EUROPEAN COMMISSION
DIRECTORATE-GENERAL
CLIMATE ACTION

Directorate B - European and International Carbon Markets

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

Guidance on determining the allocation at installation level

Final version issued on 15 February 2019

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.

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1 Scope of this guidance document

This guidance document is part of a group of documents, which are intended to support Member States, and their Competent Authorities, in the consistent 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). Guidance Document 1 on General Guidance to the Allocation Methodology provides an overview of the legislative background to the group of guidance documents. It also explains how the different Guidance Documents relate to each other and provides a glossary of terminology used throughout the guidance[1].

The current Guidance Document elaborates the general harmonised free allocation methodology under Article 10a described in Guidance Document 1 by explaining how the allocation methodology is applied at the *installation level*, including the impact of the provisions designed to address the exposure to a significant risk of carbon leakage. It describes the different type of sub-installations distinguished in the methodology for that purpose, as well as the approach to determine the allocation for each type of sub-installation.

Section 2 describes the 4 approaches to establish the allocation at the installation level and the impact of an installations' carbon leakage status. Subsequently, Section 3 explains how to split installations into sub-installations, after which Sections 4.1 to 4.5 detail each approach using simple examples. The final steps in the allocation are then explained in Section 5. Section 6 focusses on the determination of historical activity levels. Additional examples of how to determine the allocation at installation level are given in Section 7. An overview of the main changes in this guidance document compared to the 2011 version developed for Phase 3 is included in Annex A.

Note that this guidance document does not specify sector-specific elements of the methodology or special provisions for e.g. waste gases or cross-sectoral heat flows. For more details on these aspects, we refer to other Guidance documents as outlined in Section 1.2 of Guidance Document 1.

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

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 especially includes issues related to the 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.

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[1] All Guidance Documents can be found at: https://ec.europa.eu/clima/policies/ets/allowances_en#tab-0-1

2 Overview of allocation approaches

This section explains the different approaches to calculate the allocation at the sub-installation level for different types of installations, and the conditions under which each of them is to be applied (Section 2.1). Subsequently, Section 2.2 explains how an installation's carbon leakage status influences its allocation.

2.1 When to apply which installation-level allocation approach?

The free allocation of allowances is based to the extent feasible on Union-wide ex-ante product benchmarks. However, product benchmarks cannot be defined in all cases, e.g. because of a 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 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. This amount is referred to as the 'preliminary free allocation'. To arrive at the final allocation, a Cross-Sectoral Correction Factor (CSCF) can be applied in case the sum of the preliminary free allocations exceeds the amount of free allowances available. For electricity generators that are eligible for free allocation, such as high efficiency CHP and district heating, the Linear Reduction Factor is applied in the years that no CSCF is applied.

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

- The product benchmark approach;
- The heat benchmark approach;
- The fuel benchmark approach;
- The process emissions approach.

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

Please note that the heat benchmark approach mentioned above is applied to 2 different type of sub-installations, the heat benchmark sub-installation and a newly introduced (in Phase 4) district heating sub-installation. Please see Text Box for an explanation of district heating related concepts and definitions in Phase 4, as well as the separate sections in Sections 3 and 4 below.

District heating concepts in Phase 4

District heating is referred to in different ways in the relation to the EU ETS and its free allocation rules in Phase 4. A distinction can be made between:

- District heating as an **activity**, defined in Article 2(4) of the FAR as:
  "the distribution of measurable heat for the purpose of heating or cooling of space or of production of domestic hot water, through a network, to buildings or sites not covered by EU ETS with the exception of measurable heat used for the production of products and related activities or the production of electricity"
- A district heating **installation**, the installation producing heat for district heating, which can be an ETS installation or a non-ETS installation, depending on the type and capacity of the installation used;
- A district heating **distributor**, distributing the heat through a district heating network, which can either be produced by the distributor itself or purchased from third parties;
- A district heating **network,** the grid of pipelines and equipment used to distribute the heat for the purpose of district heating;
- A district heating **sub-installation**, a sub-installation defined in an ETS installation for the purpose of determining the allocation to the installation related to measurable heat exported for the purpose of district heating, as defined in Article 3 (d) of the FAR;
- District heating **purpose,** to distinguish exported heat eligible for free allocation ('measurable heat exported for the purpose of district heating') from non-eligible exported heat (for other purposes, such as for electricity production).

Table 1: Conditions under which each of the four approaches apply

Approach	Value	Conditions
Product 9benchmark	See list in BMU[2] for final values	A product benchmark is available in Annex I of the FAR. Products meet the detailed criteria given in Annex I of the FAR, as further explained in guidance document No. 9.
Heat benchmark[3]	XX Allowances / TJ of net measurable heat	**For heat benchmark sub-installations:** Heat should meet all six conditions below in order to be covered by a heat benchmark sub-installation (Article 2(3)): 1. The heat is measurable (as transported through identifiable pipelines or ducts using a transfer medium, a heat meter[4] is or could be installed) (Article 2(7-8)); 2. The heat is used for a purpose (production of products, mechanical energy, heating, cooling); 3. The heat is not used for the production of electricity 4. The heat is not produced within the boundaries of a nitric acid product benchmark (Article 16(5)); 5. The heat is not consumed within the system boundaries of a product benchmark; 6. 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 for a purpose other than: ◦ Electricity production; ◦ District heating. **For district heating sub-installations:** Heat should meet condition 1-4 above, be produced by an ETS installation AND it must be exported for the purpose of district heating (Article 2(5)). *Heat produced outside of the EU ETS is not eligible for free allocation. More information regarding cross-boundary heat flow is provided in Guidance Document 6.*
Fuel benchmark	XX Allowances / TJ of fuel used	Fuel input[5] should meet all four conditions below in order to be covered by a fuel benchmark sub-installation (Article (2(6)): - 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 (heat cannot be measured) OR • the production of mechanical energy which is not used for the production of electricity OR

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[2] Add hyperlink

[3] Including if applied to district heating sub-installations, see Section 3.3 for more details

[4] For more information, *see Guidance Document 5 on Monitoring & Reporting.*

[5] In this case "fuel" will – where applicable – include the part of waste gases which is attributed to the *consumption* of the waste gas, if outside a product benchmark sub-installation. For more details see Guidance Document No. 8 on waste gases and process emission sub-installation.

Approach	Value	Conditions
		▪ the production of products

Process Emissions Approach	0.97 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 2(10)):
		- The emissions are not covered by a product benchmark or by any of the other fall-back approaches;
		- The emissions considered "process emissions" are one of the following:
		  ▪ 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 processes 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 met – *see Guidance Document 8 on waste gases and process emissions sub-installation for additional guidance on combustion of waste gases in an open furnace*).
		  ▪ Emissions originating from the combustion of waste gases for the purpose of the production of measurable heat, non-measurable heat or electricity MINUS the equivalent emissions resulting 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 and process emissions sub-installation for additional information on the definition of waste gases and corresponding allocation)*.
		
		Relevant processes (provided they serve a primary purpose other than the generation of heat):
		o The chemical or electrolytic reduction of metal compounds in ores, concentrates and secondary materials;
		o The removal of impurities from metals and metal compounds;
		o The thermal decomposition of carbonates, excluding those for the flue gas scrubbing;
		o Chemical synthesis where the carbon bearing material participates in the reaction;
		o The use of carbon containing additives or raw materials;
		o The chemical or electrolytic reduction of metalloid oxides or non-metal oxides such as silicon oxides and phosphates.

Note that the issue of how to deal with heat recovery from the different type of sub-installations is covered in Section 3.4.

2.2 Impact of carbon leakage status on (sub-) installation level allocation

Sectors or sub-sectors deemed exposed to a significant risk of carbon leakage are those that may suffer a material competitive disadvantage against competitors located in areas outside the EU which do not have similar emission constraints. The Commission's delegated act determining a list of sectors and sub-sectors deemed to be exposed to a significant risk of carbon leakage was adopted on 15 February 2019, based on the criteria laid down in Article 10b of the EU ETS Directive[6]. It identifies 63 (sub-) sectors deemed to be exposed to a significant risk of carbon leakage. The agreed list will be valid for 10 years, i.e. it will not be updated during the fourth phase of the EU ETS, and it will be referred to in this document as the "carbon leakage list" (or CLL). Sectors and sub-sectors included in the list are also referred to here as "carbon leakage" (or CL) (sub-) sectors, while (sub-) sectors not included in the list are referred to as "non-carbon leakage" (or non-CL) (sub-) sectors.

NACE and PRODCOM codes

In principle, the eligibility assessment of (sub-) sectors inclusion in the list is based on their NACE classification codes, though for a number of sub-sectors it is based on the more disaggregated PRODCOM classification codes.

NACE codes are 4-digit codes used to classify which specific sector an installation belongs to, based on the activities carried out. The codes are taken from the Classification of Economic Activities in the European Community. The PRODCOM code is an 8-digit code and stands for the PRODucts of the European COMmunity Inquiry. It is a survey of manufactured products governed by an EU Regulation (3924/91). The product definitions are standardised across the EU to give comparability between Member States' data and the production of European aggregates at product level. There is a direct relationship between the NACE and PRODCOM codes and the first 4 digits of the PRODCOM code match the 4 digits of the NACE.

Installations in (sub-) sectors on the CLL receive up to 100% of the allowances at the level of a benchmark free of charge. Installations in sectors not on the list will instead receive only 30% of their allowances at the level of a benchmark free of charge, with this proportion decreasing after 2026 to 0% in 2030. An exception is made for district heating sub-installations, for which the proportion of allowances received free of charge remains at 30% also after 2026. These proportions are expressed in the so-called Carbon Leakage Exposure Factor (CLEF), which is set at 1 for carbon leakage sectors and 0.300 at the start of Phase 4 for non-carbon leakage sectors. Table 2 shows the development of these CLEFs over time for the different categories distinguished.

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[6] https://ec.europa.eu/clima/policies/ets/allowances/leakage_en#tab-0-1

Table 2. Overview of carbon leakage exposure factors (CLEF) for carbon leakage (CL) (sub-) sectors, non-carbon leakage (non-CL) (sub-) sectors and district heating sub-installations[7]

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CLEF for CL (sub-) sectors	1	1	1	1	1	1	1	1	1	1
CLEF for non-CL (sub-) sectors	0.300	0.300	0.300	0.300	0.300	0.300	0.225	0.150	0.075	0
CLEF for district heating sub-installations	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300

The preliminary free allocation is determined by multiplying the benchmark value with the historical activity level and the appropriate CLEF. As benchmarks are applicable to sub-installations, the CLEF is also applied at sub-installation level. The generic equations for the calculation of the preliminary amount needed for the calculation of the CSCF is as follows:

$$F_{i,k} = BM_i \times HAL_i \times CLEF_{i,k}$$

Where:

$F_{i,k}$ Annual preliminary allocation for sub-installation i in year k (allowances per year);

BM_i Applicable benchmark value (allowances per unit of activity[8]);

HAL_i Sub-installation's Historic Activity level (unit of activity per year);

$CLEF_{i,k}$ Applicable Carbon Leakage Exposure Factor (unit-less).

The final free allocation is determined after the calculation of the CSCF, when applicable, at installation level, as described in Section 5.1.

For product benchmark sub-installations

When calculating the amount of allowances for benchmarked products, the Carbon Leakage List is used to determine the applicable CLEF. In case the product produced by the product BM sub-installation is on the list (i.e. its NACE code or the PRODCOM code is on the list) the CLEF used is 1. If this is not the case, the declining factor given in Table 2 is used (CLEF for non-CL (sub-) sectors). The CLL is based on NACE revision 2, with the corresponding 2010 for PRODCOM. See Section 4.1 for more details.

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[7] Subject to review in accordance with Article 30 of the Directive for the decline after 2026 for the CLEFs when no significant risk of carbon leakage exists and non-CL cases and for district heating.

[8] tonne of product (or CWT) for product benchmark sub-installations, GJ of heat for heat benchmark (and district heating) sub-installations, GJ of fuel for fuel benchmark sub-installations or t of CO_2 for process emission sub-installations

For fall-back sub-installations
When heat and fuel benchmarks, and/or the process emissions approach are involved, the CLEF used depends on whether or not the heat, fuel or process emissions are associated with a process manufacturing a product included in the Carbon Leakage List. In case the product manufactured is on the CLL the CLEF used is 1 across all years, otherwise the declining CLEF is used.

When an installation exports heat to another installation, more attention is needed. In case a sub-installation exports heat to an ETS plant, the carbon leakage status of the sub-installation in which the imported heat is used applies. This is because under the FAR allowances are given to heat consumers, unless the heat importing installation is not in the EU ETS. In the latter case the allowances are given to the producer of the heat. For more information about the allocation procedure in case of cross-boundary heat flows, please *see Guidance Document 6.*

The carbon leakage status of the heat importer can be derived from the CLL based on the product(s) that the heat importing plant manufactures, as described above. If an installation exports heat to a non-ETS plant, the carbon leakage status of the importing installation is assumed to be <u>not at risk</u> by default, unless the "at risk" status of the products for which the exported heat is used can be proven. The relevant documentation to evidence this must be included in the data collection report. The Competent Authorities need to review these documents and accept them before the CL status can be changed. In case an installation exports heat to district heating, the exporting sub-installation will always be considered non-CL.

The "de-minimis rule"
In case more than one carbon leakage status exists per type of fall-back sub-installation within one installation, the FAR foresees a possible method for simplifying the data collection if one activity level can be considered as "dominant"[9]. More specifically, when at least 95% of the historical activity level of the heat benchmark sub-installation (respectively of the fuel benchmark sub-installation, or of the process emissions sub-installation) serves sectors or subsectors deemed to be exposed to a significant risk of carbon leakage, it may be considered as only one heat benchmark sub-installation (respectively fuel benchmark sub-installation, or process emissions sub-installation), which as a whole is deemed to be exposed to a significant risk of carbon leakage. The reverse is also true and the whole sub-installation is deemed not exposed to a significant risk of carbon leakage if at least 95% of the historical activity level is non-exposed. In both cases it is not necessary to determine the allocation for the remaining 5% of emissions separately. Application of the de-minimis rule in this case does not affect monitoring obligations*. For more details, see Guidance Document 5 on Monitoring & Reporting.*

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[9] Article 10(3) of the FAR

This rule also applies for the district heating sub-installation in combination with the heat benchmark sub-installation: when at least 95% of the historical activity level is attributable to either of the three heat benchmark sub-installations (i.e. CL heat benchmark sub-installation, non-CL heat benchmark sub-installation, and district heating sub-installation), the operator may choose to attribute the remaining 5% to this same sub-installation.

As the historical activity level is based on the arithmetic mean value over the baseline period, this rule will apply to this arithmetic mean value, regardless of whether the 95% rule held true for every year of the baseline period or not.

At installation level
The preliminary allocation at the installation level is determined by summing the allocation over the sub-installations within its system boundaries. The next section explains in further detail how an installation is to be split into separate sub-installations for the purpose of determining the allocation.

Example: Installation without product benchmarks and different Carbon Leakage status
In the example treated here the installation produces three products: A, B, and C. The NACE code or PRODCOM code (these are more disaggregated than the NACE codes) is then checked against the list of products deemed at risk of carbon leakage.

To put this into a practical example, it is assumed that the installation produces crude soy bean oil (Product A, PRODCOM 15411210), crude rape seed oil (Product B, PRODCOM code 15411260) and refined soy bean oil (Product C, PRODCOM code 15421110). The first 4 digits of the codes are 1541 for the crude oils and 1542 for the refined oil. By checking these digits against the carbon leakage list, it is revealed that the 1541 NACE code is on the list whereas the 1542 is not. Furthermore, PRODCOM codes under 1542 are not listed under "1.4. BEYOND NACE-4 LEVEL BASED ON THE QUANTITATIVE CRITERIA SET OUT IN PARAGRAPHS 15 AND 16 OF ARTICLE 10a OF DIRECTIVE 2003/87/EC". This means that the products associated with the 1541 code are deemed to be exposed to a significant risk of carbon leakage (these are crude soy bean oil and crude rape seed oil), but not the product associated with code 1542 (refined soy bean oil).

This is summarised in the figure below were products A and B are deemed to be exposed to a significant risk of carbon leakage, and product C is not.
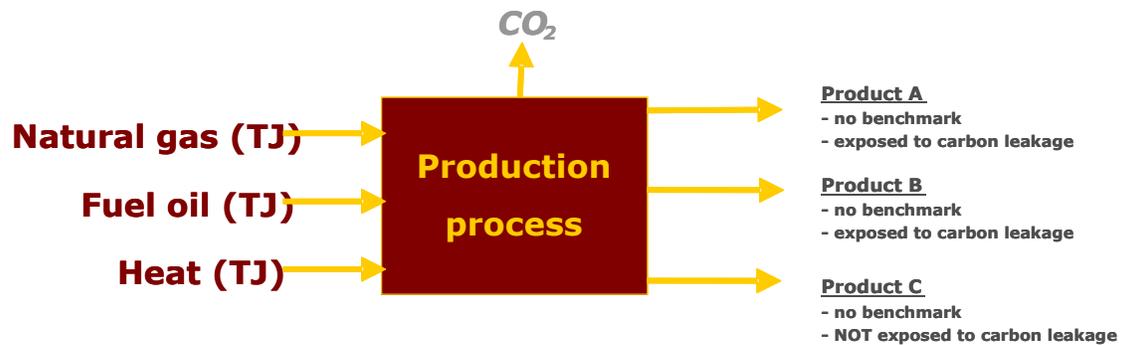
Figure 1 Installation producing both products deemed to be exposed and not exposed to carbon leakage

Since no product benchmark is applicable to products A, B, and C, the fall-back approaches are to be used. Since no process emissions occur, only heat and fuel benchmarks are relevant. As the carbon leakage status is not the same for all products, there will be four sub-installations in total, as listed below:

- Sub-installation 1: A heat benchmark for products deemed exposed to a significant risk of carbon leakage (products A and B);
- Sub-installation 2: A heat benchmark for products not deemed exposed to a significant risk of carbon leakage (product C);
- Sub- installation 3: A fuel benchmark for products deemed exposed to a significant risk of carbon leakage (products A and B);
- Sub-installation 4: A fuel benchmark for products not deemed exposed to a significant risk of carbon leakage (product C).

Only fuel not used to produce measurable heat will be included in sub-installations 3 and 4.

To determine if all four sub-installations are effectively needed, the 95% rule is applied. The historical activity levels of the heat benchmark sub-installations and the fuel benchmark sub-installations are calculated and compared to the total.

Explanatory box:

If the data to determine what proportion of measurable heat, fuel or emissions is attributed to products deemed and not deemed to be exposed to a significant risk of carbon leakage is not available, the outputs, inputs and emissions will be attributed to the relevant product proportionally to the amount of product produced. In case of a lack of data, proxy data and estimates (e.g. % values, as allowed by the data collection template) may be used, always supported by evidence provided by the operator.

This means that in case a product is deemed to be exposed to a significant risk of carbon leakage (e.g. casein) but the manufacturing process for the product includes the manufacture of intermediate products not deemed to be exposed to a significant risk of carbon leakage (e.g. fresh skim milk) or by-products that are not deemed to be exposed to a significant risk of carbon leakage, relevant data shall be split in order to assign the correct carbon leakage status to the process concerned.

If the arithmetic mean of the heat consumed to produce products A and B is at least 95% of the total heat consumed in the installation, there will be only one heat sub-installation, including the total heat consumed, which will be deemed exposed to a significant risk of carbon leakage. If it is lower than 5% there will also be only one heat sub-installation including the total heat consumed in the installation, but which will be deemed not exposed to carbon leakage. Similarly, if the arithmetic mean of the fuels combusted to produce products A and B is higher than 95% compared to the fuels combusted in the whole installation, then there will be only one fuel sub-installation, including the total amount of fuel combusted in the installation and deemed at risk of carbon leakage. If, on the contrary it is lower than 5%, there will be only one fuel sub-installation, including the total amount of fuel combusted in the installation and deemed not at risk of carbon leakage.

For the purpose of this exercise it is assumed that in both sub-installations the historic activity levels are lower than 95% and therefore all four sub-installations identified are applicable.

When calculating the allowances, the formulae to be used in each sub-installation would be the following:
- Sub-installation 1: Preliminary Allocation = BM_h x $HAL_h(A+B)$ x $CLEF_{CL}$;
- Sub-installation 2: Preliminary Allocation = BM_h x $HAL_h(C)$ x $CLEF_{non\text{-}CL,k}$;
- Sub-installation 3: Preliminary Allocation = BM_f x $HAL_f(A+B)$ x $CLEF_{CL}$;
- Sub-installation 4: Preliminary Allocation = BM_f x $HAL_f(C)$ x $CLEF_{non\text{-}CL,k}$.

Where:
BM_h	= Benchmark value for heat (EUAs/TJ);
$HAL_h(A+B)$	= Historical measurable net heat consumption for production of A and B (TJ/yr);
$HAL_h(C)$	= Historical measurable net heat consumption for the production of C (TJ/yr);
BM_f	= Fuel benchmark value (EUAs/TJ);
$HAL_f(A+B)$	= Historical consumption of fuel for the production of A and B (TJ/yr);
$HAL_f(C)$	= Historical consumption of fuel for the production of C (TJ/yr);
CLEF	= Carbon leakage exposure factor (unitless, see Table 2 for CL/non-CL CLEFs for individual years k).

Therefore, the preliminary allocation for sub-installations 1 and 3 will be for all years:
- Sub-installation 1: Preliminary Allocation = BM_h x $HAL_h(A+B)$ x 1
- Sub-installation 3: Preliminary Allocation = BM_f x $HAL_f(A+B)$ x 1

And the preliminary allocation for sub-installations 2 and 4 will be:
In 2021-2026:
- Sub-installation 2: Preliminary Allocation = BM_h x $HAL_h(C)$ x 0.300
- Sub-installation 4: Preliminary Allocation = BM_f x $HAL_f(C)$ x 0.300

In 2027:
- Sub-installation 2: Preliminary Allocation = BM_h x $HAL_h(C)$ x 0.225
- Sub-installation 4: Preliminary Allocation = BM_f x $HAL_f(C)$ x 0.225

With non-CL CLEFs further reducing until 2030, when the preliminary allocation for sub-installations 2 and 4 will be:

- Sub-installation 2: Preliminary Allocation = BM_h x $HAL_h(C)$ x 0 = 0
- Sub-installation 4: Preliminary Allocation = BM_f x $HAL_f(C)$ x 0 = 0

3 Splitting installations into sub-installations

The first step in calculating the allocation of an installation is to define the so-called sub-installations. A sub-installation means all inputs, outputs and corresponding emissions related to a specific allocation approach. Note that the boundaries of a sub-installation are not necessarily defined by boundaries of physical process units. They should be understood as system boundaries of a mass and energy balance for the specific purpose of the FAR.

As described in Guidance document 1 on the general allocation methodology, 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, complemented by 2 heat benchmark sub-installations (CL and non-CL), 2 fuel benchmark sub-installations (CL and non-CL), 2 process emissions sub-installations (CL and non-CL) and a district heating sub-installation[10]. See *Guidance Document 1 for more guidance on the type of sub-installations distinguished and Annex B of Guidance Document 1 for the respective definitions of the different type of sub-installations.*

All inputs, outputs and corresponding emissions in an installation must be attributed to a sub-installation, unless they relate to any process not eligible for free allocation. Examples are the production of electricity in the installation, flaring other than safety flaring which is not covered by a product benchmark sub-installation, or the production of measurable heat exported to other EU ETS installations[11].

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 approach. (*See Guidance Document 3 on Data Collection for more guidance on the attribution of inputs and outputs, including emissions.*)

Installations are split into sub-installations through the steps described in section 3.1 to 3.5.

3.1 Establishing product benchmark sub-installations

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

First, it should be established whether one or more product benchmarks, as defined in Annex I of the FAR, apply to the installation. For each product benchmark that applies, a product benchmark sub-installation should be defined.

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[10] In the FAR, formal definitions are provided for the product benchmark sub-installation in Art. 3(b), the heat benchmark sub-installation in (Art. 3(c), the district heating sub-installation in Art. 3(d), the fuel benchmark sub-installation in Art. 3(f) and the process emissions sub-installation in Art. 3(j).
[11] Article 10.5 of the FAR

For each product benchmark sub-installation:
- Identify the system boundaries (*see Guidance Document 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[12].

Note that product benchmark values BM_p are constant over the years within the same allocation period (2021-2025 and 2026-2030 respectively), while the Carbon Leakage Exposure Factor *CLEF* may change over the years (in the second allocation period) depending on the carbon-leakage status (if the product is deemed to be exposed to a significant risk of carbon leakage, it will in principle remain constant, if it is not it will decline over the years, as described in Section 2.2).

*Step 1b Attribute relevant inputs and outputs*

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 (and that none are missing). When there are only product benchmark sub-installations in an installation, the amount of fuel and heat attributed to each sub-installation also needs to be calculated for the purpose of updating the benchmark values (as the data collection for updating the benchmark values and is combined with the data collection for providing the basis for the calculation of allowances).

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[12] Commission Decision of 15 February 2019 on Carbon Leakage List,
https://ec.europa.eu/clima/policies/ets/allowances/leakage_en#tab-0-1

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.
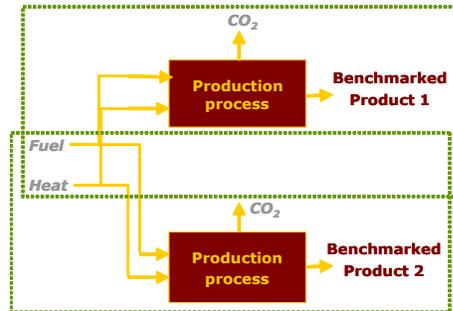
3.2 Establishing heat benchmark sub-installations

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.), as long as the heat is eligible for free allocation.

In principle, heat is eligible for free allocation if it can be regarded as covered by the EU ETS provided it is not produced from electricity. 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.

Heat is in particular not eligible in the following cases:
- 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 installation (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.

Note that heat exported for the purpose of district heating is not considered as part of the heat benchmark sub-installation, instead a separate district heating sub-installation is defined for this purpose, see Section 3.3

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 Section 2.2for more details on this topic).

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

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:
    o The heat is not produced by a non-ETS installation;
    o The heat is not produced within the boundaries of a nitric acid product benchmark;
    o The heat is not used to produce electricity;
AND/OR
- The installation exports measurable heat to a non-ETS installation or entity other than for the purpose of district heating[13], provided that:
    o The heat is not produced within the boundaries of a nitric acid product benchmark
    o 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[14]. 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**[15] (where a heat meter is any device that can measure the amount of energy produced based upon flow volumes and temperatures)*

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 to be exposed to a significant risk of carbon leakage must be included in a different sub-installation than heat consumed within the production process of a product not deemed exposed to a significant risk of carbon leakage. *See Section 2.2 on carbon leakage for more details on this topic*.

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[13] See Section 3.3 for a discussion of heat exported for the purpose of district heating

[14] Even if not all condensate is returned to the supplied, net measurable heat should be calculated assuming a 100% return of the condensate.

[15] 'Heat meter' means a thermal energy meter (MI-004) within the meaning of Annex VI of Directive 2014/32/EC of the European Parliament and of the Council [OJ L 135, 30.4.2004, p. 1.] or any other device to measure and record the amount of thermal energy produced based upon flow volumes and temperatures" (FAR, Art. 2(h8)). For guidance if no heat meter is installed, *see Guidance Document 5 on Monitoring & Reporting.*

Step 2b Attribute relevant inputs and outputs (if applicable)
Attribute all relevant inputs *(like heat)* and outputs *(like 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.

In case measurable heat is used for heating offices and canteens, this heat is included within the system boundaries of the product benchmark. In case no product benchmark sub-installation can be listed within the installation, then inputs, outputs and emissions related to those purposes shall be accounted for within the heat benchmark sub-installation. The carbon leakage exposure status of this heat is based on the most relevant production process within the installation. Note that for offices and canteens on industrial sites, this cannot be considered as a form of district heating. The consideration of heating needs to be in line with the permit of the installation. For a definition of district heating, see Section 3.3.

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.

3.3 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 measurable heat outside the boundaries of a nitric acid product benchmark sub-installation;
OR
- Imports measurable heat from an EU ETS installation, provided that the heat is not produced within the boundaries of a nitric acid 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 the EU ETS;**
- Excluding measurable heat used for the production of products and related activities 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[16]. Instead, a CLEF of 0.3 continues to be applied for district heating sub-installations also after 2025. See for further details Section 2.2 on carbon leakage.

Evidence needs to be provided that the heat considered as delivered to district heating is used for the purposes of heating or cooling of space or the production of domestic hot water.

- In cases of low temperature heat[17] delivered to a district heating network, it can be assumed that the conditions of the definition of district heating are fulfilled.
- In case of a design temperature of 130°C and more, the heat will only be considered as delivered to district heating in case that the heat producer provides appropriate evidence, e.g. via annual sales figures (for the entire baseline period), clearly indicating the amount of heat sold for the purposes of heating or cooling of space or the production of domestic hot water.

In both cases the heat producer has to confirm that heat reported as district heating is not subject to free allocation to other ETS installations.

Step 3b Attribute relevant inputs and outputs *(if applicable)*
Attribute all relevant inputs *(like fuel and/or heat)* 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 the purpose of district heating is measured at the exit of the heat exporting facilities, or at the entrance of the heat importing ones. In case heat is exported for the purpose of district heating as well as for other purposes, the heat for the purpose of district heating may need to be measured at the entrance of the heat importing facility, depending on the layout of the heat distribution system.

3.4 Establishing fuel benchmark sub-installations

Step 4a Define one or two fuel benchmark sub-installations[18] *(if applicable)*
Fuel benchmark sub-installations need to be defined if, as indicated in Table 1, the fuel benchmark approach should be used, i.e. in case the installation combusts fuel outside the boundaries of a product benchmark for:

- Direct heating or cooling without a heat transfer medium (i.e. when heat cannot be measured); or
- The production of products; or
- The production of mechanical energy, which is not used for the production of electricity;

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[16] Subject to a potential review in accordance with Article 30 of the EU ETS Directive.
[17] with a design temperature below 130°C at the heat producer's entry point to the district heating network.
[18] Depending on the carbon leakage status, see Section 2.2.

Provided that:

- The fuel is not consumed for the production of electricity; and
- 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;* and
- Heat from the process is not recovered (which would receive allocation via another allocation methodology, unless it is used for electricity production).

    To avoid double-counting in this situation, the activity level of the fuel benchmark sub-installation should be corrected by subtracting the amount of recovered measurable heat, covered by a product benchmark or heat benchmark sub-installation or used for electricity production, divided by a virtual generation efficiency of 90%[19].

Note: Fuel combusted directly 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 significant 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 a significant risk of carbon leakage. *See Section 2.2 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.

3.5 Establishing process emissions sub-installations

Step 5a Define one or two process emissions sub-installations[20] (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:

- Type a: Non-CO_2 greenhouse gas emissions listed in Annex I of Directive 2003/87/EC; N_2O is currently 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, and for

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[19] In line with Article 10(k) of the FAR.
[20] Depending on the carbon leakage status, see *Guidance Document No. 5 on carbon leakage for more details*

further activities potentially opted-in pursuant to Article 24 of the Directive, such as e.g. caprolactam production). N_2O has a Global Warming Potential of 298 t CO_2eq/t N_2O[21].

- Type b: CO_2 emissions[22] as a direct result of any of the activities listed in Table 3 (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 waste gases for the purpose of the production of measurable heat, non-measurable heat or electricity MINUS the equivalent emissions resulting from the combustion of an amount of natural gas with equal energy content as those gases[23]; *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.*

In line with Article 10(k) of the FAR, in the case of heat recovered from processes covered by a process emissions sub-installation, to avoid double-counting the activity level of the process emissions sub-installation should be corrected by subtracting the amount of recovered measurable heat, covered by a product benchmark or heat benchmark sub-installation or used for electricity production, divided by a virtual generation efficiency of 90%.

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 significant 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 significant risk of carbon leakage (see Section 2.2 on carbon leakage for more details on this topic).

For the processes in the table below – only if not part of product benchmark sub-installation – 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.

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[21] As per Commission Regulation (EU) No 206/2014 amending Regulation (EU) No 601/2012 as regards global warming potentials for non-CO_2 greenhouse gases of 4 March 2014,
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0206&from=EN)

[22] CO_2 emissions have to be in line with the rules the MRR. This means that emissions from any biomass that is sustainable or where no sustainability criteria apply (e.g. solid biomass) are rated as zero.

[23] A specific rule applies where waste gases occurring outside the boundaries of product benchmarks are not used, mainly in cases of open furnaces, as the further oxidation of incompletely oxidised carbon is difficult to control. *See Guidance Document 8 on process emissions and process emissions sub-installation for further guidance on this topic.*

Table 3. Definitions and examples of activities covered by the process emissions sub-installations definition (Article 2(10) of the FAR)

Definition of activity[24]	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
Chemical or electrolytic reduction of metalloid oxides or non-metal oxides such as silicon oxides and phosphates	Production of silicon, reduction of phosphate ore

Step 5b Attribute relevant inputs and outputs

Attribute all relevant inputs *(all 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.

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

4 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 (updated) benchmark values. Each sub-installation will make use of one and only one approach. This section describes the application of the different allocation approaches for each of the sub-installations.

4.1 Product benchmark sub-installation

Figure 2 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.
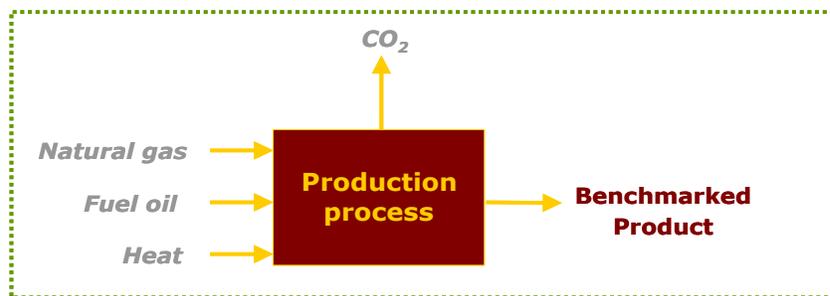

Figure 2 Example of product benchmark sub-installation

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:

$$F_{p,k} = BM_p \; X \; HAL_p \; X \; CLEF_{p,k}$$

With:

$F_{p,k}$	Annual preliminary allocation for product p in year k (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;

CLEF$_{p,k}$ Carbon Leakage Exposure Factor for product p in year k.

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 3 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)*.
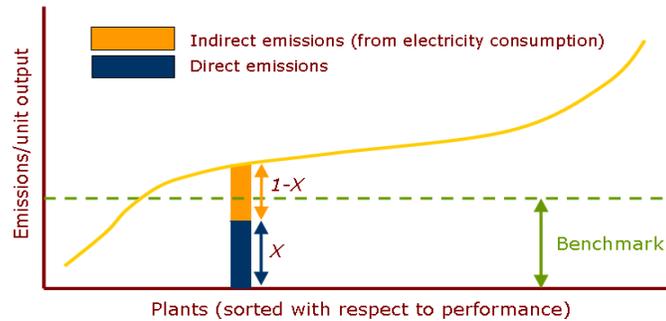

Figure 3 Definition of benchmarks in the case of exchangeability between fuel and electricity

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:

$$F_{p,k} = \frac{Em_{direct} + Em_{NetHeatImport}}{Em_{direct} + Em_{NetHeatImport} + Em_{Elec}} \times BM_p \times HAL_p \times CLEF_{p,k}$$

With:

$F_{p,k}$:   Annual preliminary allocation for a product benchmark sub-installation in year k (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.

$Em_{NetHeatImportI}$: 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:

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

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[25].

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:

$$Em_{Elec} = Elec\ use \times 0.376$$

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.

$CLEF_{p,k}$ Carbon Leakage Exposure Factor for product p in year k.

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.

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[25] Please note that the baseline data template will automatically calculate the result using the BM_heat value once it is published.

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.*

4.2 Heat benchmark 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 net measurable heat consumption.
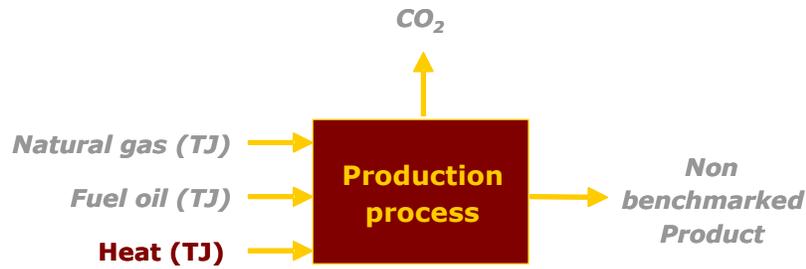

Figure 4 Example of a heat benchmark sub-installation.

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 (other than for the purpose of district heating) 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 3, 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:

$$F_{h,k} = BM_h \times HAL_h \times CLEF_{h,k}$$

With:

$F_{h,k}$ Preliminary annual allocation for sub-installation based on the heat benchmark in year k(expressed in EUAs/yr);

BM_h Heat benchmark; set at XX EUAs / TJ;

HAL_h Historical activity level, i.e. the arithmetic mean annual consumption of net eligible heat (measured as production + import from ETS installations – export to non-ETS for the purpose of district heating) in the baseline period as determined and verified in the baseline data collection (expressed in TJ/yr) for the heat BM sub-installation;

$CLEF_{h,k}$ Carbon Leakage Exposure Factor for the heat BM sub-installation in year k.

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[26]. Own heat consumption that is part of the heat production process (e.g. for the deaerator and fuel pre-heating) is taken into account in the value of the heat benchmark and, for the purpose of free allocation, should not be covered by a heat benchmark sub-installation. The value of the heat benchmark (in EUAs/TJ) covers all emissions related to the heat production but can only cover net heat flows that can be consumed outside the heat production system, so that losses within the installation are not covered.

In case of heat export to non-ETS consumers (other than for the purpose of 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.*

4.3 District heating sub-installation

Figure 5 shows a district heating 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.

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[26] Even if not all condensate is returned to the supplied, net measurable heat should be calculated assuming a 100% return of the condensate.
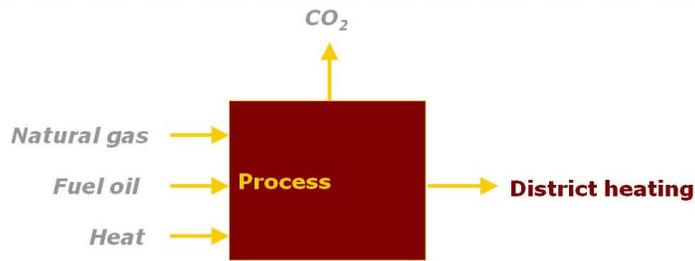
Figure 5 Example of a district heating sub-installation.

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 for the purpose of district heating.

Step 3d Calculate preliminary free allocation
Calculate the preliminary annual allocation for the district heating sub-installation using the following equation:

$$F_{DH,k} = BM_h = HAL_{DH} \text{ X } CLEF_{DH}$$

With:

$F_{DH,k}$	Preliminary annual allocation for the district heating sub-installation in year (expressed in EUAs/yr);
BM_h	Heat benchmark; set at XX EUAs / 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);
$CLEF_{DH}$	Carbon Leakage Exposure Factor for the DH sub-installation (=0.300).

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.

4.4 Fuel benchmark sub-installation

Figure 6 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.
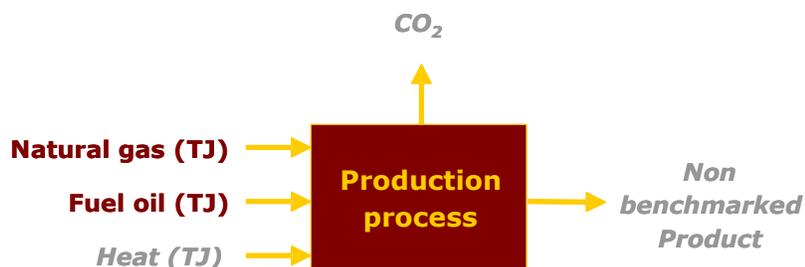
Figure 6 Fuel benchmark sub-installation

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[27] 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:

$$F_{f,k} = BM_f \times HAL_f \times CLEF_{f,k}$$

With:
$F_{f,k}$ Preliminary annual allocation for the sub-installation in year k (expressed in EUAs/yr);
BM_f Fuel benchmark; set at XX EUAs / TJ;
HAL_f Historical activity level, i.e. the arithmetic mean annual consumption of fuels of the sub-installation (expressed in TJ/yr);
$CLEF_{f,k}$ Carbon Leakage Exposure Factor for the fuel sub-installation in year k.

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

4.5 Process emissions sub-installation

Figure 7 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.
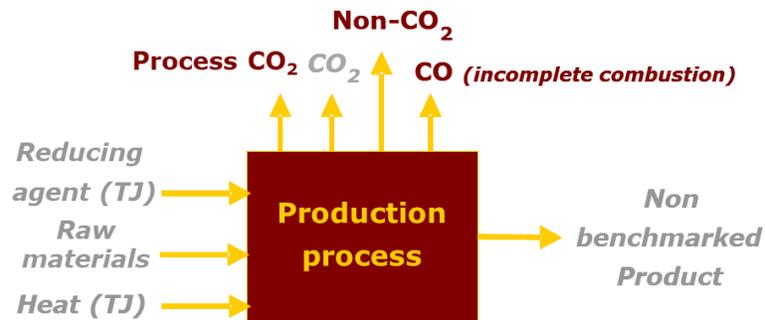

Figure 7 Process emissions sub-installation

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

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 0);
- CO_2 emissions as a result of any of the activities listed in step 5.a (type b, see Section 0);
- 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 0) for the purpose of the production of measurable heat, non-measurable 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:

$$F_{e,k} = PRF \ X \ HAL_e \ X \ CLEF_{e,k}$$

With:

$F_{e,k}$	Preliminary annual allocation for the sub-installation in year k (expressed in EUAs/yr);
PRF	Process Emissions Reduction factor, which is set at 0.97 (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);
$CLEF_{e,k}$	Carbon Leakage Exposure Factor for the process emissions sub-installation in year k.

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 combustion of waste gases, not for the purpose of the production of measurable heat, non-measurable heat or electricity, the historical activity level should be based on the assumption that 75% of the carbon content of the gas-mix is fully oxidised (CO_2). For further guidance on process emissions resulting from the combustion of waste gases[28], see *Guidance Document 8 on waste gases and process emissions sub-installation*.

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[28] Including waste gases occurring outside the boundaries of product benchmarks in open furnaces.

5 Preliminary and final allocation per installation

5.1 Preliminary allocation

The preliminary total annual amount of emission allowances (including the CLEF, as per the equation in Section 2.2) per installation is calculated by summing the allowances across sub-installations.

$$F_{inst,k} = \sum_i F_{i,k}$$

With:

$F_{inst,k}$ Preliminary total allocation to the installation in year k;

$F_{i,k}$ Preliminary allocation for sub-installation *i* in year k.

5.2 Final allocation

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

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

With:

$F_{inst}^{final}(k)$ Final total amount of allocation to the installation in year k;

$CSCF_k$ Cross-sectoral correction factor in year k (if necessary).

If the CSCF applies in any year[29], the final total 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:

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

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 the table in Guidance Document 1).

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

6 Determination of historical activity level

6.1 Default approach to determining historical activity level

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)*

All years in the baseline period in which the *installation* has been operating for at least 1 day should be taken into account (See Article 15(7) of the FAR).

Consequently, in some cases years of zero activity levels for a sub-installation have to be considered if at least one other sub-installation has been operating. This is particularly relevant for installations that have produced different benchmarked products in the same production line. The following examples demonstrate that the standard methodology also works for such cases.

Example 1
A glass factory has a glass production line in which both coloured and colourless glass bottles can be produced. The two types of products are covered by two different product benchmarks. The following activity levels were realized in 2014-2018.

Table 4: Historical activity levels of a glass-producing installation

	2014	2015	2016	2017	2018
Coloured glass bottles	800	800	0	0	800
Colourless glass bottles	0[30]	0	800	800	0

The installation is covered by two product benchmarks, hence two sub-installations should be applied. In order to determine the HAL, the arithmetic mean of the annual production over the baseline period in which the **installation** (i.e. the whole installation needs to be looked at, not each individual sub-installation) has been operating for at least one day should be taken for each product benchmark, following Article 15(7):

$HAL_{coloured\ glass} = mean_{2014\text{-}2018}$ *(800, 800, 0, 0, 800) = 480*
$HAL_{colourless\ glass} = mean_{2014\text{-}2018}$ *(0, 0, 800, 800, 0) = 320*

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[30] In this case, the AL value of 0 is considered in the calculation of the HAL because the sub-installation has been operating in previous years. If the sub-installation had started operating in 2016, then years 2014 and 2015 would not have been considered in the calculation of the HAL. See Section 6.2 for guidance on such cases.

The sum of the HALs for the whole installation is 800 and reflects the historical activities of the glass factory.

Example 2
A paper mill has a paper production line in which 3 types of paper can be produced: newsprint, uncoated fine paper and coated fine paper. The three types of products are covered by three different product benchmarks. The following activity levels were realized in 2014-2018.

Table 5: Historical activity levels of a paper-producing installation

	2014	2015	2016	2017	2018
Newsprint	800	0	500	700	0
Uncoated fine paper	200	600	0	300	500
Coated fine paper	0[31]	400	500	0	500

The installation is covered by three product benchmarks, hence three sub-installations should be applied. In order to determine the HAL, the arithmetic mean of the annual production over the baseline period in which the **installation** (i.e. the whole installation needs to be looked at, not each individual sub-installation) has been operating for at least one day should be taken for each product benchmark, following Article15(7):

$HAL_{newsprint} = mean_{2014\text{-}2018} (800, 0, 500, 700, 0) = 400$
$HAL_{uncoated\ fine} = mean_{2014\text{-}2018} (200, 600, 0, 300, 500) = 320$
$HAL_{coated\ fine} = mean_{2014\text{-}2018} (0, 400, 500, 0, 500) = 280$

The sum of the HALs for the whole installation is 1000. As in the first example, the results reflect the production levels very well.

6.2 Determination of historical activity level when not operating the full baseline period

Special provisions apply for if HAL is not available for the entire baseline period. In this respect, the FAR distinguishes two situations:
- A sub-installation has been operating for less than two calendar years;
- A sub-installation has not been operating for a full calendar year since the start of normal operations.

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

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[31] As previously, in this case the AL value of 0 is considered in the calculation of the HAL because the sub-installation has been operating in previous years. If the sub-installation had started operating in 2015, then year 2014 would not have been considered in the calculation of the HAL. See Section 6.2 for guidance on such cases.

calendar year of operation after the start of normal operation of this sub-installation. This approach is valid for all sub-installations within the installation with their first start of normal operation after 01.01.2017 or 01.01.2022 respectively. 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[32].

No specific approach is necessary to take into account the possible closing of operation of a (sub-) installation, or a possible change in production during the baseline period. Any such change will automatically be regulated by the activity level change rules. *For more guidance on this, please see the Guidance Document 7 on new entrants and closures.*

For Phase 4, the 'start of normal operation' is defined as the first day of operation (Article 2(12) of the FAR)[33]. The "first day of operation" is defined as the first day the activity level is higher than 0.

The text Box below shows a number of examples of how to take into account operation of sub-installations during the baseline period in the determination of HAL.

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[32] 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.

[33] Different than for Phase 3.

Text Box Examples on calculating HAL not operating during the entire baseline period
The following example illustrates how different sub-installations are to be taken into account for the determination of HAL, depending on the year when they start operating, and on how they operate in the following years during the baseline period.
In this example, several sub-installations are presented, with an indication of the years in which they were operating during the baseline period. It is assumed that sub-installations 2, 4 and 5 have their start of normal operation during the baseline period, i.e. they have never operated before. Several examples of installations are then given, consisting of one or more of the listed sub-installations.
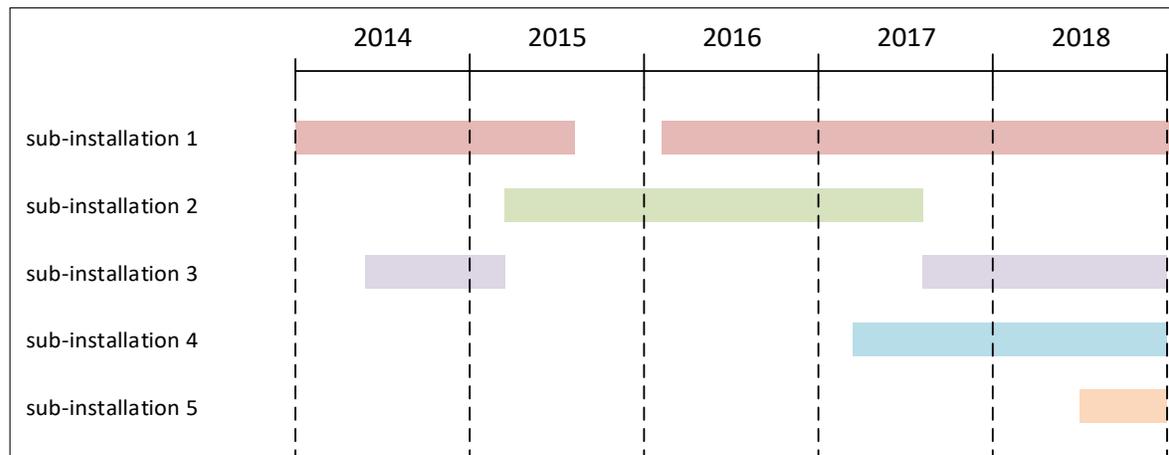
Installation	Consisting of	Years to be taken into account for HAL for each sub-installation					Sub-installation operating < 2 calendar years?	If yes, year relevant for HAL
		2014	2015	2016	2017	2018		
A	Sub-inst 1	X	X	X	X	X	No	N.A.
B	Sub-inst 2		X	X	X		No	N.A.
C	Sub-inst 3	X	X		X	X	No	N.A.
D	Sub-inst 4				X	X	Yes	2018
E	Sub-inst 5					X	Yes	2019
F	Sub-inst 1	X	X	X	X	X	No	N.A.
	Sub-inst 2		X	X	X	X	No	N.A.
G	Sub-inst 1	X	X	X	X	X	No	N.A.
	Sub-inst 3	X	X	X	X	X	No	N.A.
H	Sub-inst 2		X	X	X	X	No	N.A.
	Sub-inst 3	X	X	X	X	X	No	N.A.
I	Sub-inst 4				X	X	Yes	2018
	Sub-inst 5					X	Yes	2019
J	Sub-inst 3	X	X		X	X	No	N.A.
	Sub-inst 4				X	X	Yes	2018

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Text box Examples continued

To summarize:
- If a sub-installation A starts operating during the baseline period in year Y, it can only be taken into account from year Y (i.e. in case several sub-installations are included in the installation, this sub-installation will NOT have an AL of 0 in year Y-1). This is for example the case for sub-installation 2, which starts operating in 2015, and therefore never has year 2014 taken into account in the calculation of its HAL;
- With the exception of situations described in the previous bullet point, for the calculation of the HAL all years during the baseline for which AT LEAST ONE sub-installation has been operating need to be taken into account (if a sub-installation does not operate during one or more of the years of the baseline, but another sub-installation does, these years are to be counted with an AL of 0 – see examples in Section 6.1). In this example, for installation C, year 2016 is not taken into account in HAL, as sub-installation is not operating that year, and installation C has no other sub-installation. However, year 2016 is taken into account for the HAL of sub-installation 3 in installation H, even though its AL is 0 for that year, as installation H has been operating at least one day that year (with sub-installation 2);
- If a sub-installation operates less than 1 full calendar year during the baseline period, its HAL will be based on the AL of the first full calendar year of operation, i.e. on the AL of year 2019. In this example, this is the case for sub-installation 5.

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For **new entrants**, basically the same approach applies to calculate the amount of free allowances as for incumbents, i.e. multiplying HAL with the benchmark value[34]. 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.[35]

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

More detailed rules on how to determine the change in allocation as a result in changes in activity level are laid down in the Activity Level Change Implementing act (ALC)[36]. *For more detailed guidance, see the Guidance Document in Activity Level Changes.*

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[34] And other correction factors (such as CLEF) as applicable.
[35] 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 capacity utilisation factor (RCUF or SCUF).
[36] Ref to Implementing act

7 Additional examples

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

7.1 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.
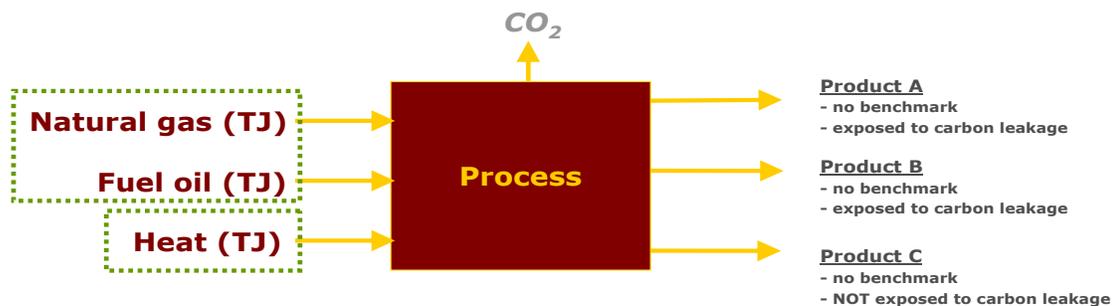

Figure 8 How many sub-installations are present in this installation?

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*.

7.2 Example 2: Combined heat and power (CHP)

In the case of a CHP installation (see Figure 9), 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:
    - o The CHP installation will not receive any free allocation for the part of the heat that goes to another **ETS consumer**, as the other ETS heat consumer will receive the free allowances for the heat it consumes.
    - o 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.

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.
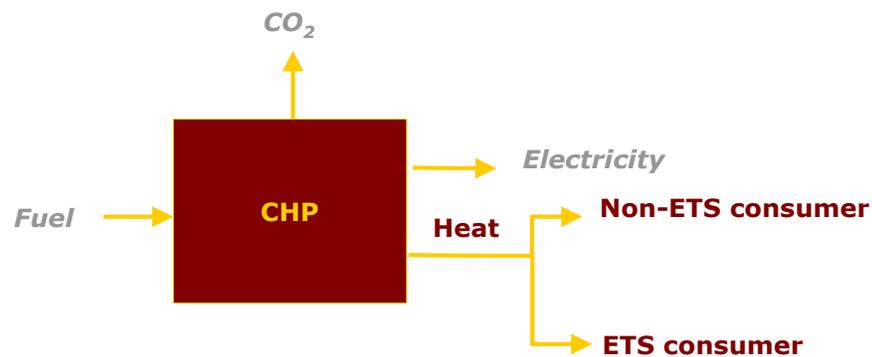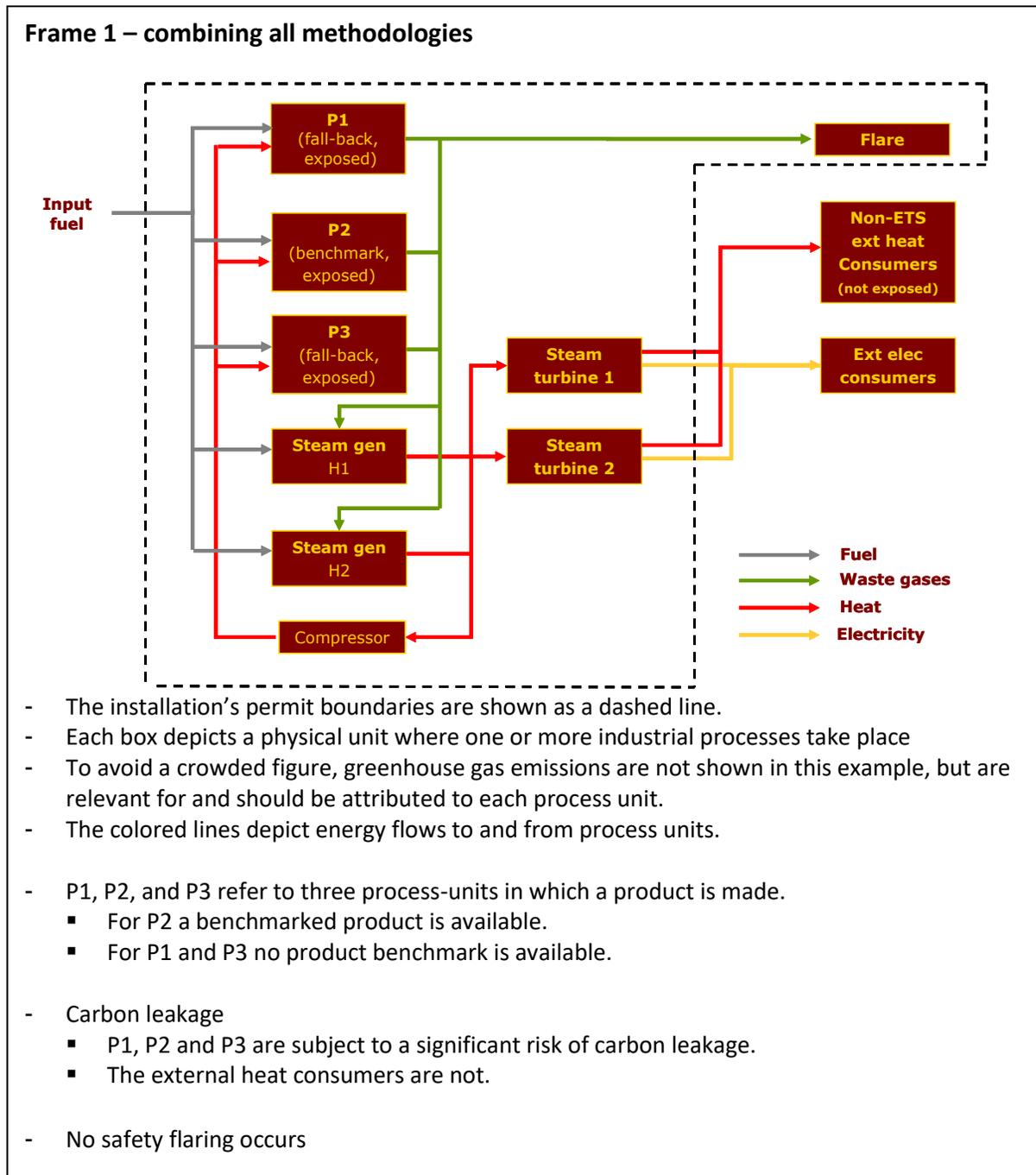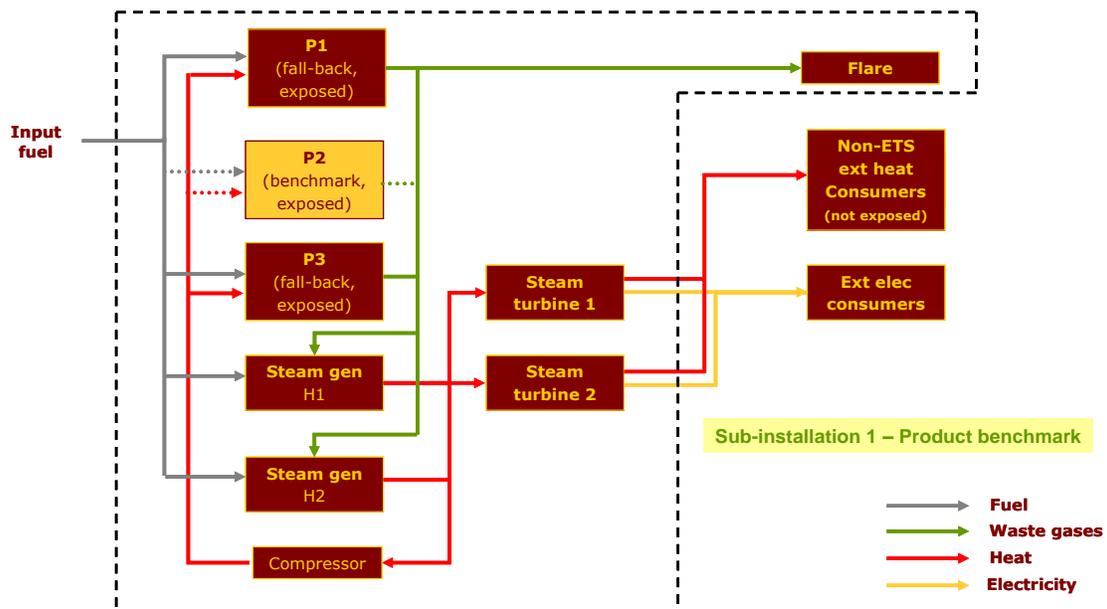

Figure 9 Schematic diagram of CHP installation

7.3   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
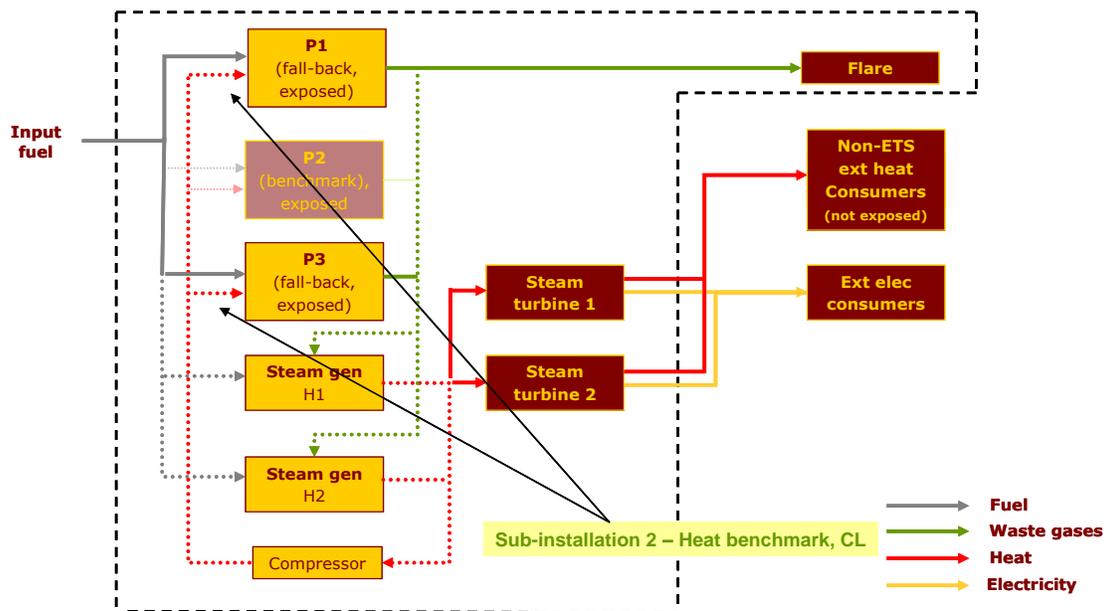
Step 2a Define one or two heat benchmark sub-installations
- The installation consumes measurable heat outside the boundaries of a product benchmark (P1 and P3) and exports heat to non-ETS consumers.
- The process units (P1 and P3) are exposed to a significant risk of carbon leakage, whereas the non-ETS consumers are not. Two heat benchmark sub-installations therefore need to be defined.
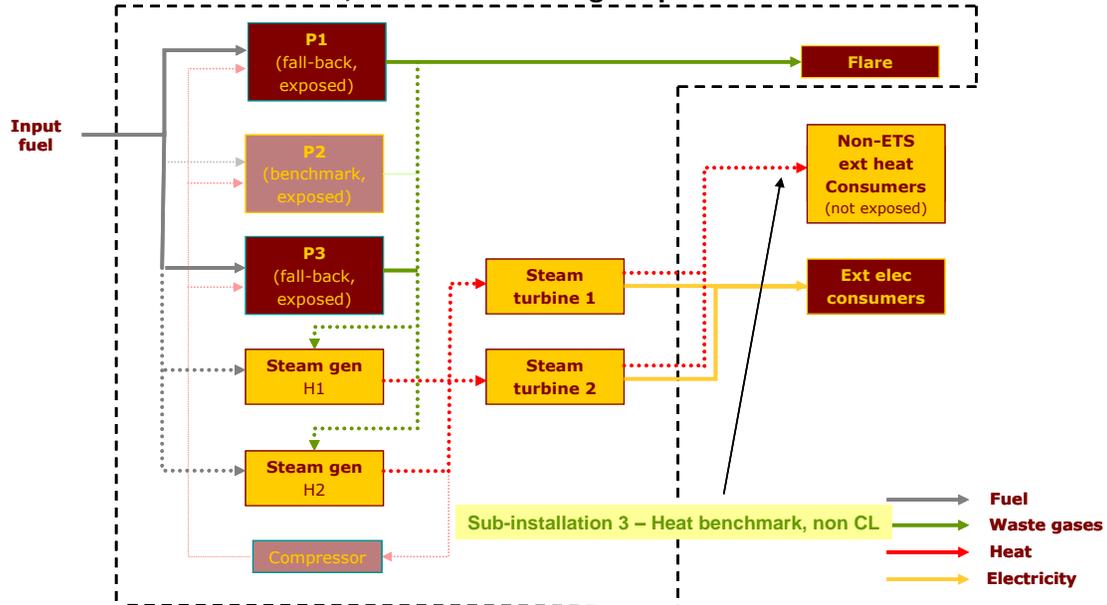
Step 2a and 2b, attribute relevant inputs and outputs (Sub-installation 2)
- Sub-installation 2 accounts for the heat consumed by P1 and P3, for the emissions linked to the production of this heat and for the energy flows used to produce this heat.
- The heat is produced by the combustion of waste gases 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
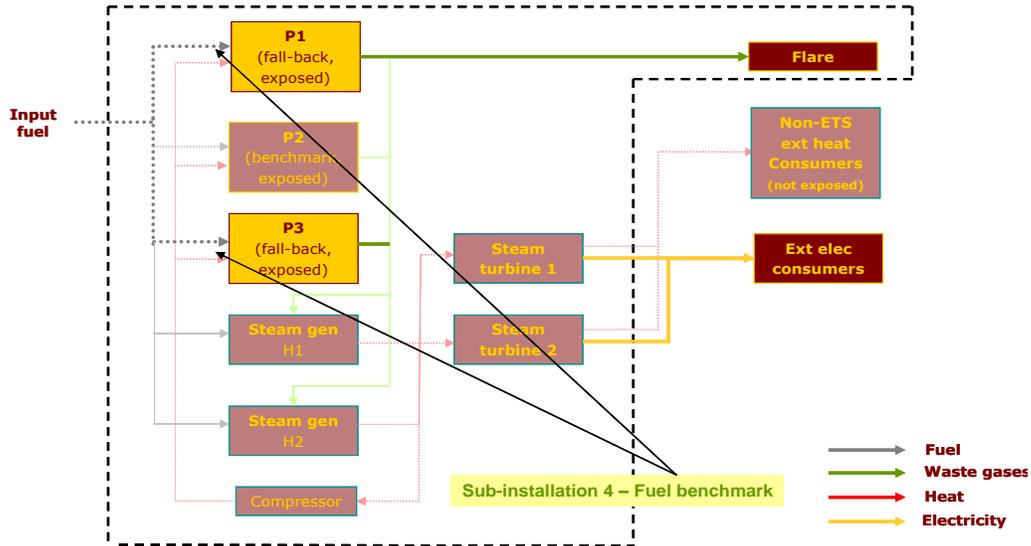
Step 3a Define one or two fuel benchmark sub-installations
- The example installation contains two process units (P1 and P3) where fuel is combusted for direct heating purposes. Both units produce products which are deemed exposed to Carbon Leakage and are therefore covered by the same sub-installation (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 and/or waste gases 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
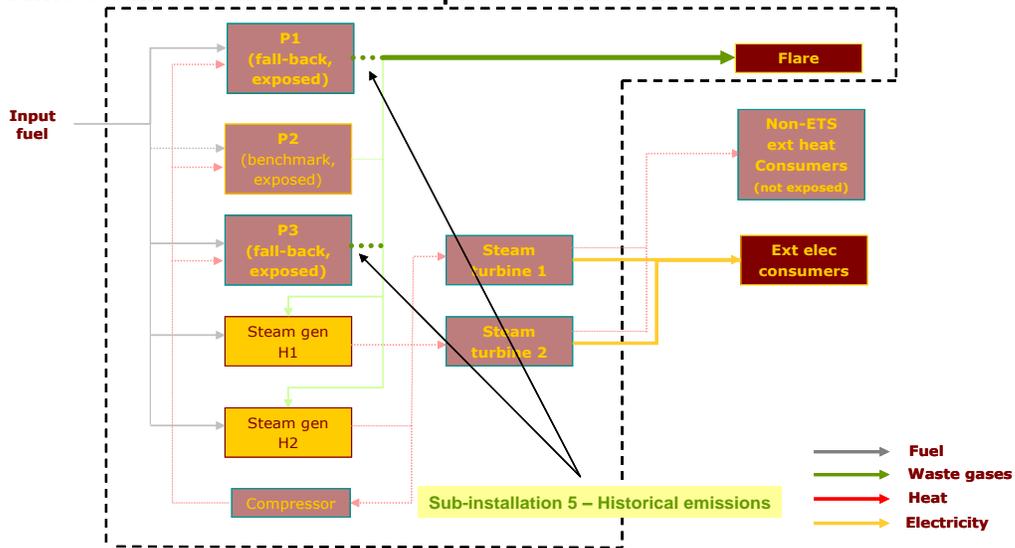
Step 4a Define one or two process emissions sub-installations
- In our example plant, waste gases produced by P1 and P3 can be either flared (not for safety reasons) or used for combustion in the steam generators.
- Flaring (other than safety flaring) is not eligible for free allocation, and the use 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 that is not flared
- The energy content of the waste gas that is not flared
- 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 contained in the waste gases (completely oxidised carbon contained in the waste gases) plus the emissions originating from the combustion of incompletely combusted carbon in the waste gases that re not flared 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
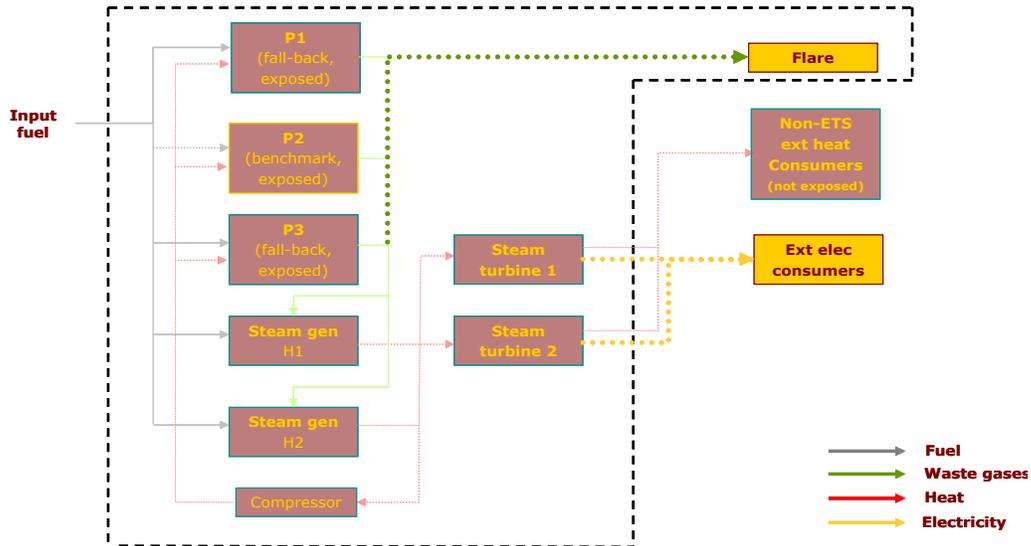
The last part of the sub-installation exercise is to attribute non-eligible emissions, i.e. emissions caused by electricity production or flaring other than safety flaring. As these emissions are not eligible for free allocation, there is no sub-installation needed for these emissions. Rather they are 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.

Annex A: Comparison with 2011 Guidance Document 2

The below table shows how the sections of the 2011 version of Guidance Document 2 correlate to the sections in the current, 2019 version, and where main topics are covered. Please note that the contents of corresponding sections in the different versions can be significantly changed as a result of new rules in the revised ETS Directive or the FAR regulation. '-' indicates that the topic was not included in the corresponding GD.

Content	Section in		Comments
	2011 GD2	2019 GD2	
Introduction	1	-, in GD1	2019 GD2 refers to general introduction section in 2019 GD1
Status of the Guidance Documents	1.1	-, in GD1	
Background of the CIM Guidance Documents	1.2	-, in GD1	
Use of the Guidance documents	1.3	-, in GD1	
Additional guidance	1.4	-, in GD1	
Scope of this guidance document	1.5	1	
Overview of allocation approaches	1.5	2	
When to apply which installation-level approach	1.5	2.1	Included district heating sub-installation, overview of related concepts in 2019 GD
Impact of carbon leakage	-, in GD5	2.2	Moved (updated) contents of 2011 GD5 on Carbon leakage to 2019 GD2
Split installation into sub-installations	2	3	Included district heating (DH) sub-installation in 2019 GD
Establishing product benchmark sub-installations	2.1	3.1	
Establishing heat benchmark sub-installations	2.2	3.2	
Establishing district heating sub-installations	-	3.3	
Establishing fuel benchmark sub-installations	2.3	3.4	

Establishing process emissions sub-installations	2.4	3.5	
Determination of allocation per sub-installation	3	4	Included DH sub-installation in 2019 GD, updated equations/examples to arithmetic mean instead of median values for historical activity levels
Product benchmark sub-installation	3.1	4.1	
Heat benchmark sub-installation	3.2	4.2	
District heating sub-installation		4.3	
Fuel benchmark sub-installation	3.3	4.4	
Process emissions sub-installation	3.4	4.5	
Preliminary and final allocation per installation	4	5	Included district heating sub-installation in 2019 GD
Basic allocation	4.1	-	Deleted in 2019 GD, as no longer relevant
Preliminary allocation	4.2	5.1	
Final allocation	4.3	5.2	
Determination of initial capacity	5	-	Deleted in 2019 GD, referred to new rules on activity level changes under FAR in separate GD
Determination of historical activity level	6	6	
Choice of baseline period	6.1	-	Deleted in 2019 GD, as no longer relevant
Default approach	6.2	6.1	
Determination of historical activity level when not operating the full baseline period	6.3	6.2	
Changes in capacity	6.4	-	Deleted in 2019 GD, referred to separate GD on rules on activity level changes under FAR
Additional examples	7	7	