leakage issue and how it affects the free allocation calculation.
- Guidance document no. 6 – guidance on cross boundary heat flows: it explains how the allocation methodologies work in case of heat transfer across the 'boundaries' of an installation.
- Guidance document no. 7 – guidance on new entrants and closures: this guidance is meant to explain allocation rules concerning new entrants as well as the treatment of closures.
- Guidance document no. 8 – guidance on waste gas and process emission sub-installation: this document provides for explanation of the allocation methodology concerning process emission sub-installation, in particular, concerning the waste gas treatment.
- Guidance document no. 9 – sector specific guidance: this guidance provides for detailed description of the product benchmarks as well as the system boundaries of each of the product benchmarks listed within the FAR.

This list of documents is intended to complement other guidance papers issued by the European Commission related to Phase 3 and 4 of EU ETS, in particular:

- Guidance on Interpretation of Annex I of the EU ETS Directive (excl. aviation activities), and
- Guidance paper to identify electricity generators

References to articles within this document generally refer to the revised EU ETS Directive and to the FAR.

1.3 Use of the Guidance documents

The guidance documents give guidance on implementing the new allocation methodology for Phase 4 of the EU ETS, as from 2021: the Member States may use this guidance when they perform the data collection pursuant to Article 24 of the FAR in order to define the complete list of installations as well as to calculate any free allocation to be determined for the National Implementing Measures (NIMs) pursuant to Article 11(1) of the Directive 2003/87/EC.

Note on outstanding issues in this version of the Guidance Document

As decision-making on the allocation methodology is not yet finalized, certain elements of this Guidance Document are as yet undefined. This includes especially issues related to the

[2] Article 11 of Directive 2003/87/EC

implementing act still to be adopted on the detailed rules on the changes to allocations of free allowances, the update of the benchmark values and the new carbon leakage list. In addition, it can also apply to references to the outstanding legislation itself or to accompanying Guidance Documents that are still to be prepared or finalized.

In this Guidance Document, we have indicated such instances by yellow highlighting. Specifically for benchmark values and dates, 'XX' have been inserted as placeholders for the values and dates still to be determined. In addition, while not highlighted in yellow, specific FAR article references may be subject to change.

1.4 Additional guidance

Next to the guidance documents, additional support to the Member State authorities is provided in the form of the EC-website, with list of guidance documents, FAQs and useful references, https://ec.europa.eu/clima/policies/ets/allowances_en .

1.5 Scope of this guidance document and overview of allocation methods

The free allocation of allowances is based to the extent feasible on Union-wide ex-ante product benchmarks. However, not in all can cases product benchmarks be defined, e.g. because of too diverse or changing product mix. In these cases, so-called 'fall-back' approaches using the heat benchmark, the fuel benchmark or the process emissions approach are used.

In general, the allocation to individual installations is established according to the following steps, as discussed in more detail in *Guidance Document 1 on the general allocation methodology*:

- The installation is split into sub-installations to which the different types of benchmarks apply (where necessary) and depending on whether or not their products are deemed to be exposed to a significant risk of carbon leakage;
- The allocation at sub-installation level is determined by multiplying the sub-installations' Historical Activity Level (HAL) with the applicable benchmark value and the relevant correction factors, including the carbon leakage exposure factor (CLEF);
- The respective sub-installation allocations are summed to the installation level.

Four approaches have been developed in order to calculate the allocation of free allowances to the different sub-installations. The methodologies have the following strict order of applicability, as required by Art.10(2) of the FAR:

- Product benchmark
- Heat benchmark[3]

[3] Note that, as of Phase 4 the heat benchmark applies to 2 different types of sub-installations: the 'normal' heat benchmark sub-installation and a specific type of sub-installation that produces (or imports) heat to export to district heating systems. For more details, see sections 2.2 and 2.3)

- Fuel benchmark
- Process emissions approach

Table 1 provides an overview of the conditions relating to each approach.

Section 2 presents the split into sub-installations, and sections 3.1 to 3.5 detail each methodology using simple examples. The final steps of allocation are then explained in section 4, and additional examples given in section 6.

Table 1: Conditions related to the four approaches

Methodology	Value	Conditions	Relevant emissions
Product benchmark	See list in BMU[4] for final values	A product benchmark is available in Annex I of the FAR.	Emissions within system boundaries of product
Heat benchmark[5]	XX Allowances / TJ of heat consumed	Heat should meet all six conditions below in order to be covered by a heat benchmark sub-installation (article 3(c)): - The heat is measurable (as transported through identifiable pipelines or ducts using a transfer medium, a heat meter is or could be installed) (article 3(g-h)) - The heat is used for a purpose (production of products, mechanical energy, heating, cooling) - The heat is not used for the production of electricity - The heat is not produced within the boundaries of a nitric acid product benchmark (article 26(5)). - The heat is not consumed within the system boundaries of a product benchmark - The heat is: ▪ consumed within the ETS installation's boundaries and produced by an ETS installation; OR ▪ produced within the ETS installation's boundaries and consumed by a non-ETS installation or other entity[6] for a purpose other than electricity production *Heat produced outside of ETS is not eligible for free allocation.* *Operators trading heat (neither producing it nor consuming it) will receive no free allocation for this heat.* *More information regarding cross-boundary heat flow is provided in Guidance Document 6.*	Emissions relating to the production of consumed "measurable" heat, not covered by a product benchmark
Fuel	XX	Fuel input should meet all four conditions below in order	Emissions

[4] Benchmark Update Implementing act XX,
[5] Including if applied to district heating sub-installations, see section2.3 for more details
[6] Including for the purpose of district heating (DH)

Methodology	Value	Conditions	Relevant emissions
benchmark	Allowances / TJ of fuel used	to be covered by a fuel benchmark sub-installation (article (3(f)): - The fuel is not consumed within the boundaries of a product or heat benchmark sub-installation - The fuel is not consumed for the production of electricity - The fuel is not flared, except in the case of safety flaring. - The fuel is combusted for: ▪ direct heating or cooling production, without a heat transfer medium OR ▪ the production of mechanical energy which is not used for the production of electricity OR ▪ the production of products	originating from the combustion of fuels, not covered by product or heat benchmark.

Table 1. Conditions related to the four approaches (continued)

Methodology	Value	Conditions	Relevant emissions
Process Emissions Approach	0.941 Allowances/t of process emissions	Process emissions should meet both conditions below in order to be covered by a process emissions benchmark sub-installation (article 3(j)): - The emissions are not covered by a product benchmark or by any of the other fall-back approaches; - The emissions considered "process emissions" are: ▪ non-CO_2 greenhouse gas emissions listed in Annex I of Directive 2003/87/EC occurring outside of the system boundaries of a product benchmark listed in Annex I of the FAR ▪ CO_2 emissions as a result of any of the activities listed below; Only CO_2 as direct and immediate result of the production process or chemical reaction can be considered. CO_2 from the oxidation of CO or other incompletely oxidized carbon is not covered regardless of whether this oxidation takes place in the same or a separate technical unit. Example: CO_2 from the oxidation of CO in an open furnace cannot be regarded as process emission under this category (but may fall under the third category if the criteria are matched). ▪ Emissions originating from the combustion of incompletely oxidized carbon produced as a result of any of the following activities for the purpose of the production of measurable heat, non-measureable heat or electricity MINUS emissions from the combustion of an amount of natural gas with equal energy content as those gases, taking into account differences in energy conversions efficiencies *(see Guidance Document 8 on waste gases for additional information on the*	All "process emissions" within an installation not covered by previous approaches. Non-eligible emissions are excluded.

definition of waste gases and corresponding allocation).

Activities (provided they serve a primary purpose other than the generation of heat):

- The chemical or electrolytic reduction of metal compounds in ores, concentrates and secondary materials;
- The removal of impurities from metals and metal compounds;
- The thermal decomposition of carbonates, excluding those for the flue gas scrubbing;
- Chemical synthesis where the carbon bearing material participates in the reaction;
- The use of carbon containing additives or raw materials;
- The chemical or electrolytic reduction of metalloid oxides or non-metal oxides such as silicon oxides and phosphates.

2 Split installation into sub-installations

The first step in calculating the allocation of an installation is to define so-called sub-installations. A sub-installation means all inputs, outputs and corresponding emissions related to a specific allocation regime. The boundaries of a sub-installation are not necessarily defined by boundaries of physical process units. An installation can be split into a maximum number of n+7 sub-installations, n being the number of product benchmarks applicable within the installation *(See FAR for formal definitions of five types of sub-installations: a product benchmark sub-installation (Art. 3(b)), a heat benchmark sub-installation (Art. 3(c)), a district heating sub-installation (Art. 3(d)), a fuel benchmark sub-installation (Art. 3(f)) and a process emissions sub-installation (Art. 3(j)); see also Guidance Document 1 for guidance on sub-installations)*.

Care should be taken that sub-installations do not overlap. Inputs, outputs and corresponding emissions should not be covered by more than one sub-installation and each sub-installation will receive allocation according to one and only one allocation methodology. (*See Guidance Document 3 on Data Collection for more guidance on the attribution of inputs and outputs)*

Installations are split into sub-installations via the following steps.

2.1 Establishing product benchmark sub-installations

Step 1a Define one or more product benchmark sub-installations (if applicable)

For each product benchmark that applies, a product benchmark sub-installation should be defined. For each product benchmark sub-installation:

- Identify the system boundaries (*see Guidance Documents 3 on data collection and 9 on sector specific guidance for details on boundaries).*
- Look up the relevant product benchmark values
- Look up the carbon leakage status in the Carbon Leakage List[7] with corresponding Carbon Leakage Exposure Factor *CLEF*) (*For additional guidance on the 'carbon leakage status', see Guidance Document 5 on carbon leakage*)

Note that product benchmark values BM_p are constant over the years k within the same allocation period (2021-2025 and 2026-2030 respectively), while the exposure factor *CLEF* may change over the years k (in the second allocation period) depending on the carbon-leakage status (if the product is deemed to be exposed to a risk of carbon leakage, it will in principle remain constant, if it is not it will decline over the years; *see Guidance Document 5 on Carbon Leakage for more information)*.

Step 1b Attribute relevant inputs and outputs (This should only apply in case not all emissions are covered by product benchmark sub-installations.)

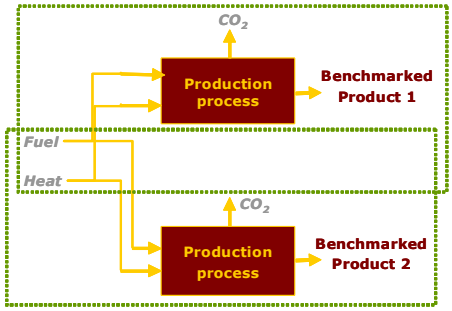
Attribute all relevant inputs *(e.g. raw materials, fuel, heat, and electricity input required for making the product)* and outputs*(e.g. production activity, heat, process emissions, waste gases)* to the sub-installation for each year in the period 2014 to 2018, or 2019 to 2023 (depending on the allocation period) that the installation has been operating.

If there is more than one product benchmark applicable in one installation, one should make sure that inputs and outputs of each sub-installation are not attributed twice. When there are only product benchmark sub-installations in an installation, for allocation purposes[8] it is not necessary to calculate precisely the amount of fuel and heat attributed to each sub-installation, as the allocation will be based only on the amount of each product produced.

[7] Delegated act XX

[8] However, for the purpose of updating the benchmark values this split up is necessary. As the data collection exercise for updating the benchmark values and for providing the basis for the calculation of allowances is combined, in practice such a split needs to be made.

Example: installation with two product benchmarks
In the example below, the incoming flows of heat and fuel are in principle split between the two sub-installations; the sum of the energy content attributed to each sub-installation should not exceed the total energy content of the heat and fuel consumed within the installation, taking into account losses.



2.2 Establishing heat benchmark sub-installations

No distinction between different origins of heat
No distinction is made between heat from different sources (e.g. produced from different fuels, produced by boilers or CHP, heat as a by-product of a benchmarked production process, etc.)

In principle, heat is eligible for free allocation if it can be regarded as covered by the ETS and if it is not produced via electric boilers. This is in particular likely to be the case for measurable heat directly linked (combustion process or exothermic production process) to source streams which are contained in the monitoring plan (MP) of an installation covered by the EU ETS. Exceptions to this rule are the following:

- The export or consumption of heat produced in the nitric acid production process is not eligible for free allocation as this heat is already taken into account by the nitric acid benchmark.
- The consumption of heat produced by a non-ETS plant or unit (not covered by a GHG permit) is not eligible for free allocation.
- The consumption of heat used for electricity generation is not eligible for free allocation.

Whether one or two heat benchmark sub-installations need to be defined, depends on the carbon leakage status of the products for which the heat is consumed: heat consumed within the production process of a product deemed exposed to carbon leakage must be included in a different sub-installation than heat consumed within the production process of a product not deemed exposed to carbon leakage (see *Guidance Document 5 on carbon leakage* for more details on this topic).

Step 2a Define one or two heat benchmark sub-installations (if applicable)

One or two heat benchmark sub-installations need to be defined if either or both of the following apply:

- The installation consumes measurable heat outside the boundaries of a product benchmark sub-installation, provided that:
  - the heat is produced by the installation itself or by another ETS installation
  - the heat is not produced within the boundaries of a nitric acid product benchmark
  - the heat is not used to produce electricity

- The installation exports measurable heat to a non-ETS installation or entity other than district heating[9], provided that:
  - the heat is not produced within the boundaries of a nitric acid product benchmark
  - the heat is not used to produce electricity

Measurable heat flows *have all of the following characteristics:*

- *They are **net** meaning that the heat content in the condensate or transfer medium returning to the heat supplier is subtracted. For determination of measurable heat data see Guidance Document 3 on data Collection.*
- *The heat flows **are transported through identifiable pipelines or ducts***

AND

- *The heat flows **are transported using a heat transfer medium**, e.g. steam, hot air, water, oil, liquid metals or salts*

AND

- *The heat flows **are or could be measured by a heat meter** (where a heat meter is any device that can measure the amount of energy produced based upon flow volumes and temperatures)*

Step 2b Attribute relevant inputs and outputs (if applicable)

Attribute all relevant inputs *(like heat data)* and outputs *(like emissions relating to the heat production)* to each sub-installation for each year[10] in the period 2014 to 2018, or 2019 to 2023 (depending on the allocation period) that the installation has been operating.

The heat consumed by a heat benchmark sub-installation is measured at the heat consuming production lines, and not at the heat producing facilities. For heat exported from a heat benchmark sub-installation to a non-ETS entity the point of measurement is however at the exit of the heat producing facilities.

[9] See Section 2.3 for a discussion of heat exported for the purpose of district heating

[10] Measurable heat for heating offices and canteens: this heat is normally included within the system boundaries of the product BM. In case no product BM sub-installation can be listed within a certain installation, then inputs, outputs and emissions related to those devices shall be accounted for within the heat BM sub-installation. The CL exposure status of this heat is based on the most relevant production process within the installation.

2.3 Establishing district heating sub-installation

Step 3a Define one district heating sub-installations (if applicable)
One district heating sub-installation is defined, if both of the following apply:

- The installation produces and/or imports measurable heat from an ETS installation that is not covered by a product-benchmark;

AND

- The heat is exported for the purpose of district heating.

District heating is characterised as follows:

- It concerns the distribution of **measurable heat** through a network;
- For the purpose of **heating or cooling of space** or of production of **domestic hot water**;
- To buildings or sites **not covered by EU ETS;**
- **Excluding** heat used for the **production of products or electricity**.

Note: for district heating sub-installation, no distinction is made based on the carbon leakage status, as all heat is by definition used for the purpose of district heating, which is not exposed to a risk of carbon leakage. Therefore, a maximum of one DH sub-installation can be defined. To reward the efficient use of excess heat for district heating purposes, district heating sub-installations are not subject to a decrease in Carbon Leakage Exposure Factor (CLEF) in the calculation of the amount of free allowances as other non-carbon leakage sub-installations are[11]. Instead, a CLEF of 0.3 continues to be applied for district heating sub-installations also after 2025. *See for further details Guidance Document 5 on Carbon leakage.*

Step 3b Attribute relevant inputs and outputs (if applicable)
Attribute all relevant inputs *(like fuel and/or heat data)* and outputs *(like heat exported and emissions relating to the heat production)* to each sub-installation for each year in the period 2014 to 2018, or 2019 to 2023 (depending on the allocation period) that the installation has been operating.

The heat exported for district heating is measured at the exit of the heat producing (or importing) facilities.

2.4 Establishing fuel benchmark sub-installations

[11] Subject to a potential review in accordance with Art. 30 of the EU ETS Directive

Step 4a Define one or two fuel benchmark sub-installations[12] *(if applicable)*
One or two fuel benchmark sub-installations need to be defined if, as indicated in Table 1, the fuel benchmark methodology should be used in case the installation combusts fuel outside the boundaries of a product benchmark for:

- Direct heating or cooling production without a heat transfer medium
- Or the production of products
- Or the production of mechanical energy, which is not used for the production of electricity

Provided that:

- The fuel is not consumed for the production of electricity
- The fuel is not flared, unless it is for safety flaring; Safety flaring refers to the combustion of pilot fuels and highly fluctuating amounts of process or residual gases in a unit open to atmospheric disturbances which is explicitly required for safety reasons by relevant permits for the installation. *Please consult guidance document No. 8 on waste gases for further explanations of this definition.*

Note: Fuel used for the purpose of waste treatment (without recovery of measurable heat) cannot be considered eligible as a fuel benchmark sub-installation as it does not relate to any of the three production activities listed above (direct heating/ cooling, production of products, production of mechanical energy).

Whether one or two fuel benchmark sub-installations need to be defined, depends on the carbon leakage status of the products for which the fuel is combusted: fuel combusted within the production process of a product deemed to be exposed to a risk of carbon leakage must be included in a different sub-installation than fuel combusted within the production process of a product not deemed exposed to carbon leakage. *See Guidance Document 5 on carbon leakage for more details on this topic*.

Step 4b Attribute relevant inputs and outputs (if applicable)
Attribute all relevant inputs *(combusted fuel)* and outputs *(emissions relating to the combusted fuel)* to each sub-installation for each year in the period 2014 to 2018, or 2019 to 2023 (depending on the allocation period) that the installation has been operating.

2.5 Establishing process emissions sub-installations

Step 5a Define one or two process emissions sub-installations[13] *(if applicable)*
One or two process emissions sub-installations need to be defined if the installation has process emissions outside the boundaries of a product benchmark, where process emissions are defined as:

[12] Depending on the carbon leakage status, see *Guidance Document No. 5 on carbon leakage for more details*
[13] Depending on the carbon leakage status, see *Guidance Document No. 5 on carbon leakage for more details*

- Type a: non-CO_2 greenhouse gas emissions listed in Annex I of Directive 2003/87/EC; N_2O is the only non-CO_2 greenhouse gas included in EU ETS for non-benchmarked products (only for emissions from the production of glyoxal and glyoxylic acid). N_2O has a Global Warming Potential of 310 t CO_2eq/t N_2O.
- Type b: CO_2 emissions as a result of any of the activities listed in Table 2 (and *not* as a result from the combustion of incompletely oxidized carbon produced in these activities; as such 'indirect CO_2 emissions' are in principle covered by type c);
- Type c: Emissions stemming from the combustion of incompletely oxidized carbon produced as a result of any of the activities listed in Table 2 for the purpose of the production of measurable heat, non-measureable heat or electricity MINUS emissions from the combustion of an amount of natural gas with equal energy content as those gases; *See Guidance Document 8 on Waste Gases and process emissions sub-installation for additional information on the definition of waste gases, the distinction between emissions of type b and c and the corresponding allocation*

Whether one or two sub-installations based on the process emissions approach need to be defined depends on the carbon leakage status of the products whose production process emits the process emissions: emissions from the production process of a product deemed to be exposed to a risk of carbon leakage must be included in a different sub-installation than emissions from the production process of a product not deemed to be exposed to a risk of carbon leakage (see *Guidance Document 5 on carbon leakage* for more details on this topic).

Table 2. Definitions and examples of activities covered by the process emissions sub-installations definition (Art. 3 (j) of the FAR)[14]

Definition of activity	Example
Chemical, electrolytic or pyrometallurgical reduction of metal compounds in ores, concentrates and secondary materials	Production of copper from copper carbonate minerals
Removal of impurities from metals and metal compounds	Emissions from the oxidation of impurities of scrap metal emitted as part of a recycling process
Decomposition of carbonates, excluding those for the flue gas scrubbing	Production of magnesia
Chemical synthesis where the carbon bearing material participates in the reaction	Acrylic acid production, acetylene production (partial oxidation), acrylonitrile production (ammoxidation), formaldehyde production (partial oxidation/dehydrogenation)
Use of carbon containing additives or raw materials	Emissions from the oxidation of organic additives to increase the porosity of ceramics products

[14] All for a primary purpose other than the production of heat

Chemical or electrolytic reduction of metalloid oxides or non-metal oxides such as silicon oxides and phosphates	Production of silicon, reduction of phosphate ore

For the processes in the table above it needs to be assessed whether there is a purpose of the use of carbon containing material other than the production of heat, and if yes, which has to be regarded as the primary purpose. Only if heat production is not considered the primary purpose of the process it comprises a process emissions sub-installation.

Example: The production of lime as a high temperature process requires the use of significant amounts of fuels for the production of the necessary heat for the chemical reaction. In case the lime is used for purification processes (e.g. for the production of sugar) requiring an excess of CO_2, the combustion CO_2 serves an additional purpose. However, given the high energy intensity of the process, the heat production has to be regarded as the primary purpose of the fuel combustion and the resulting emissions cannot be covered by a process emissions sub-installation[15].

Step 5b Attribute relevant inputs and outputs

Attribute all relevant inputs *(data relating to the material from which the process emissions originate, if applicable)* and outputs *(e.g. process emissions, data relating to the use of the waste gases including emissions from their combustion)* to each sub-installation for each year in the period 2014 to 2018, or 2019 to 2023 (depending on the allocation period) that the installation has been operating.

[15] Independent from these considerations, emissions from the decomposition of carbonates occurring during the production of lime products used in the same installation for purification processes should not be regarded as a process emissions sub-installation and should not be subject to monitoring and reporting. The production of precipitated calcium carbonate (PCC) is not regarded as a purification process and therefore lime produced and used for PCC production should be subject to the product benchmark “lime”. Furthermore, these emissions should be subject to monitoring and reporting in accordance with the applicable rules for ETS installations.

3 Determination of allocation per sub-installation

After definition of the relevant sub-installations, the allocation to the sub-installations can be calculated, based on the historical activity levels (HAL) and the benchmarks. Each sub-installation will make use of one and only one methodology. This chapter describes the application of the different allocation methodologies.

3.1 Product benchmark sub-installation

Figure 1 shows a product benchmark sub-installation. The dotted line shows the system boundaries of the sub-installation. The allocation is determined based on the production of the benchmarked product.

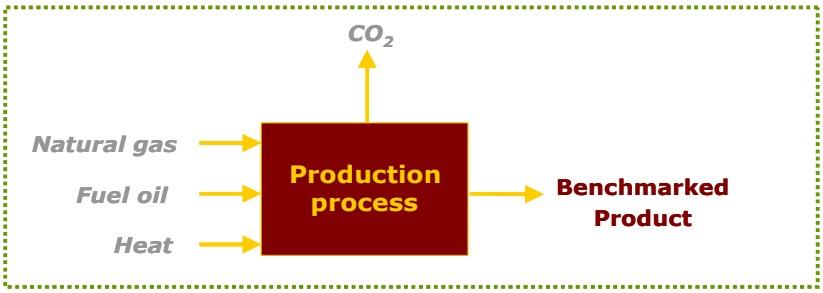


Figure 1 **Example of aroduct benchmark sub-installation**

Following steps 1a and 1b for product benchmark sub-installations described in Section 2.1, subsequent steps include the following.

Step 1c Determine historical activity level

The historical activity levels (HAL_p) of each product benchmark sub-installation p are expressed as the average annual production volumes of the benchmarked product. Product definitions and units of production are defined in the FAR, and explained in *Guidance Document 9 on sector-specific guidance*.

Step 1d Calculate preliminary free allocation

The preliminary annual amount of allocation for each product benchmark sub-installation is:

$$F_{sub\_p} = BM_P \times HAL_p$$

With:

F_{sub_p}	Annual preliminary allocation for product p (expressed in EUAs/yr)
BM_p	Product benchmark value for product p (expressed in EUAs / unit of product)
HAL_p	Historical activity level of product p, i.e. the arithmetic mean of the annual production in the baseline period as determined and verified in the baseline data collection (expressed in unit of product). *See Guidance Document 9 with*

Sector Specific Guidance for the unit of production to be used for different products.

Exchangeability between fuel and electricity

In processes where either fuel or electricity can be used to produce heat or mechanical energy for the production of an equivalent product (e.g. mineral wool), the choice of energy carrier should not influence the determination of the benchmark value. In these cases indirect emissions have been taken into account in the determination of the benchmark value. Figure 2 illustrates how the benchmark curve (yellow curve) takes into account both direct (blue bar) and indirect (orange bar) emissions to define the benchmark value (in green) *(see Guidance Document 1 for further details on how the curve is constructed*).

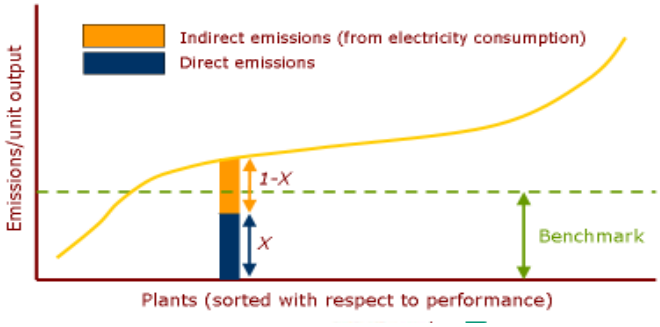


Figure 2 **Definition of benchmarks in the case of exchangeability between fuel and electricity**

Allocation should however be based on direct emissions only. In order to achieve consistency between the benchmarks and the allocation, for the product benchmarks concerned (as determined by Annex I point (2) of the FAR), the preliminary allocation is calculated using a ratio of direct and total emissions (see equation here-after). *Guidance document 9 on sector-specific guidance provides additional guidance on sectors for which this applies.*

If the benchmark is based on direct and indirect emissions, the preliminary annual amount of allocation is determined as follows:

$$F_P = \frac{Em_{direct} + Em_{NetHeatImport}}{Em_{direct} + Em_{NetHeatImport} + Em_{Elec}} \cdot BM_P \cdot HAL_P$$

With:

F_P : Annual preliminary allocation for a product benchmark sub-installation (expressed in EUAs/yr).

BM_P : Product benchmark (expressed in EUAs / unit of product).

HAL_P : Historical activity level, i.e. the arithmetic mean annual production in the baseline period as determined and verified in the baseline data collection (expressed in units of product per year) for product p.

Em_{direct} : Direct emissions within the system boundaries of the product benchmark sub-installation over the baseline period. These are the total cumulative emissions over the entire baseline period (2014-2018 or 2019-2023) irrespective of any changes in capacity, activity or operation that may have occurred. The direct emissions include the emissions due to the production of heat within the same ETS installation that is consumed within the system boundaries of the benchmarked production process. Direct emissions should exclude any emissions from electricity generation or net heat export/import from other ETS installations or non-ETS entities.

$Em_{NetHeatImportl}$: Emissions from any net measurable heat import from other ETS installations and non-ETS entities over the baseline period by the product benchmark sub-installation. Irrespective of where and how the heat is produced, these emissions expressed in tonne CO_2/yr are calculated as follows:

$$Em_{NetHeatImport} = NetHeatImport \cdot BM_{heat}$$

Where *Net Heat Import* is the total net measurable heat import from other ETS installations and non-ETS entities over the baseline period by the product benchmark sub-installation, expressed in TJ. This is the cumulative net heat import over the entire baseline period (2014-2018 or 2019-2023) irrespective of any changes in capacity, activity or operation that may have occurred.

Em_{Elec} : Indirect emissions from electricity consumption within the system boundaries of the product benchmark sub-installation over the baseline period. Irrespective of where and how the electricity is produced, these emissions expressed in tonne CO_2/yr are calculated as follows:

$$Em_{\mathrm{Elec}} = \mathrm{Elec.use} \cdot 0.376$$

Where *Elec.use* is the electricity consumption within the system boundaries of the production of the benchmarked product over the baseline period, expressed in MWh. This is total electricity consumption over the entire baseline period (2014-2018 or 2019-2023) irrespective of any changes in capacity, activity or operation that may have occurred.

Import of heat from non-ETS installations

The consumption of heat produced either by a non-ETS installation or by a sub-installation producing products covered by the nitric acid benchmark is not eligible for free allocation. Therefore, when a product benchmark sub-installation imports such heat, the allocation relating to this amount of heat should be subtracted from the total allocation. *See Guidance Document 6 on cross-boundary heat flows for more guidance on this topic.*

3.2 Heat benchmark sub-installation

Figure 3 shows a heat benchmark sub-installation. The dotted line shows the system boundaries of the sub-installation. The allocation is determined based on the net measurable heat consumption.

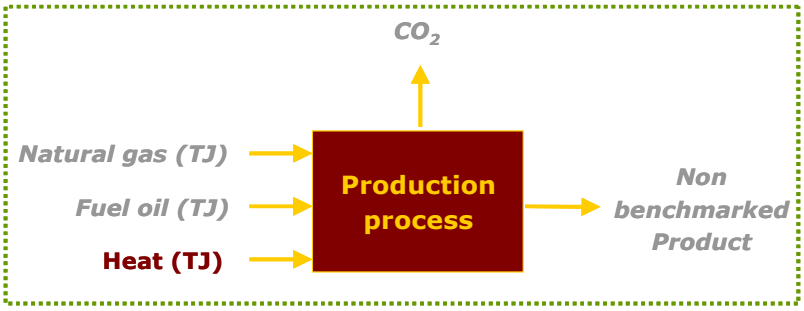


Figure 3 Example of a heat benchmark sub-installation.

Following steps 2a and 2b for heat benchmark sub-installations described in section 2.2, subsequent steps include the following.

Step 2c Determine historical activity level

The annual historical activity level of a heat benchmark sub-installation (HAL_h) is expressed in TJ/yr and is the sum of:

- Consumption of net measurable heat outside the boundaries of a product benchmark produced by the installation itself or another ETS installation provided that the heat is not produced within the boundaries of a nitric acid product benchmark or used to produce electricity.
- Net measurable heat production exported to non-ETS consumers provided that the heat is not produced within the boundaries of a nitric acid product benchmark or used to produce electricity. *See Guidance Document 6 on cross-boundary heat flows for more details on this topic.*

In principle, no distinction is made between heat from different sources (see section 2, step 2a for further explanations)

The applicable methodologies as to which type of data should be used to calculate the historical activity level are described in *Annex B of Guidance Document 3 on Data Collection*.

Step 2d Calculate preliminary free allocation

Calculate the preliminary annual allocation for each heat benchmark sub-installation using the following equation:

$$F_{sub\_h} = BM_h \times HAL_h$$

with

F_{sub_h}	Preliminary annual allocation for sub-installation based on the heat benchmark (expressed in EUAs/yr)
BM_h	Heat benchmark; set at XX t CO_2 / TJ.
HAL_h	Historical activity level, i.e. the arithmetic mean annual production in the baseline period as determined and verified in the baseline data collection (expressed in TJ/yr) for the heat BM sub-installation.

Only net heat flows are of relevance meaning that the heat content in the condensate or transfer medium returning to the heat supplier is subtracted.

In case of heat export to non-ETS consumers (other than district heating), the net heat export will be used instead of the net heat consumption, and the allocation will be distributed to the heat producer. As a general rule, a non-ETS plant is not deemed to be exposed to a risk of carbon leakage. In case the operator has reason to believe that the non-ETS heat consumer is deemed to be exposed to a risk of carbon leakage, he must provide sufficient proof of this to the Competent Authorities. *See Guidance Document 6 on cross-boundary heat flows for more details on this topic.*

3.3 District heating sub-installation

Figure 4 shows a heat benchmark sub-installation. The dotted line shows the system boundaries of the sub-installation. The allocation is determined based on the measurable heat exported for district heating purposes.

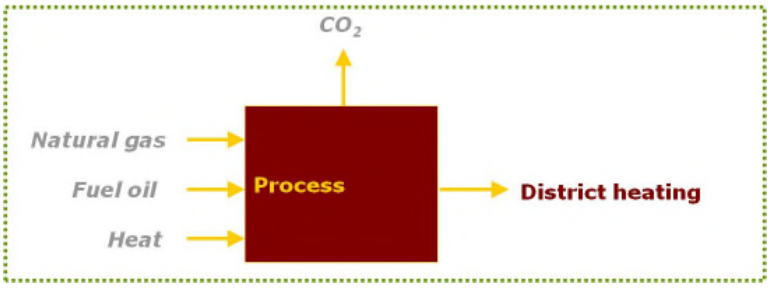


Figure 4 **Example of a district heating sub-installation.**

Following steps 3a and 3b for district heating sub-installations described in Section 2.3, subsequent steps include the following.

Step 3c Determine historical activity level

The annual historical activity level of a district heating sub-installation (HAL_h) is expressed in TJ/yr and is the net measurable heat exported to district heating.

Step 3d Calculate preliminary free allocation

Calculate the preliminary annual allocation for the district heating sub-installation using the following equation:

$$F_{DH} = BM_h \times HAL_{DH}$$

with

F_{dDH}	Preliminary annual allocation for the district heating sub-installation (expressed in EUAs/yr)
BM_h	Heat benchmark; set at XX t CO_2 / TJ.
HAL_{DH}	Historical activity level, i.e. the arithmetic mean annual export of measurable heat, either imported or produced on-site, by an EU ETS installation for the purpose of district heating in the baseline period as determined and verified in the baseline data collection (expressed in TJ/yr).

Only net heat flows are of relevance meaning that the heat content in the condensate or transfer medium returning to the heat supplier is subtracted.

3.4 Fuel benchmark sub-installation

Figure 5 shows a fuel benchmark sub-installation. The dotted line shows the system boundaries of the sub-installation. The allocation is determined based on the fuel consumption.

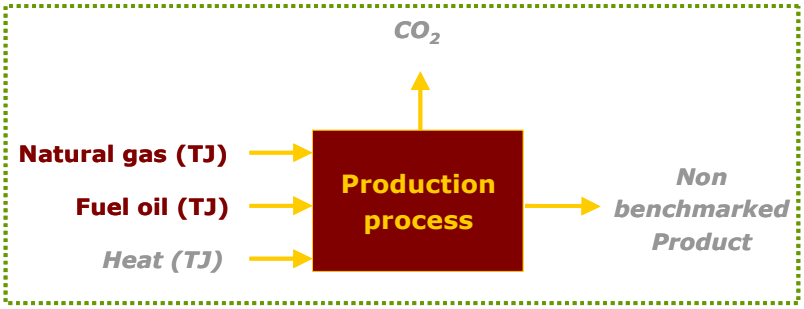


Figure 5 Fuel benchmark sub-installation

Following steps 4a and 4b for fuel benchmark sub-installations described in Section 2.4, subsequent steps include the following.

Step 4c Determine historical activity level

The annual historical activity level (HAL_f) of a fuel benchmark sub-installation is the consumption of fuel outside the boundaries of a product benchmark (expressed in TJ/yr), provided that the fuel is used for the production of products, mechanical energy or heating/ cooling and not for the production of electricity or measurable heat production. The annual historical activity level includes the amount of fuel used for safety flaring. Fuel used for

other purposes (e.g. waste treatment outside the boundaries of a product benchmark) is not considered.

If a fuel is not primarily used for a combustion process to produce non-measurable heat[16] this amount of fuel must not be considered for the determination of the historical consumption of fuels by the fuel sub-installation(s). *For more guidance on this topic, see Guidance Document 8 on waste gases.*

Step 4d Calculate preliminary free allocation

Calculate the preliminary annual amount of allocation for each fuel benchmark sub-installation using the following equation:

$$F_{sub\_f} = BM_f \times HAL_f$$

With:

F_{sub_f}	Preliminary annual allocation for the sub-installation (expressed in EUAs/yr)
BM_f	Fuel benchmark; set at XX t CO_2 / TJ.
HAL_f	Historical activity level, i.e. the arithmetic mean annual consumption of fuels of the sub-installation (expressed in TJ/yr)

3.5 Process emissions sub-installation

Figure 6 shows a process emissions sub-installation. The dotted line shows the system boundaries of the sub-installation. The allocation is determined based on the historical process emissions.

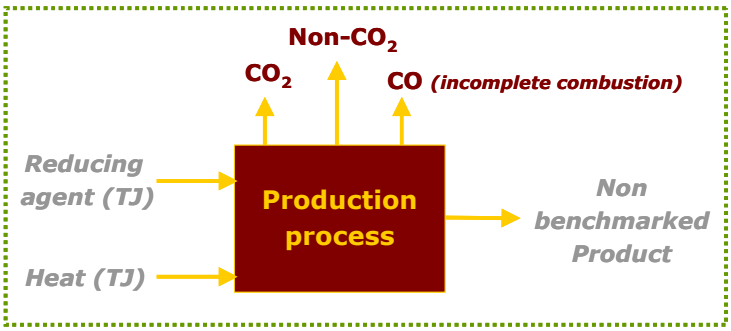


Figure 6 **Process emissions sub-installation**

Following steps 5a and 5b for process emissions sub-installations as described in Section 2.5, subsequent steps include the following.

[16] as it is used for other chemical reactions producing waste gases (e.g. chemical reduction of metal ores, chemical syntheses, etc.),

Step 5c Determine historical activity level

The historical activity level (HAL_e) (expressed as t CO_2e/yr) of a process emission sub-installation is the sum of:

- non-CO_2 greenhouse gas emissions listed in Annex I of Directive 2003/87/EC which are not covered by a product benchmark or by any other fall back approaches (type a, see section 2)
- CO_2 emissions as a result of any of the activities listed in step 5.a (type b, see section 2)
- Emissions stemming from the combustion of incompletely oxidized carbon produced as a result of any of the activities listed in step 5.a (see section 2) for the purpose of the production of measurable heat, non-measureable heat or electricity MINUS emissions from the combustion of an amount of natural gas with equal energy content as those gases, taking into account differences in energy conversions efficiencies. The allocation for incompletely oxidized carbon constitutes the allocation for waste gases (type c)

For additional guidance on process emissions sub-installations and waste gases, please refer to Guidance Document 8.

Step 5d Calculate preliminary free allocation

Calculate the allocation for each sub-installation for which a historical emissions approach is applicable using the following equation:

$$F_{sub\_e} = PRF \times HAL_e$$

With:

F_{sub_e}	Preliminary annual allocation for the sub-installation
PRF	Process emissions Reduction factor, which is set at 0.941 (dimensionless).
HAL_e	Historical activity level, i.e. the arithmetic mean of the "process emissions" of the sub-installation (expressed in t CO_2eq/yr)

For type b process emissions sub-installations the historical activity level is based on the CO_2 emissions for the baseline period. In case of mixes of incompletely oxidized carbon (e.g. CO) and CO_2, the historical activity level should be based on results from measurements of the share of CO_2 in the total carbon content of the gas in accordance with applicable European standards covering the relevant baseline period. In case such historical measurement data are not are available, a default value based on the assumption that 75% of the carbon content of the gas-mix is fully oxidised (CO_2) should be applied.

In the case of process emissions resulting from the combustion of waste gases, see *Guidance Document 8 on waste gases*.

4 Preliminary and final allocation per installation

4.1 Preliminary allocation

The preliminary total annual amount of emission allowances per installation is calculated by multiplying the allocation with the carbon leakage exposure factor of each sub-installation I, and summing the resulting allowances across sub-installations.

$$F_{inst}(k) = \sum_i \left(F_{sub}^i \times EF_{sub}^i(k) \right)$$

With

$F_{inst}(k)$	Preliminary total allocation to the installation in year k
F_{sub}^i	Allocation for sub-installation *i*
$EF_{sub}^i(k)$	Carbon Leakage Exposure Factor of sub-installation *i* in year k.

4.2 Final allocation

For installations not classified as an "electricity generator" the final total annual amount of allowances is determined by:

$$F_{inst}^{final}(k) = F_{inst}(k) \times CSF(k)$$

With

$F_{inst}^{final}(k)$	Final total amount of allocation to the installation in year k
$CSF(k)$	Cross-sectoral correction factor in year k (if necessary)

If the CSCF applies in any year[17], the final total amount annual amount of allowances for installations classified as an "electricity generator" is determined in the same way as above. However, in years the CSCF does not apply the final total annual amount of allowances is determined by:

$$F_{inst}^{final}(k) = F_{inst}(k) * LRF(k)$$

With

k	Year k
$F_{inst}^{final}(k)$	Final total amount of allocation to the installation in year *k*
$F_{inst}(k)$	Final preliminary amount of allocation to the installation in year *k*
LRF(k)	Linear Reduction Factor (see table below)

[17] The CSCF applies means that the CSCF value is below 1 in any year leading to downwards adjustments of the allocation.

Placeholder Table LRF

4.3 Determination of historical activity level when operating less than for the full baseline period

As indicated in the steps described in the previous section, the default way to determine the historical activity level of a sub-installation is to take the arithmetic mean value of the annual activity levels of the sub-installation in the baseline period: 2014-2018 or 2019-2023, depending on the allocation period, so:

$$HAL = mean_{2014\text{-}2018}\,(Annual\ activity\ levels)$$

OR

$$HAL = mean_{2019\text{-}2023}\,(Annual\ activity\ levels)$$

In which only calendar years during which the installation has been operating for at least one day are taken into account.

If a sub-installation has been operating for less than two calendar years during the relevant baseline period, the historical activity level is determined as the activity level of the first calendar year of operation after the start of normal operation of this sub-installation. For Phase 4, the 'start of normal operation' is defined as the first day of operation (Art.3j)[18]. If a sub-installation has not been operating for a full calendar year after the start of normal operation during the baseline period, the historical activity level shall be determined when the activity level report after the first full calendar year of operation is submitted[19].

For new entrants, basically the same approach applies to calculate the amount of free allowances, i.e. multiplying HAL with the benchmark value[20]. For the first two years of operation of the new entrant, the calculation of the preliminary annual number of emission allowances will use the new entrant's actual activity level of the respective year.[21]

For more detailed guidance on the allocation to new entrants, see Guidance document 7.

[18] Different than for Phase 3.

[19] This will be the case for (sub-) installations starting after January 1st in 2018 (respectively 2023). In those cases, the HAL will not be available in time to be included in the NIMs, but it will be known before the start of Phase 4.

[20] And other correction factors (such as CLEF) as applicable.

[21] Note that this is different from Phase 3, where activity levels for new entrants were determined by multiplying each sub-installation's capacity with a standard capacity utilisation factor (SCUF).

5 Changes in production levels

In Phase 3, changes in allocation were triggered either by physical changes leading to changes in capacity or if the activity level of a sub-installation decreased by at least 50%. As of Phase 4, these two approaches will be replaced by only one based on changes in production levels (i.e. activity levels of a sub-installation).

In order to prevent having to adjust the installation's allocation after every small change in production levels, a minimum threshold has been defined in the revised Directive before a change in production level affects the amount of free allowances the installation is eligible for (Art.10a(20) of the Directive). This threshold is defined as a change (increase *or* decrease) in activity levels of more than 15% compared to the sub-installation's HAL. In other words, an increase in the sub-installation's production of more than 15% triggers an upwards adjustment in the free allocation of the installation, while a decrease of more than 15% triggers a downward adjustment in the free allocation. This is determined on the basis of a rolling average of two years.

More detailed rules on how to determine the change in allocation as a result in changes in production level are laid down in the Activity Level Change Implementing act (ALC)[22]. *For more detailed guidance, see Guidance Document 7.*

[22] Ref to Implementing act

6 Additional examples

This chapter provides some additional examples to illustrate the calculation of allocation to installations.

6.1 Example 1: Installation without product benchmarks and with different carbon leakage statuses

Consider the following installation which produces three products (A, B, and C) of which A and B are deemed to be exposed to a significant risk of carbon leakage, and C is not.

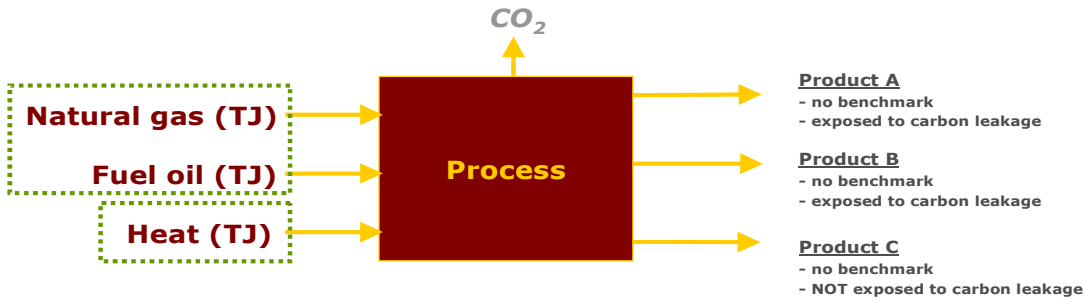


Figure 7 **How many sub-installations are present in this installation?**

Since the products A, B, and C do not have a product benchmark applicable, the fall-back approaches should be used. In case no eligible process emissions arise, then only heat and fuel benchmarks should be used. As the Carbon Leakage status is not the same for all the products, there will be four sub-installations in total.

1. Heat benchmark for products deemed exposed to Carbon Leakage (A and B);
2. Heat benchmark for products not deemed exposed to Carbon Leakage (C);
3. Fuel benchmark for products deemed exposed to Carbon Leakage (A and B);
4. Fuel benchmark for products not deemed exposed to Carbon Leakage (C).

To calculate the historical activity level of each installation, only the share of heat (resp. fuel) necessary to produce the relevant product(s) should be taken into account:

- HAL of sub-installation 1 should be based only on the measurable heat consumed to produce products A and B;
- HAL of sub-installation 2 should be based only on the measurable heat consumed to produce product C;
- HAL of sub-installation 3 should be based only on the fuel combusted to produce products A and B excluding fuel combustion for the production of measurable heat
- HAL of sub-installation 4 should be based only on the fuel combusted to produce product C, excluding fuel combustion for the production of measurable heat

For guidance on data to be used, see *Guidance Document 3 on data collection*.

6.2 Example 2: Combined heat and power (CHP)

In the case of a CHP installation (see Figure 8), the installation produces both heat and electricity:

- The production of electricity is not eligible for free allocation.
- The production of heat is eligible for free allocation:
  - The CHP installation will not receive any free allocation for the part of the heat that goes to an **ETS consumer**, as the ETS heat consumer will receive the free allowances for the heat it consumes.
  - The CHP installation will receive free allocation according to the heat benchmark for the heat exported to **non-ETS consumers**, and for the heat consumed at the installation, when this heat is not used to produce electricity. Only this part of the heat should be taken into account when determining the historical activity level relevant for the heat benchmark sub-installation of the CHP.
- No calculations are needed to split the emissions from a CHP over heat and electricity production. An exception to this rule is the allocation in case of **heat export to district heating systems** (See *Guidance Document 6 on cross-boundary heat flows* for more guidance on this topic)

By default, non-ETS consumers are not deemed to be exposed to a risk of carbon leakage. In case the CHP operator is able to prove that one of his non-ETS heat consumers is deemed to be exposed to a risk of carbon leakage, he may need to split the sub-installation into 2 heat benchmark sub-installations: one for the non-ETS heat consumers that are deemed to be exposed to a risk of carbon leakage, and one for the non-ETS consumers who are not deemed to be exposed.

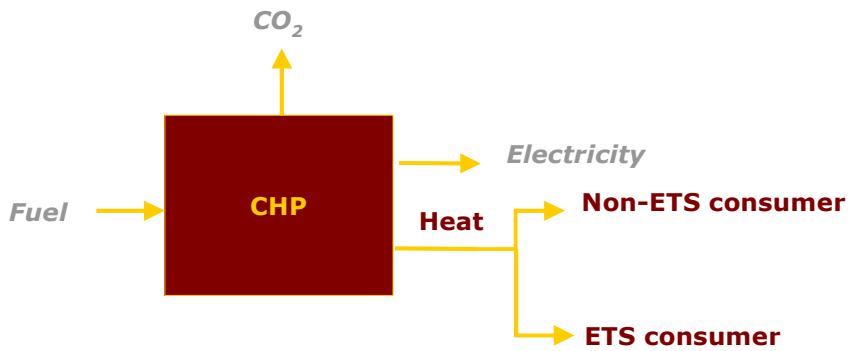
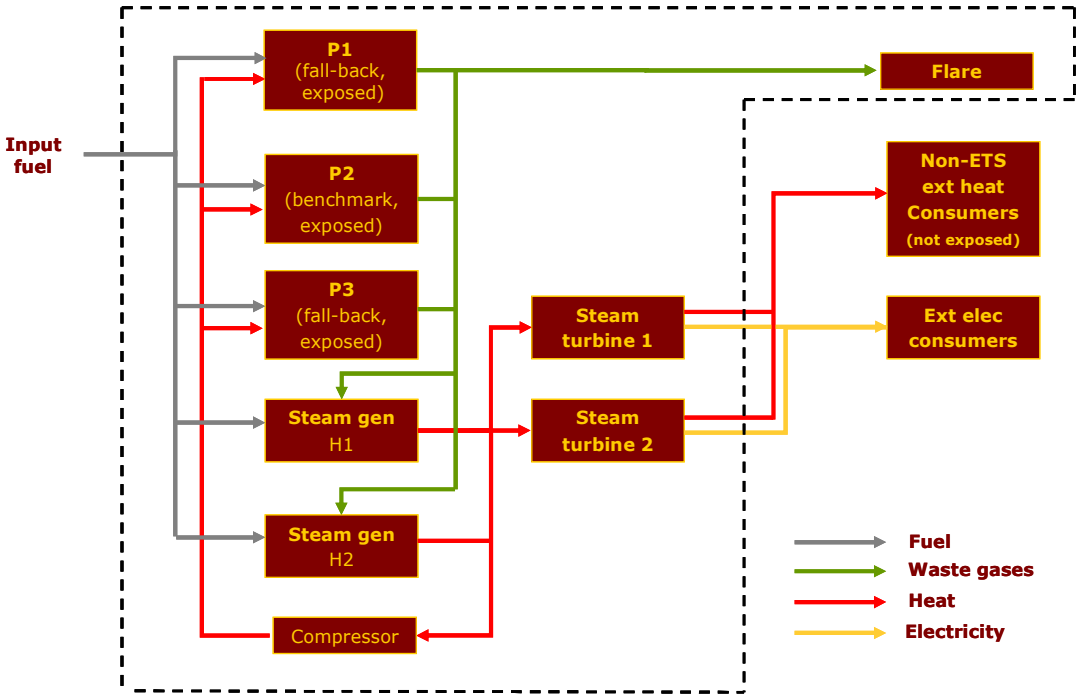


Figure 8 **Schematic diagram of CHP installation**

6.3 Example 3: Complex example

Frame 1 – combining all methodologies



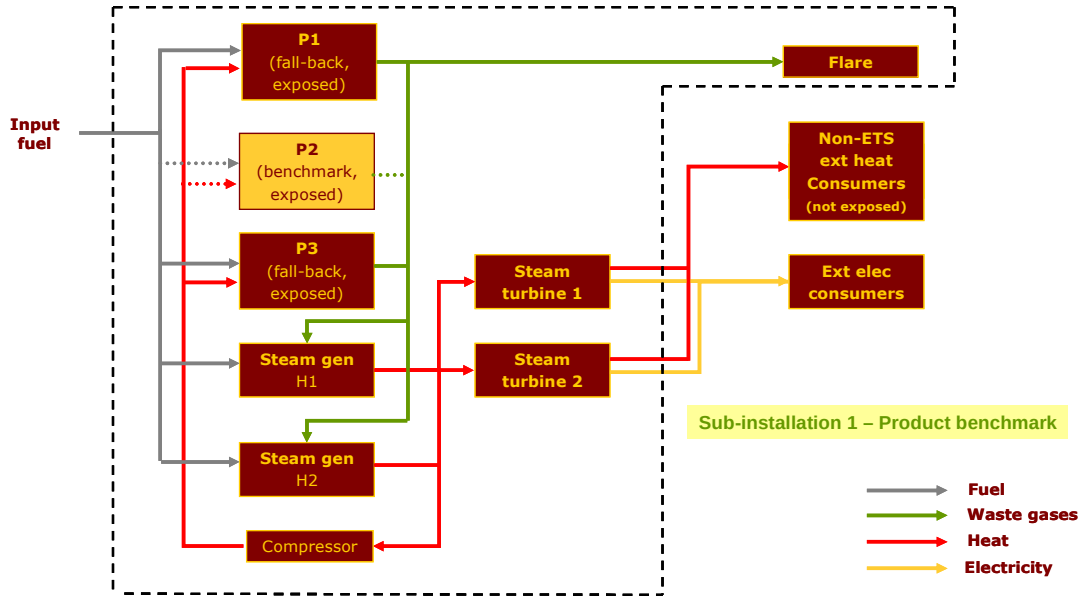
- The installation's permit boundaries are shown as a dashed line.
- Each box depicts a physical unit where one or more industrial processes take place
- To avoid a crowded figure, greenhouse gas emissions are not shown in this example, but are relevant for and should be attributed to each process unit.
- The colored lines depict energy flows to and from process units.

- P1, P2, and P3 refer to three process-units in which a product is made.
  - For P2 a benchmarked product is available.
  - For P1 and P3 no product benchmark is available.

- Carbon leakage
  - P1, P2 and P3 are subject to a significant risk of carbon leakage.
  - The external heat consumers are not.

- No safety flaring occurs

Frame 2 – product benchmark

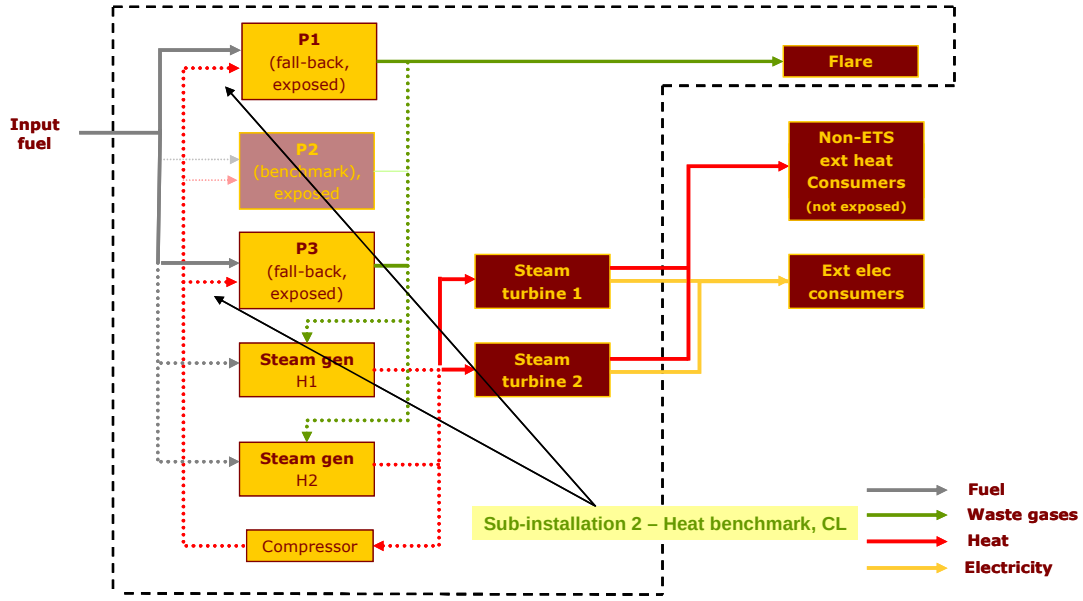


Step 1a: Definition of product benchmark sub-installations
The installation has 1 product with a product benchmark (hence, n=1). For the manufacture of this product, process unit P2 is identified.

Step 1b: Attribute relevant inputs and outputs
- The relevant energy flows for sub-installation 1 are shown as dashed arrows.
- In sub-installation 1 (P2) fuel and heat go in, waste gases and emissions (not shown) go out, and are attributed to the sub-installation.
- The amount of fuel and heat input (in units of energy) do not influence the amount of free allocation to sub-installation 1, but are relevant to know because they should not be attributed to other sub-installations.

Step 1c: Determine historical activity level
- Determination of the historical activity level of sub-installation 1 is based on the historical production levels of product P2.

Frame 3 – heat benchmark; carbon leakage exposed



Step 2a Define one or two heat benchmark sub-installations

- The installation consumes measurable heat outside the boundaries of a product benchmark (P1 and P3) and exports heat to non-ETS consumers.
- The process units (P1 and P3) are exposed to a significant risk of carbon leakage, whereas the non-ETS consumers are not. Two heat benchmark sub-installations therefore need to be defined.

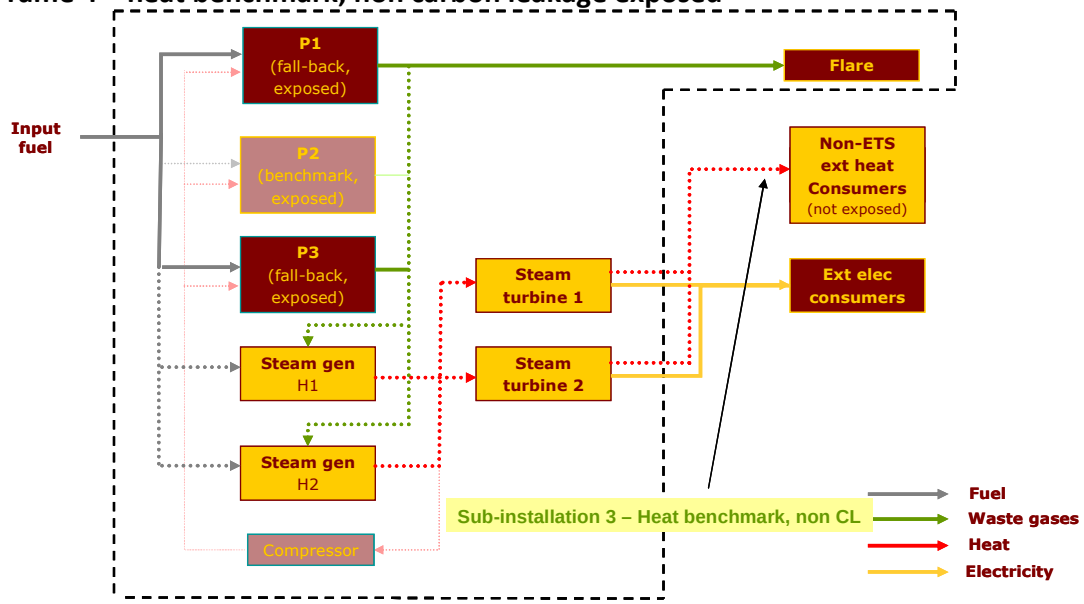
Step 2a and 2b, attribute relevant inputs and outputs (Sub-installation 2)

- Sub-installation 2 accounts for the heat consumed by P1 and P3, for the emissions linked to the production of this heat and for the energy flows used to produce this heat.
- The heat is produced by the combustion of waste gases and fuel in the 2 steam generators; part of the produced heat is also consumed by other consumers. Sub-installation 2 therefore accounts for part of the waste gases and fuel combusted in the steam generators, and for part of the corresponding emissions

Step 2c Determine historical activity level (Sub-installation 2)

- The Historical Activity Level of sub-installation 2 is based on the sum of the heat consumed by P1 and P3.

Frame 4 – heat benchmark; non carbon leakage exposed



Step 2a and 2b, attribute relevant inputs and outputs (Sub-installation 3)

- Sub-installation 3 will be defined for the production of measurable heat, consumed for the production of products *not* deemed exposed to a significant risk of Carbon Leakage. In this example the consumers are non-ETS, and the allocation is therefore given to the producer of the heat (as no allocation can be given to a non-ETS plant).

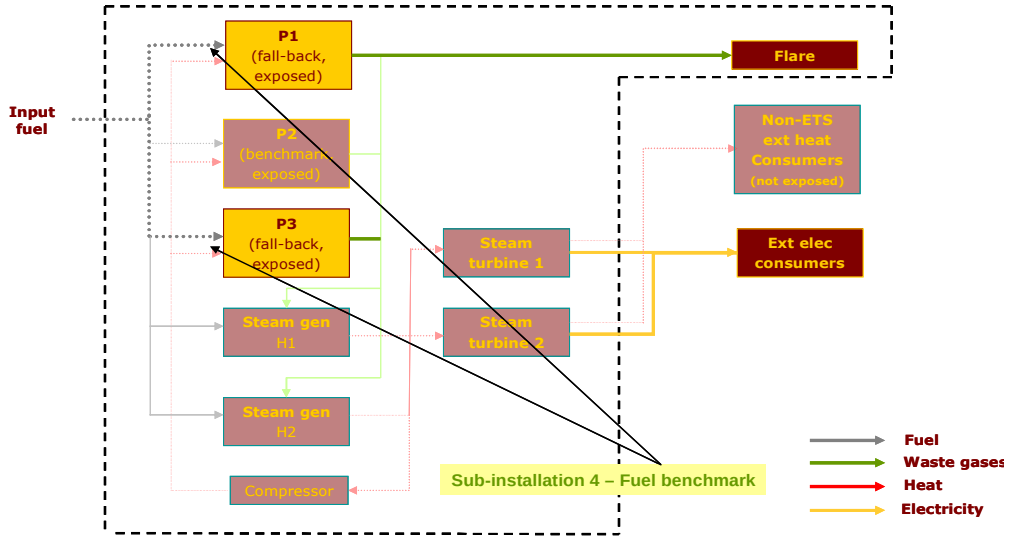
If the external heat consumer was another ETS-installation, the free allocation would be given to the heat consumer, and therefore this sub-installation would not be part of the current installation.

- As for sub-installation 2, sub-installation 3 accounts for part of the waste gases and fuel combusted in the steam generators, and for part of the corresponding emissions (looking only at the "consumer part" of the emissions from the waste gases – see Guidance Document 8 for additional guidance). Sub-installations 2 and 3 together cover the total amount of fuels used to generate the measurable heat and the corresponding emissions

Step 2c Determine historical activity level (Sub-installation 3)

The Historical Activity Level of sub-installation 3 is based on the amount of heat exported to the non-ETS consumers.

Frame 5 – fuel benchmark



Step 3a Define one or two fuel benchmark sub-installations

- The example installation contains two process units (P1 and P3) where fuel is combusted for direct heating purposes. Both units produce products which are deemed exposed to Carbon Leakage and are therefore covered by the same sub-installation (sub-installation 4).

Step 3b Attribute relevant inputs and outputs (Sub-installation 4)

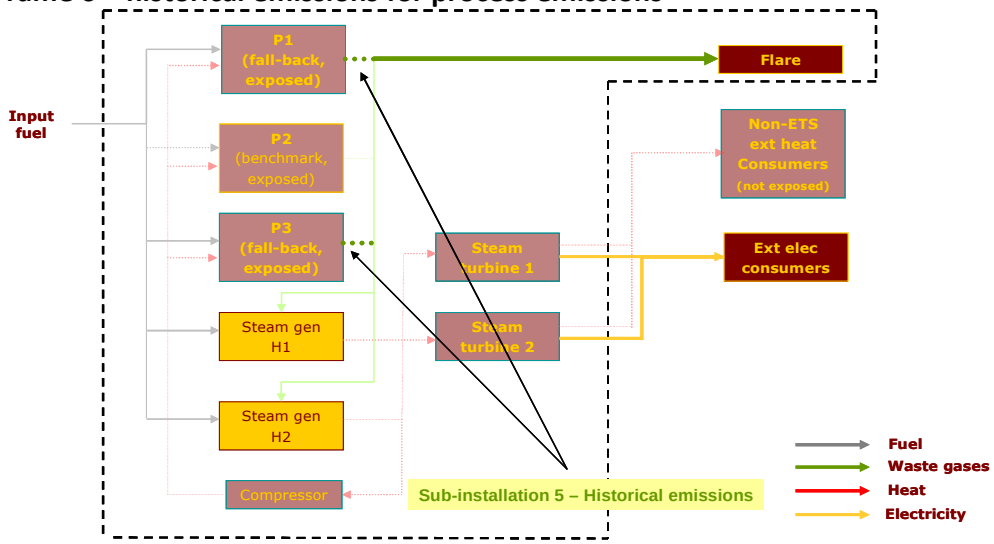
- Relevant inputs are fuel use, relevant outputs are emissions.

If safety flaring had occurred (in this example no flaring is done for safety reasons) the fuel consumed for safety flaring would also be a relevant input.

Step 3c Determine historical activity level (Sub-installation 4)

- In this case, as part of the fuel is converted into waste gases, care must be taken in the calculation of the Historical Activity Level of sub-installation 4: the HAL must exclude the part of the fuel which is converted into waste gases (*see Guidance Document 8 on details on how to do this; guidance is given based on this same example*).

Frame 6 – historical emissions for process emissions



Step 4a Define one or two process emissions sub-installations

- In our example plant, waste gases produced by P1 and P3 can be either flared (not for safety reasons) or used for combustion in the steam generators.
- Flaring (other than safety flaring) is not eligible for free allocation, and the use of waste gases in the steam generators has been covered by the 2 heat benchmarks (frames 3 and 4).
- Hence, sub-installation 5 is defined using the historical emissions approach for the production of the waste gases from P1 and P3, and the relevant stream to attribute is the stream of waste gases produced.

Step 4b Attribute relevant inputs and outputs (Sub-installation 5)

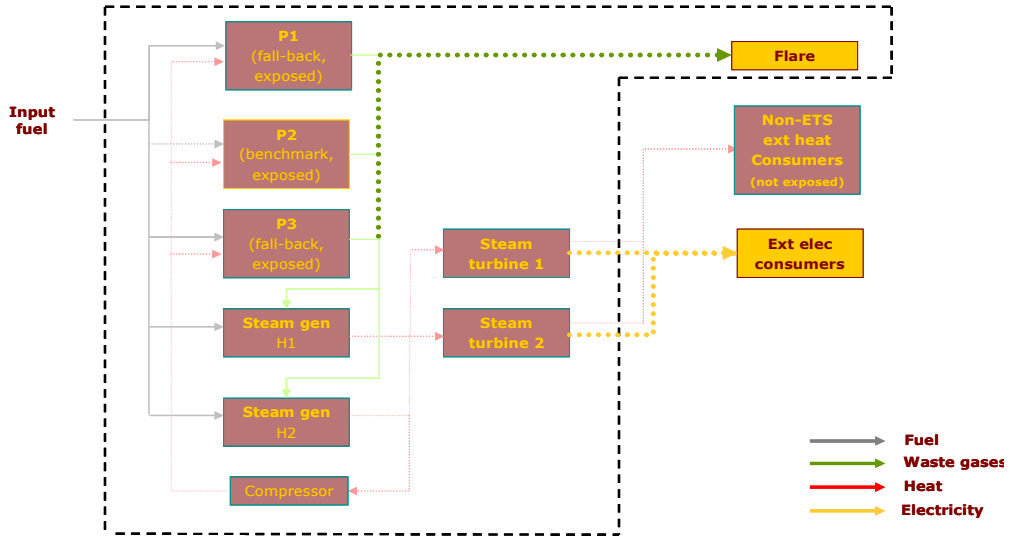
Relevant inputs and outputs are:

- The amount of CO_2 in the waste gas
- The amount of incompletely combusted carbon in the waste gas
- The energy content of the waste gas
- The fuel needed to produce the waste gas

Step 4c Determine historical activity level (Sub-installation 5)

The historical activity level is the CO_2 emissions plus the emissions originating from the combustion of incompletely combusted carbon in the waste gases MINUS the emissions from the combustion of an amount of natural gas with the same energy content. Note that the allocation for waste gas use goes to the consumer of the waste gas and not to the producer. This is not relevant in this example as the waste gas is both produced and consumed in the same installation. *For additional guidance on allocation for emissions from waste gases, see Guidance Document 8.*

Frame 7 – non-eligible emissions



The last part of the sub-installation exercise is to attribute non-eligible emissions, i.e. emissions caused by electricity production or flaring other than safety flaring. As these emissions are not eligible for free allocation, there is no sub-installation needed for these emissions. Rather they are attributed as memo items in the full list of activities and emissions to ensure there is a balance and nothing is double counted etc.

At this stage, the operator should check that all identified sources (such as energy inputs and emissions) have been either attributed to a sub-installation or are listed in the non-eligible section; each (part of a) source can only be attributed once.