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Guidance Document n°6  
on the harmonised free allocation methodology for the EUETS  
post-2020

**Cross-Boundary Heat Flows**

*Version issued on 19 September 2018 for comments*

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

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# 1 Introduction

## 1.1 Status of the Guidance Documents

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

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

This draft guidance document is based on a draft provided by a consortium of consultants (SQ Consult, Umweltbundesamt) and builds on the guidance documents developed for phase 3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

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

## 1.2 Background of the FAR Guidance Documents

Specific topics were identified within the FAR which deserve further explanation or guidance. The FAR guidance documents intend to address these issues as specifically and clearly as possible. The Commission considers it necessary to achieve the maximum level of harmonisation in the application of the allocation methodology for Phase 4.

The FAR guidance documents aim at achieving consistency in the interpretation of the FAR, to promote harmonisation and prevent possible abuse or distortions of competition within the Community.

The full list of those documents is outlined below:

- Guidance document no. 1 – general guidance: this guidance gives a general overview of the allocation process and explains the basics of the allocation methodology.

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<sup>1</sup> by a consortium of consultants (Ecofys NL, Fraunhofer ISI, Entec).

- Guidance document no. 2 – guidance on allocation methodologies: this guidance explains how the allocation methodology works and its main features.
- Guidance document no. 3 – data collection guidance: this guidance explains which data are needed from operators to be submitted to the Competent Authorities and how to collect them. It reflects the structure of the data collection template provided by the European Commission (EC).
- Guidance document no. 4 – guidance on NIMs data verification: this guidance explains the verification process concerning the data collection for the National Implementation Measures<sup>2</sup>.
- Guidance document no. 5 – guidance on carbon leakage: this guidance presents the carbon leakage issue and how it affects the free allocation calculation.
- Guidance document no. 6 – guidance on cross boundary heat flows: this guidance explains how the allocation methodologies work in case of heat transfer across the 'boundaries' of an installation.
- Guidance document no. 7 – guidance on new entrants and closures: this guidance is meant to explain allocation rules concerning new entrants as well as the treatment of closures.
- Guidance document no. 8 – guidance on waste gas and process emission sub-installation: this guidance provides for explanation of the allocation methodology concerning process emission sub-installations, in particular, concerning waste gas treatment.
- Guidance document no. 9 – sector specific guidance: this guidance provides a detailed description of the product benchmarks as well as the system boundaries of each of the product benchmarks listed within the FAR.

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

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

References to articles within this document generally refer to the revised (2018) EU ETS Directive and to the FAR.

### **1.3 Use of the Guidance documents**

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

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<sup>2</sup> Article 11 of Directive 2003/87/EC

### **Note on outstanding issues in this version of the Guidance Document**

As decision-making on the allocation methodology is not yet finalized, certain elements of this Guidance Document are as yet undefined. This includes especially issues related to the implementing act still to be adopted on the detailed rules on the changes to allocations of free allowances, the update of the benchmark values and the new carbon leakage list. In addition, it can also apply to references to the outstanding legislation itself or to accompanying Guidance Documents that are still to be prepared or finalized.

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

### **1.4 Additional guidance**

Alongside the guidance documents, additional support to the Member State authorities is provided in the form of the EC-website, with a list of guidance documents, FAQs and useful references, [https://ec.europa.eu/clima/policies/ets/allowances\\_en#tab-0-0](https://ec.europa.eu/clima/policies/ets/allowances_en#tab-0-0).

### **1.5 Scope of this guidance document**

This guidance document describes allocation in case of heat flows across an installation boundary, where heat is defined as measurable heat.

Cases of direct cross-boundary heat flows to and from ETS and non-ETS entities are discussed in section 3.

More complex cases involving heat exchange between multiple entities are discussed in section 4

Examples of heat flows in more unusual cases are described in section 5.

Heat flows from non-ETS entities or installations to other non-ETS entities or installations are not relevant for allocation and therefore are not discussed in this document.

Heat flows between two sub-installations that are part of the same installation are relatively simple in terms of allocation. An example of allocation in case of internal heat flows in case of a paper mill is given in Section 5.

## 2 Principles for the treatment of cross-boundary heat flows

### Net heat flows

For the purpose of allocation only measurable heat flows are of relevance<sup>3</sup>. See below for explanation of what is meant by net.

**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
- 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 in principle be measured by a heat meter<sup>4</sup>** (where a heat meter is any device that can measure the amount of energy produced based upon flow volumes and temperatures)

In the case of cross-boundary heat flows, measurable heat can be eligible for free allocation<sup>5</sup> under certain conditions, depending on the producer and consumer. The number of free allowances depends on the historical activity levels of the heat benchmark and district heating sub-installations<sup>6</sup>. The basic principles of eligibility for cross-boundary heat flows are that the heat needs to be produced by an ETS installation, and that only an ETS installation can receive free allocation. Therefore, the types of heat for which an ETS installation can receive free allocation can be summarized follows:

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<sup>3</sup> “‘measurable heat’ means a net heat flow transported through identifiable pipelines or ducts using a heat transfer medium, such as, in particular, steam, hot air, water, oil, liquid metals and salts, for which a heat meter is or could be installed” (FAR, Art. 3(g))

<sup>4</sup> “‘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. 3(h))

<sup>5</sup> See also (see Guidance Document 2 on the determination of free allocation

<sup>6</sup> “The heat-related historical activity level shall refer to the arithmetic mean of historical import from an installation covered by the EU ETS, production, or both, during the baseline period, of net measurable heat consumed within the installation’s boundaries for the production of products, for the production of mechanical energy other than used for the production of electricity, for heating or cooling with the exception of the consumption for the production of electricity, or exported to installations or other entity not covered by the EU ETS with the exception of the export for the production of electricity expressed in terajoule per year.

The district heating-related historical activity level shall refer to the arithmetic mean of annual historical import from an installation covered by the EU ETS, production, or both, during the baseline period, of measurable heat which is exported for the purposes of district heating expressed as terajoule per year.” (FAR Art. 25(4))

An ETS installation will receive free allocation for the measurable heat **produced** within EU ETS and:

- **consumed** within the installation boundaries

**AND/OR**

- **exported** to district heating

**AND/OR**

- **exported** to non-ETS entities other than district heating

**Unless** it is used for the production of electricity or for the production of mechanical energy that is used for the production of electricity

### **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 by-product of a benchmarked production process, etc.).

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

Exceptions to this rule are the following:

- The export or consumption of heat produced in the nitric acid production process is not eligible for free allocation as this heat is already taken into account by the nitric acid benchmark. (see Art. 26(5) of the FAR)
- The consumption of heat produced by a non-ETS plant or unit (not covered by a GHG permit) is not eligible for free allocation. (see Art. 25(4) and Art. 32 of the FAR)
- The export or consumption of heat used for electricity generation is not eligible for free allocation. (see Art. 3(c) and 25 (4) of the FAR)

Below some examples of heat flows that may be encountered in practice are given, together with the eligibility for allocation

Example 1: An ETS installation that produces paper consumes steam from a 40 MW CHP unit that is covered by the same GHG EU ETS permit. In this case the heat flow is not regarded as cross-boundary. The heat consumed by the installation is eligible for free allocation either under the product benchmark sub-installation (if any) or the heat benchmark sub-installation.

Example 2: An ETS installation that produces paper consumes heat from an external 5 MW boiler that is not covered by an EU ETS permit. In this case, the heat delivered to the EU ETS installation is not eligible for allocation.

Example 3: An ETS installation that produces paper consumes heat from an electric boiler: the electric boiler is not covered by the EU ETS (the installation's EU ETS permit boundaries should not include it). In this case, the corresponding amount of heat is not eligible for allocation.

Example 4: Within an ETS installation, heat from a nitric acid production process is used in fertilizer production that is covered by the same EU ETS permit. In this case, the heat delivered from the nitric acid sub-installation is not eligible for free allocation.

Example 5: A carbon black plant<sup>7</sup> recovers heat from the exothermic production process and delivers it to a district heating network. In this case, the heat delivered to the district heating network is eligible for free allocation<sup>8</sup>.

Example 6: A carbon black plant<sup>7</sup> recovers heat from the exothermic production process and delivers it within the same installation to a CHP unit co-fired with natural gas and covered by the same EU ETS permit. The CHP delivers heat and electricity to a district heating network and the grid. In this case, the carbon black is allocated via a product benchmark sub-installation, the heat produced by the CHP installation is eligible for free allocation and allocated via a district heating sub-installation (if not all heat is exported to district heating then the remainder may be eligible for allocation under a heat benchmark sub-installation). The produced electricity, which is partly produced using exothermic heat, is not eligible for free allocation.

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<sup>7</sup> For the production of carbon black the plant in the example is allocated based on a product benchmark sub-installation

<sup>8</sup> Note, though, that the allocation would be made to a district heating sub-installation.



**List of technical connections**

Connections for import or export of heat, CO<sub>2</sub> or waste gas across the boundary of the EU ETS permit are called technical connections. Each operator should clearly list all its technical connections. All connected installations and entities have to be identified and notified to the competent authorities. *See Guidance Document 3 on Data Collection for further guidance on data reporting.*

Heat flow is a common type of technical connection. Heat flows between sub-installations within the same installation are not considered technical connections, only heat flows across EU ETS permit boundaries are. All technical connections need to be listed, including for heat flows which are not eligible for free allocation. All data including those on, or provided by, non-ETS entities related to cross-boundary heat flows are subject to independent verification.

### 3 Heat flows between one heat exporter and one heat importer

*This section explains the preliminary allocation calculation methodology related to direct cross-boundary heat flows, as used for the regular NIMs phase. For guidance on the calculation of the final allocation and how the allocation calculation differs for situations such as new entrants, installations operating less than two years in the baseline period or activity level changes, please refer to Guidance Document 2.*

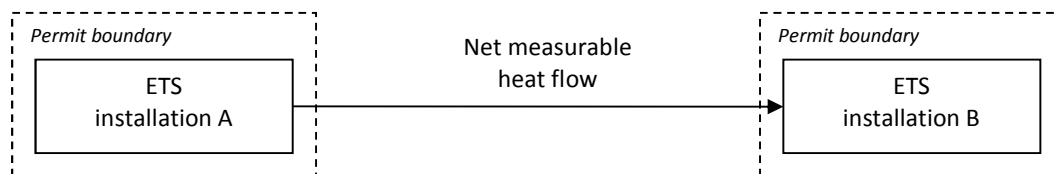
#### 3.1 Heat flows between two ETS installations

This section discusses the allocation in the case of heat flows from one installation to another installation, where both installations are in the EU ETS.

##### Schematic

Figure 1 shows the situation discussed in this section.

**Figure 1. Heat flows from an ETS installation to another ETS installation**



##### Preliminary allocation

As a general rule, free allocation is given to the heat consuming installation. An overview of the preliminary allocation is given Table 1.

##### Carbon leakage exposure factor (CLEF)

The carbon leakage exposure factor to be used is the CLEF applicable to the heat consumer, i.e. the consuming sub-installation(s) of the importing ETS installation.

**Table 1. Overview of preliminary allocation in case of a heat flow from one ETS installation to another ETS installation**

Preliminary allocation to heat exporting installation A	Preliminary allocation to heat importing installation B
<p style="text-align: center;"><b>No allocation is given to the heat producer when exporting to ETS</b></p> <p>The part of the ETS installation A's heat that is exported to other ETS installations does not receive any allowances</p>	<p><i>In case the heat is imported to be used within the perimeter of a product benchmark sub-installation:</i></p> <p>The imported heat is taken into account in the product benchmark<sup>9</sup>.</p> $F_{P,preliminary} = BM_P \cdot HAL_P \cdot CLEF_P$ <p><i>Allocation = Product Benchmark x amount of Product produced x Carbon leakage exposure factor of the heat consumer</i></p> <p>where:</p> <p><i>F<sub>P,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUA/year)</p> <p><i>BM<sub>P</sub></i>: product benchmark (expressed in EUA/tonne)</p> <p><i>HAL<sub>P</sub></i>: the product-related related historical activity level (expressed in tonnes/year)</p> <p><i>CLEF<sub>P</sub></i>: carbon leakage exposure factor of the product benchmark</p>

<sup>9</sup> Allocation to all heat, including imported heat, used to produce a product covered by a product benchmark is included in the allocation to the product benchmark, and therefore does not receive any additional allocation under a different sub-installation. See Guidance Document 2 for further explanation on the way that product benchmarks are defined.

*In case the heat is imported to be used outside the perimeter of a product benchmark sub-installation:*

The heat imported from ETS installations is taken into account in the historical activity level of the importing heat sub-installation:

$$F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$$

*Allocation = Heat Benchmark x Heat consumed x Carbon leakage exposure factor of the heat consumer*

where:

*F<sub>H,preliminary</sub>*: annual preliminary allocation to the heat importing sub-installation (expressed in EUAs/year)

*BM<sub>H</sub>*: heat benchmark (expressed in EUAs/TJ)

*HAL<sub>H</sub>*: the heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of annual heat consumed over the baseline period.

*CLEF<sub>H</sub>*: carbon leakage exposure factor of the consumer's heat sub-installation

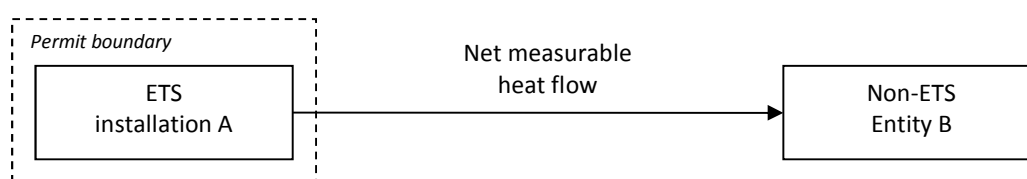
## 3.2 Heat flows from an ETS installation to a non-ETS installation or entity

This section discusses allocation in the case heat flows from an EU ETS installation to an installation or entity that is not covered by the EU ETS. Whether the non-ETS heat consumer can be district heating<sup>10</sup> or not can have an impact on allocation. Both options are described below.

### Schematic

Figure 2 below shows the situation discussed in this section:

**Figure 2. Heat flows from an ETS installation to a non-ETS entity**



### Preliminary allocation

In this situation, where the heat is consumed outside of the EU ETS, free allowances are given to the heat producer for the heat exported. In case heat is exported to district heating the heat is eligible under the district heating (DH) sub-installation<sup>11</sup> of ETS installation A, otherwise the installation is allocated under a heat benchmark sub-installation. An overview of the preliminary allocation is given in Table 2.

### Carbon leakage exposure factor

The non-ETS entities are by default deemed not exposed to carbon leakage. The district heating sub-installation is by definition not exposed to carbon leakage, for other heat flows to non-ETS the CLEF for carbon leakage exposed sectors can only be used if the heat exporter provides satisfactory evidence that it exports heat to a non-ETS entity that is exposed to a significant risk of carbon leakage: the operator will for example provide a list of his customers consuming the heat, along with the NACE codes of these customers and the amounts of heat delivered to them. In absence of such evidence the CLEF for sectors not exposed to carbon leakage is to be used. For the case of district heating the

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<sup>10</sup> 'district heating' means 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. (FAR, Art.3(e))

<sup>11</sup> Only for calculation purposes, in the case heat is exported to a district heating system, a 'virtual' DH heating sub-installation is defined, for which the free allowances related to the exported heat are assigned to, before the total preliminary allocation for the heat producing ETS installation is summed over its sub-installation. For more detail, see [section xxx](#) of this document and *Guidance Document 1 on general allocation methodology*.

carbon leakage exposure factor has been fixed at 0.3 for the entire 4<sup>th</sup> Phase (Art. 26(3) of the FAR). *See also Guidance Document 2 for guidance on sub-installation split.*

If the heat is exported to one or more non-ETS entities with different carbon leakage exposure factors, then the heat exporting sub-installation needs to be split in two sub-installations. Section 4.1 considers this situation in more detail.

**Table 2. Overview of preliminary allocation in case of a heat flow from an ETS installation to a non-ETS entity**

Preliminary allocation to heat exporting sub-installation A	Preliminary allocation to non-ETS heat importer B
<p><u>In case non-ETS entity B has (wholly or partially) an activity other than district heating:</u> The heat exporting sub-installation to non-ETS other than district heating is by definition a heat benchmark sub-installation</p> <p>The heat exported to non-ETS entities is taken into account in the historical activity level of the heat exporting sub-installation.</p> $F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$ <p>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage exposure factor</p> <p>where:</p> <p><math>F_{H,preliminary}</math>: annual preliminary allocation to the heat exporting sub-installation (expressed in EUAs/year)</p> <p><math>BM_H</math>: heat benchmark (expressed in EUAs/TJ)</p> <p><math>HAL_H</math>: the heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of annual measurable heat produced and exported to non-ETS entity over the baseline period, unless used for electricity production.</p> <p><math>CLEF_H</math>: The carbon leakage exposure factor for non-carbon leakage exposed sectors is used, unless the heat exporter provides evidence that it exports heat to a non-ETS entity that is exposed to a significant risk of carbon leakage.</p>	<p>Non-ETS entities cannot receive free allocation</p>
<p><u>In case non-ETS entity B is (wholly or partially) a district heating:</u> The district heat exporting sub-installation of installation A is a district heating sub-installation</p> <p>The heat exported to district heating is taken into account in the historical activity level of the district heating sub-installation.</p> $F_{DH,preliminary} = BM_H \cdot HAL_{DH} \cdot CLEF_{DH}$ <p>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage</p>	

*exposure factor*

where:

- $F_{DH,preliminary}$ : annual preliminary allocation to the district heat exporting sub-installation (expressed in EUAs/year)
- $BM_H$ : heat benchmark (expressed in EUAs/TJ)
- $HAL_{DH}$ : the district heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of annual measurable heat produced and exported for district heating.
- $CLEF_{DH}$ : The carbon leakage exposure factor district heating is used.



### 3.3 Heat flows from a non-ETS entity to an ETS installation

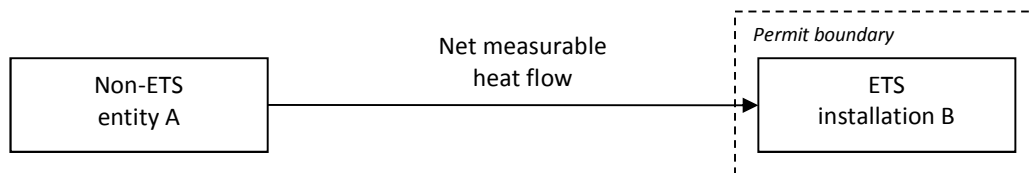
This type of heat flow occurs when a heat importing installation is in the EU ETS and receives heat from a heat exporter that is not in the EU ETS because it does not perform an activity listed in Annex I of the EU ETS Directive. This can for example be:

- An installation for the incineration of municipal waste selling the heat produced to a ceramics plant
- A 5 MW CHP selling the heat produced to a mineral wool plant

#### Schematic

Figure 3 below shows the situation discussed in this section:

**Figure 3. Heat flows from a non-ETS entity to an ETS installation**



#### Preliminary allocation

The consumption of heat produced outside the EU ETS is not eligible for free allocation. An overview of the preliminary allocation is given in Table 3.

#### Carbon leakage exposure factor

The carbon leakage exposure factor to be used is the carbon leakage exposure factor for the heat consuming sub-installation.

**Table 3. Overview of preliminary allocation in case of a heat flow from a non-ETS installation to an ETS installation**

Preliminary allocation to non-ETS heat producer A	Preliminary allocation to heat importing installation B
<p>Non-ETS entities cannot receive free allocation</p>	<p><i>In case the heat is imported to be used within the perimeter of a product benchmark sub-installation:</i></p> <p>The imported heat is not eligible for free allocation. The imported heat is however taken into account by the product benchmark<sup>9</sup>. The allocation therefore needs to be corrected for the amount of imported heat.</p> $F_{P,preliminary} = (BM_P \cdot HAL_P - BM_H \cdot H_{import}) \cdot CLEF_P$ <p><i>Allocation = (Product Benchmark x amount of Product produced – Heat Benchmark x non-ETS Heat imported) x Carbon leakage exposure factor of the heat consuming sub-installation</i></p> <p>where:</p> <p><i>F<sub>P,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUA/year)</p> <p><i>BM<sub>P</sub></i>: product benchmark (expressed in EUA/tonne)</p> <p><i>HAL<sub>P</sub></i>: the product-related related historical activity level (expressed in tonnes/year)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUA/TJ)</p> <p><i>H<sub>import</sub></i>: the heat import in the same baseline years as used for <i>HAL<sub>P</sub></i> (expressed in TJ/year)</p> <p><i>CLEF<sub>P</sub></i>: carbon leakage exposure factor of the heat consuming sub-installation</p>
	<p><i>In case the heat is imported to be used outside the perimeter of a product benchmark sub-installation:</i></p> <p>The heat imported from non-ETS entities is not taken into account in the determination of the historical activity level. As a consequence, the heat benchmark sub-installation does not receive any allowances for the heat imported from non-ETS entities.</p>

## 4 Heat flows involving multiple heat exporters and importers

This section discusses situations in which more than one heat exporter or importer is involved.

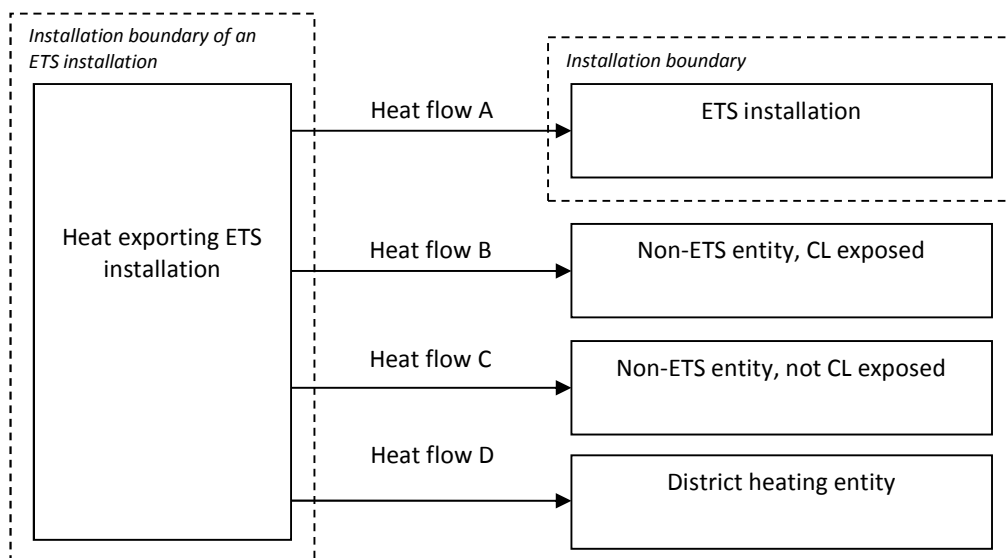
### 4.1 One heat exporter and multiple heat importers

This section considers the case in which one ETS installation exports heat to both ETS installations and non-ETS entities with different carbon leakage (CL) exposure factors.

#### Schematic

Figure 4 shows the situation discussed in this section. The heat exporting installation needs to be divided into different sub-installations (see *Guidance Document 2 on Allocation Methodologies*)

Figure 4. An ETS installation exports heat to both ETS installations and non-ETS entities



#### Preliminary allocation

The preliminary allocation calculation is shown in Table 4, determined using the cases as discussed in sections 3.1 and 3.2 as building blocks:

- Heat export by an ETS installation to another ETS installation (heat flow A) is discussed in section 3.1. In this case the allocation goes to the heat importer, the exporting ETS installation does not receive allocation for the exported heat and therefore does not need any additional sub-installation for the exported heat.
- Heat flows to non-ETS entities can be of 3 types, as discussed in section 3.2. These 3 types each have a different CLEF, depending on whether the non-ETS consumption of the heat flow is district heating (heat flow D), exposed to carbon leakage (heat flow B) or not exposed to carbon leakage (heat flow C). For these 3

types of heat flows the allocation goes to the exporter. Each type of heat flow requires a different type of sub-installation.

**Carbon leakage exposure factor**

For the ETS heat consumers the carbon leakage exposure factor to be used is the CLEF of the heat consuming sub-installation.

The non-ETS entities are by default deemed not exposed to carbon leakage. The district heating sub-installation is by definition not exposed to carbon leakage, for other heat flows to non-ETS the CLEF for carbon leakage exposed sectors can only be used if the heat exporter provides satisfactory evidence that it exports heat to a non-ETS entity that is exposed to a significant risk of carbon leakage: the operator will for example provide a list of his customers consuming the heat, along with the PRODCOM codes of these customers and the amounts of heat delivered to them. In absence of such evidence the CLEF for sectors not exposed to carbon leakage is to be used. For the case of district heating the carbon leakage exposure factor has been fixed at 0.3 for the entire 4<sup>th</sup> phase (Art. 26(3) of the FAR). *See also Guidance Document 2 for guidance on sub-installation split.*

**Table 4. Overview of preliminary allocation in case an ETS installation exports heat to both ETS sub-installations and non-ETS consumers with different carbon leakage exposure factors.**

Heat flow	Preliminary allocation
<p>Heat flow from an ETS installation to another ETS installation:  <b>Allocation goes to the ETS heat importer</b>  <u>Heat flow A</u></p>	<p><i>The part of the ETS installation that <b>exports</b> heat to other ETS installations does not receive any allowances for the heat produced and exported</i></p> <hr/> <p><i>In case the heat is <b>imported</b> to be used <u>within</u> the perimeter of <b>a product benchmark sub-installation</b>:</i></p> <p>The imported heat is taken into account in the product benchmark<sup>9</sup>.</p> $F_{P,preliminary} = BM_P \cdot HAL_P \cdot CLEF_P$ <p><i>Allocation = Product Benchmark x amount of Product produced x Carbon leakage exposure factor of the heat consumer</i></p> <p>where:</p> <p><math>F_{P,preliminary}</math>: annual preliminary allocation to the heat importing sub-installation (expressed in EUA/year)  <math>BM_P</math>: product benchmark (expressed in EUA/tonne)  <math>HAL_P</math>: the product-related related historical activity level (expressed in tonnes/year)  <math>CLEF_P</math>: carbon leakage exposure factor of the product benchmark</p> <hr/> <p><i>In case the heat is <b>imported</b> to be used <u>outside</u> the perimeter of <b>a product benchmark sub-installation</b>:</i></p> <p>The heat imported from ETS installations is taken into account in the historical activity level of the importing heat sub-installation:</p> $F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$ <p><i>Allocation = Heat Benchmark x Heat consumed x Carbon leakage exposure factor of the heat consumer</i></p> <p>where:</p> <p><math>F_{H,preliminary}</math>: annual preliminary allocation to the heat importing sub-installation (expressed in EUAs/year)  <math>BM_H</math>: heat benchmark (expressed in EUAs/TJ)  <math>HAL_H</math>: the heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of annual heat consumed over the baseline period.  <math>CLEF_H</math>: carbon leakage exposure factor of the consumer's heat sub-installation</p>
<p>Heat flow from an ETS installation to a non-ETS entity other than</p>	<p><i>In case of heat <b>export</b> to a non-ETS entity other than for district heating, the heat <b>exporting</b> sub-installation by definition is a heat benchmark sub-installation</i></p>

<p>district heating:  <b>Allocation goes to the ETS heat exporter</b>  <u>Heat flows B and C</u></p>	<p>The heat exported to non-ETS entities is taken into account in the historical activity level of the heat exporting sub-installation:</p> $F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$ <p style="text-align: center;"><i>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage exposure factor</i></p> <p>where:</p> <p><math>F_{H,preliminary}</math>: annual preliminary allocation to the heat exporting sub-installation (expressed in EUAs/year)</p> <p><math>BM_H</math>: heat benchmark (expressed in EUAs/TJ)</p> <p><math>HAL_H</math>: the heat-related historical activity level (expressed in TJ/year); i.e., the annual arithmetic mean of historical heat produced and exported to non-ETS entities over the baseline period, unless used for electricity production or district heating.</p> <p><math>CLEF_H</math>: The carbon leakage exposure factor for non-carbon leakage exposed sectors is used (Heat flow C), unless the heat exporter provides evidence that it exports heat to a non-ETS entity that is exposed to a significant risk of carbon leakage (Heat flow B)</p> <hr/> <p><i>Non-ETS entities cannot receive free allocation</i></p>
<p>Heat flow from an ETS installation to a non-ETS district heating entity: <b>Allocation goes to the ETS heat exporter</b>  <u>Heat flow D</u></p>	<p><i>In case of heat <b>export</b> for district heating, the exporting ETS installation receives allocation under a district heating sub-installation</i></p> <p>The heat exported to district heating is taken into account in the historical activity level of the district heating sub-installation.</p> $F_{DH,preliminary} = BM_H \cdot HAL_{DH} \cdot CLEF_{DH}$ <p style="text-align: center;"><i>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage exposure factor</i></p> <p>where:</p> <p><math>F_{DH,preliminary}</math>: annual preliminary allocation to the district heat exporting sub-installation (expressed in EUAs/year)</p> <p><math>BM_H</math>: heat benchmark (expressed in EUAs/TJ)</p> <p><math>HAL_{DH}</math>: the district heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of annual measurable heat produced and exported for district heating.</p> <p><math>CLEF_{DH}</math>: The carbon leakage exposure factor of district heating is used.</p> <hr/> <p><i>Non-ETS entities cannot receive free allocation</i></p>

## 4.2 Heat flows from an ETS exporter via a heat distributor

This section discusses allocation in the case of heat flows from an ETS installation to a heat distributor which distributes heat to both ETS and non-ETS consumers.

### Definition of a heat distributor

A heat distributor is an entity which acts as an intermediary between heat producers and the heat consumers. This means that in contrast to the situation described in section 4.1:

- The heat distributor is neither producing nor consuming the heat.
- There is no direct contractual relation between the heat producer and the heat consumers concerning the delivery of heat.

In case there exists a direct heat delivery contract between heat producers and consumers, but the heat physically passes through an intermediate heat distributor, the rules described in this section don't need to be applied. In that case, the intermediate party is not considered as a separate entity, but rather as part of the heat transfer infrastructure. The standard rules for heat flows apply (allocation to ETS heat consumers unless heat is imported from non-ETS heat producers, allocation to ETS heat producers if consumers are not covered by the ETS, see section 3).

In some cases an installation can be both a heat producer covered under EU ETS and at the same time a heat distributor that transfers heat between other installations. In such cases the installation will be virtually split into two parts: the ETS heat production part A transfers the produced heat to the non-ETS heat distributor part B. Even though in this case parts A and B are within the same installation, the allocation for the heat is analogous to if the parts weren't in the same installation: the allocation goes to ETS heat producer A as the heat is regarded as delivered to a non-ETS entity B, see section 3.2).

### Schematic

Figure 5 below shows the situation discussed in this section.

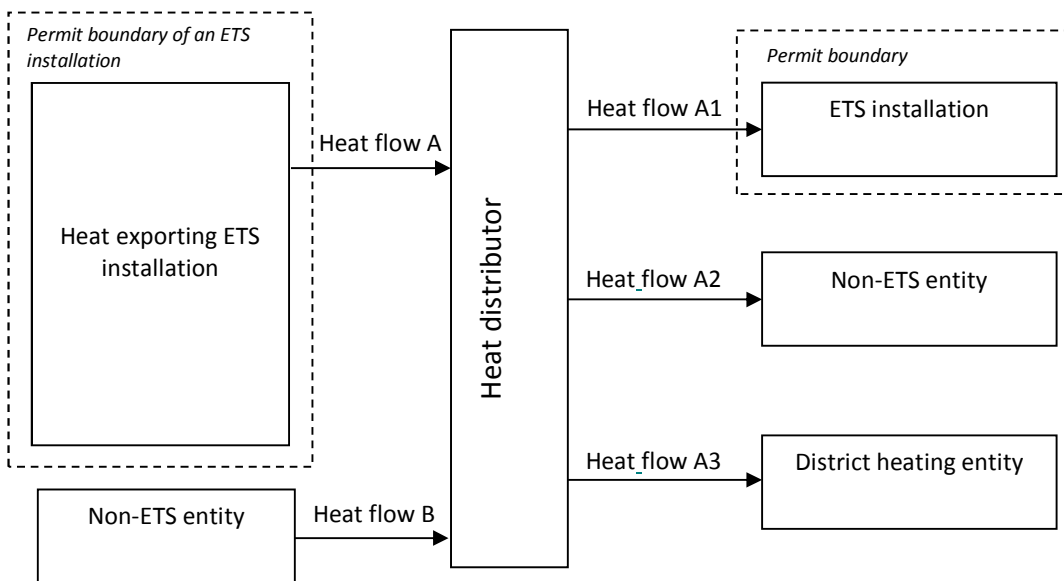
### Preliminary allocation

For the purpose of allocation, the heat distributor is regarded as a non-ETS entity, regardless of whether the installations to which it exports heat are ETS or non-ETS. Consequently:

- Heat producers that supply the heat distributor receive free allowances for the export to non-ETS (if the producer is covered by EU ETS);
- Heat consumers that are supplied by the heat distributor don't receive free allowances, because the heat is supplied by a non-ETS entity: the heat distributor.

An overview of the preliminary allocation is given in Table 5. The rules for heat transfer via a heat distributor also apply in complex heat networks linking multiple producers and consumers, see Section 4.4 for an example of a more complex network.

**Figure 5. Heat flows from an ETS installation via a non-ETS distributor**



### **Carbon leakage exposure factor**

The carbon leakage exposure factor to be used is the CLEF for non-carbon leakage exposed sectors unless evidence on the carbon leakage exposure of the heat consumer can be provided), or unless evidence that the heat is consumed for district heating can be provided .

Such data can only be delivered to the ETS exporter by the heat distributor on a voluntary basis as there are no legal obligations for these entities in the context of the data collection. The ETS exporting installation will for example need a list of his customers consuming the heat, along with the PRODCOM codes of these customers and the amounts of heat delivered to them. In absence of such evidence the CLEF for sectors not exposed to carbon leakage is to be used.



**Table 5. Overview of preliminary allocation in case ETS installation exports heat via a non-ETS heat distributor to heat importers**

Entity	Preliminary allocation
ETS installation exporting heat to heat distributor (Heat flow A)	<p><i>The heat exporting sub-installation by default is a heat benchmark sub-installation. The default CLEF is for non-carbon leakage exposed sectors.</i></p> <p>In the default case, the heat exported by the ETS exporter to the heat distributor (a non-ETS entity) is taken into account in the historical activity level of the heat exporting sub-installation:</p> $F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$ <p><i>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage exposure factor</i></p> <p>where:</p> <p><math>F_{H,preliminary}</math>: annual preliminary allocation to the heat exporting sub-installation (expressed in EUAs/year)</p> <p><math>BM_H</math>: heat benchmark (expressed in EUAs/TJ)</p> <p><math>HAL_H</math>: the heat-related historical activity level (expressed in TJ/year); i.e., the annual arithmetic mean of historical heat produced and exported to non-ETS entities over the baseline period, unless used for electricity production.</p> <p><math>CLEF_H</math>: The carbon leakage exposure factor for non-carbon leakage exposed sectors is used in the default case</p> <p><i>If sufficient evidence can be provided, the following exceptions to the default allocation calculation are possible:</i></p> <ul style="list-style-type: none"> <li>• In case of a direct heat supply contract between the ETS heat producer and an ETS heat consumer, the allocation goes to the consumer instead of the producer. See section 3.1 for the preliminary allocation calculation in this case (may apply for heat flow A1).</li> <li>• In case of a direct heat supply contract between the ETS heat producer and a non-ETS heat consumer, the ETS heat producer can apply for allocation under its heat benchmark sub-installation. The preliminary allocation calculation is equal to that of the default case above, but CLEF value depends on the carbon leakage exposure of the non-ETS consumer (may apply for heat flow A2).</li> <li>• In case of proven heat supply by an ETS heat producer, via a heat distributor, to district heating, the ETS heat producer can apply for allocation under its district heating sub-installation. See section 3.2 for the preliminary allocation calculation in this case (may apply for heat flow A3).</li> </ul>
Non-ETS installation exporting heat to heat distributor (Heat flow B)	Non-ETS installations cannot receive free allocation.

Heat distributor	Heat distributors are regarded as non-ETS entities and cannot receive free allocation (in case the heat distributor also produces and exports heat, the heat exporting part receives allocation analogous to an ETS installation exporting to a heat distributor).
ETS installation importing heat from the heat distributor (Heat flow A1)	As the heat distributor is regarded as non-ETS entity, this installation will not receive any allocation for the imported heat (an exception to this case is possible; see first exception in the ones listed in the first line of this table).
Non-ETS installations importing heat from heat distributor (Heat flows A2 and A3)	Non-ETS installations cannot receive free allocation.
ETS consumers importing from a heat distributor (heat flow A1)	<p><i>In the default case, heat import from a non-ETS entity such as a heat distributor is not eligible for allocation</i></p> <p><i>In case the heat is imported to be used <u>within</u> the perimeter of a <u>product benchmark sub-installation</u> (heat flow A1):</i></p> <p>The imported heat is not eligible for free allocation since it comes from a non-ETS entity. The imported heat is however taken into account by the product benchmark<sup>9</sup>. The allocation therefore needs to be corrected for the amount of imported heat.</p> $F_{P,preliminary} = (BM_P \cdot HAL_P - BM_H \cdot H_{import}) \cdot CLEF_P$ <p style="text-align: center;"><i>Allocation = (Product Benchmark x amount of Product produced – Heat Benchmark x non-ETS Heat imported) x Carbon leakage exposure factor of the heat consuming sub-installation</i></p> <p>where:</p> <p><i>F<sub>P,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUA/year)</p> <p><i>BM<sub>P</sub></i>: product benchmark (expressed in EUA/tonne)</p> <p><i>HAL<sub>P</sub></i>: the product-related related historical activity level (expressed in tonnes/year)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUA/TJ)</p> <p><i>H<sub>import</sub></i>: the heat import in the same baseline years as used for <i>HAL<sub>P</sub></i> (expressed in TJ/year)</p> <p><i>CLEF<sub>P</sub></i>: carbon leakage exposure factor of the heat consuming sub-installation</p> <p>An exception is possible in case of a direct heat supply contract between the ETS heat producer and an ETS heat consumer, then the allocation goes to the consumer instead of the producer. See section 3.1 for the preliminary allocation calculation in this case (may apply for heat flow A1).</p> <p><i>In case the heat is imported to be used <u>outside</u> the perimeter of a <u>product benchmark sub-installation</u> (heat flow A1):</i></p>

	<p>In the default case, the heat imported from non-ETS entities is not taken into account in the determination of the historical activity level of the importing ETS installation. As a consequence, the heat benchmark sub-installation does not receive any allowances for the heat imported from the heat distributor, a non-ETS entity.</p> <p>An exception is possible in case of a direct heat supply contract between the ETS heat producer and an ETS heat consumer, then the allocation goes to the consumer instead of the producer. See section 3.1 for the preliminary allocation calculation in this case (may apply for heat flow A1).</p>
Non-ETS consumers	Non-ETS entities cannot receive free allocation

### **4.3 Heat flows from an ETS exporter to district heating**

Special provisions apply to heat exported for the purposes of district heating. In line with Art. 10b(4) of the EU ETS Directive, the CLEF will not decrease after 2026 for heat exported for the purposes of district heating, in contrast with other non-ETS sectors.

#### **Definition of district heating**

Art. 3(e) of the FAR gives the following definition of district heating:

*“‘district heating’ means 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.”*

In practical terms, this means that district heating covers measurable heat distributed through a network to non-ETS buildings or sites, for the purpose of any of the following:

- Heating of space
- Production of domestic hot water
- Cooling of space

and excludes heat used for:

- The production of products
- The production of electricity

This heat can be exported by an ETS installation to a district heating network directly, or via a heat distributor. In the latter case, the ETS installation will need to provide proof of final export to district heating to apply the relevant CLEF (see section 4.2 for more information).

#### **Schematic**

Figure 4 in section 4.1 provides an example of heat exported from an ETS installation directly to a district heating network. Figure 5 in section 4.2 provides an example of heat exported from an ETS installation to a district heating network via a heat distributor.

#### **Preliminary allocation**

District heating is always considered non-ETS. Therefore, preliminary free allocation will be given to the heat exporting ETS installation.

#### **Determination of emissions related to heat exported for the purpose of district heating**

When heat is exported by a CHP for the purpose of district heating, the values for the emissions related to heat production need to be determined as the total emissions need to be split into a heat-related and an electricity-related part.

In determining the amount of emissions related to heat exported for the purpose of district heating, note that in the case of CHP units only the amount of CHP-fuel input

attributable to usable CHP heat production should be taken into account. Therefore the emissions related to CHP heat production ( $Em_{CHP,Heat}$ ) is calculated from the total emissions of the CHP<sup>12</sup> ( $Em_{CHP}$ ) as follows<sup>13</sup>:

$$Em_{CHP,Heat} = Em_{CHP} \cdot \frac{\eta_{heat}/\eta_{ref,heat}}{\eta_{el}/\eta_{ref,el} + \eta_{heat}/\eta_{ref,heat}}$$

Where:

$Em_{CHP,Heat}$	is the emissions allocated to the production of CHP heat
$Em_{CHP}$	is the total emissions caused by CHP-fuel input
$\eta_{heat}$	is the efficiency of the heat production (=CHP heat / CHP-fuel input)
$\eta_{ref,heat}$	is the reference efficiency of a stand-alone boiler
$\eta_{el}$	is the efficiency of the electricity production (=CHP electricity / CHP-fuel input)
$\eta_{ref,el}$	is the reference efficiency of electricity production without CHP.

The efficiencies  $\eta_{heat}$  and  $\eta_{el}$  will be based either on technical documentation (design values) of the installation, or on suitable measurements which have been independently verified. If neither of these approaches are feasible, conservative default values of  $\eta_{heat} = 0.7$  and  $\eta_{el} = 0.525$  should be used.

For the reference efficiencies  $\eta_{ref,heat}$  and  $\eta_{ref,el}$  to be used, see Commission Delegated Regulation 2015/2402 of 12 October 2015 establishing harmonised efficiency reference values for the separate production of electricity and heat in application of Directive 2012/27/EU of the European Parliament and of the Council.

If not all the measurable heat from a certain boiler or CHP is exported for the purpose of district heating, because the heat is consumed by several installations or sub-installations, the amount of emissions related to the heat exported for the purpose of district heating ( $Emissions_{DH}$ ) is determined as follows:

$$Emissions_{DH} = Emissions_{heat} \cdot \frac{Q_{DH}}{Q_{produced}}$$

$Q_{DH}$	is the amount of heat exported for the purpose of district heating.
$Q_{produced}$	is the total amount of heat produced in this boiler or CHP under consideration.

### Carbon leakage exposure factor

A specific carbon leakage exposure factor is to be used for heat exported for the purposes of district heating. This factor is the same as non-carbon leakage exposed sectors for the first 5-year period of 2021-2015, and stays the same for the second 5-

year period of 2016-2020 (in contrast with other non-carbon leakage exposed sectors for which the factor decreases after 2016).

In the case of heat exported for the purposes of district heating, the carbon leakage exposure factor is therefore a constant value of 30% over the whole Phase 4.

**Table 6. Overview of preliminary allocation in case an ETS installation exports heat for the purpose of district heating**

Exporter/ importer	Preliminary allocation
ETS exporter	<p><i>The following formula is to be used either if heat is directly exported for the purpose of district heating, or if heat is exported via a heat distributor AND if proof has been provided by the heat distributor that heat is exported for the purpose of district heating. In the case of export of heat via a heat distributor with no proof of use of the heat for district heating, then the situation should be treated as export of heat to non-ETS (see section 3.2 and Table 2).</i></p> <p><i>The heat exporting sub-installation is by definition a district heating sub-installation</i></p> <p>The heat exported to district heating is taken into account in the historical activity level of the district heating sub-installation.</p> $F_{DH,preliminary} = BM_H \cdot HAL_{DH} \cdot CLEF_{DH}$ <p><i>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage exposure factor</i></p> <p>where:</p> <p><i>F<sub>DH,preliminary</sub></i>: annual preliminary allocation to the district heat exporting sub-installation (expressed in EUAs/year)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUAs/TJ)</p> <p><i>HAL<sub>DH</sub></i>: the district heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of annual measurable heat produced and exported for district heating.</p> <p><i>CLEF<sub>DH</sub></i>: the carbon leakage exposure factor for district heating is used.</p> <p>-----</p> <p>-----</p>
Heat distributor	Heat distributors are regarded as non-ETS entities and cannot receive free allocation
District heating	District heating is by definition regarded as a non-ETS entity and therefore cannot receive free allocation

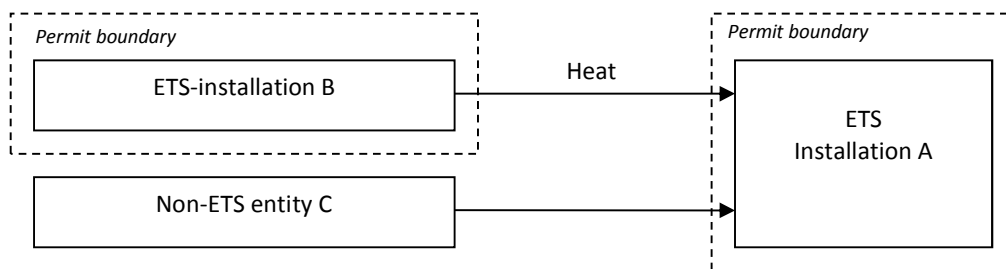
#### 4.4 Multiple heat exporters and one heat importer

This section considers the case in which an ETS heat installation imports heat from both an ETS installation and a non-ETS entity

##### Schematic

Figure 6 below shows the situation discussed in this section.

**Figure 6. An ETS heat installation imports heat from both an ETS installation and a non-ETS entity**



##### Preliminary allocation

Preliminary allocation is shown in Table 7 and is determined using the cases as discussed in sections 3.1 and 3.3 as building blocks:

- Heat import by an ETS sub-installation from an ETS installation: the allocation goes to the heat consumer, see section 3.1.
- Heat import by an ETS sub-installation from a non-ETS entity: heat import from outside ETS is not eligible for allocation, see section 3.3.

##### Carbon leakage exposure factor

The carbon leakage exposure factor to be used is the CLEF for the heat consuming sub-installation.

**Table 7. Overview of preliminary allocation in case an ETS installation imports heat from both an ETS sub-installation and a non-ETS entity.**

Entity	Preliminary allocation
ETS heat consumer A	<p><i>In case the heat is <b>imported</b> to be used within the perimeter of a product benchmark sub-installation:</i></p> <p>The heat imported from ETS (flow A) does not impact the allocation calculation, but the allocation needs to be corrected for the amount of heat imported from the non-ETS installation.</p> $F_{P,preliminary} = (BM_P \cdot HAL_P - BM_H \cdot H_{non-ETS, import}) \cdot CLEF_P$ $F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$ <p><i>Allocation = (Product Benchmark x amount of Product produced – Heat Benchmark x Heat imported) x Carbon leakage exposure factor of heat consumer</i></p> <p>where:</p> <p><i>F<sub>P,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUA/year)</p> <p><i>BM<sub>P</sub></i>: product benchmark (expressed in EUA/tonne)</p> <p><i>HAL<sub>P</sub></i>: the product-related related historical activity level (expressed in tonne)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUA/TJ)</p> <p><i>H<sub>non-ETS, import</sub></i>: the heat import from the non-ETS entities in the same base years as used for <i>HAL<sub>P</sub></i> (expressed in TJ/year)</p> <p><i>CLEF<sub>P</sub></i>: carbon leakage exposure factor of the heat consuming product benchmark sub-installation</p>
	<p><i>The heat importing sub-installation is not a product benchmark sub-installation</i></p> <p>The heat imported from ETS installations is taken into account in the historical activity level of the heat importing sub-installation. The heat imported from non-ETS entities is not eligible for free allocation:</p> $F_{H,preliminary} = BM_H \cdot HAL_H \cdot EF_C$ $F_{H,preliminary} = BM_H \cdot HAL_{H,eligible} \cdot CLEF_H$ <p><i>Allocation = Heat Benchmark x Heat consumed (excl. heat from non-ETS entity) x Carbon leakage exposure factor of heat consumer</i></p> <p>where:</p> <p><i>F<sub>H,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUAs/year)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUAs/TJ)</p> <p><i>HAL<sub>H, eligible</sub></i>: the heat-related historical activity level (expressed in TJ/year), by definition this historical activity level does not consider the heat imported from non-ETS entities.</p> <p><i>CLEF<sub>H</sub></i>: carbon leakage exposure factor of the heat consuming sub-installation</p>
ETS heat exporter B	The part of the ETS installation that exports heat to other ETS installations does not receive any allowances for the heat export
Non-ETS exporter C	Non-ETS entities cannot receive free allocation



## 5 Special allocation examples

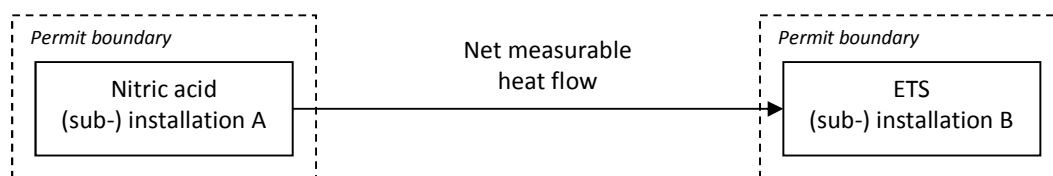
### 5.1 Heat flows from a nitric acid benchmark sub-installation to another sub-installation

This section discusses the allocation in case of heat flows from an installation that produces products covered by the nitric acid benchmark and another sub-installation, (see Art. 26(5) of the FAR)

#### Schematic

Figure 7 shows the situation discussed in this section.

**Figure 7. Heat flows from a nitric acid benchmark sub-installation to another sub-installation**



#### Preliminary allocation

As a general rule, the preliminary allocation for the nitric acid benchmark (sub-) installation A will be calculated based on the product benchmark for nitric acid and its historic activity level. In the case of the nitric acid benchmark, the heat produced within the boundaries of the nitric acid sub-installation and exported outside of the sub-installation boundary is allocated under the nitric acid benchmark, so the exported heat shouldn't receive allocation under another sub-installation of the same or another installation.

Therefore the preliminary allocation for the heat consuming (sub-) installation B needs to be adjusted for the allowances related to the nitric acid benchmark heat consumed, since the corresponding allowances are allocated to the nitric acid producer.

An overview of the preliminary allocation is given Table 8.

#### Carbon leakage exposure factor

The carbon leakage exposure factor to be used in the determination of the allocation to (sub-) installation B is the CLEF for the heat consuming sub-installation.

**Table 8. Overview of preliminary allocation in case of a heat flow from a nitric acid installation to another(sub-) installation or entity**

Preliminary allocation to heat exporting nitric acid (sub-)installation A	Preliminary allocation to heat importing sub-installation B
<p><b>Allocation is given to the nitric acid producer based on the nitric acid benchmark, but no additional allocation for the exported heat</b></p> <p>A (sub-)installation that exports heat to another (sub-)installation never receives any allowances for the heat export</p>	<p><i>In case the heat is imported to be used within the perimeter of a product benchmark sub-installation:</i> The imported heat is not eligible for free allocation. The imported heat is however taken into account by the product benchmark<sup>9</sup>. The allocation therefore needs to be corrected for the amount of imported heat.</p> $F_{P,preliminary} = (BM_P \cdot HAL_P - BM_H \cdot H_{nitric\ acid,\ import}) \cdot CLEF_P$ <p style="text-align: center;"><i>Allocation = (Product Benchmark x amount of Product produced – Heat Benchmark x Nitric acid heat imported) x Carbon leakage exposure factor of the heat consuming sub-installation</i></p> <p>where:</p> <p><i>F<sub>P,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUA/year)  <i>BM<sub>P</sub></i>: product benchmark (expressed in EUA/tonne)  <i>HAL<sub>P</sub></i>: the product-related related historical activity level (expressed in tonnes/year)  <i>BM<sub>H</sub></i>: heat benchmark (expressed in EUA/TJ)  <i>H<sub>nitric acid, import</sub></i>: the heat import from a nitric acid sub-installation in the same baseline years as used for <i>HAL<sub>P</sub></i> (expressed in TJ/year)  <i>CLEF<sub>P</sub></i>: carbon leakage exposure factor of the heat consuming sub-installation</p> <p><i>In case the heat importing sub-installation is a heat benchmark sub-installation, the heat imported from a nitric acid sub-installation is non-eligible and therefore subtracted from the total heat HAL.</i></p> $F_{H,preliminary} = BM_H \cdot (HAL_H - H_{nitric\ acid,\ import}) \cdot CLEF_C$ <p style="text-align: center;"><i>Allocation = Heat Benchmark x (Total heat consumed – Heat consumed from nitric acid installation) x Carbon leakage exposure factor of the heat consumer</i></p> <p>where:</p> <p><i>F<sub>H,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUAs/year)  <i>BM<sub>H</sub></i>: heat benchmark (expressed in EUAs/TJ)  <i>HAL<sub>H,total</sub></i>: the total heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of over the baseline of the annual heat consumed other than for electricity production or district heating  <i>H<sub>nitric acid, import</sub></i>: the heat import from a nitric acid sub-installation in the same baseline years as used for <i>HAL<sub>H,total</sub></i> (expressed in TJ/year)  <i>CLEF<sub>C</sub></i>: carbon leakage exposure factor of the heat consumer</p>

*In case the heat importing sub-installation is a district heating sub-installation, the heat imported from a nitric acid sub-installation is non-eligible and therefore subtracted from the total district heating HAL.*

$$F_{H,preliminary} = BM_H \cdot (HAL_H - H_{nitric\ acid,\ import}) \cdot CLEF_{DH}$$

*Allocation = Heat Benchmark x (Total heat exported to district heating – Heat consumed from nitric acid installation) x Carbon leakage exposure factor of the heat consumer*

where:

- F<sub>H,preliminary</sub>*: annual preliminary allocation to the heat importing sub-installation (expressed in EUAs/year)
- BM<sub>H</sub>*: heat benchmark (expressed in EUAs/TJ)
- HAL<sub>DH,total</sub>*: the total heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of over the baseline of the annual heat consumed other than for electricity production or district heating
- H<sub>nitric acid, import</sub>*: the heat import from a nitric acid sub-installation in the same baseline years as used for *HAL<sub>H,total</sub>* (expressed in TJ/year)
- CLEF<sub>DH</sub>*: carbon leakage exposure factor of district heating

## 5.2 Heat flows within an integrated paper mill

This section discusses the allocation in case of heat flows within an integrated paper mill. An integrated paper mill includes at least a pulp product benchmark sub-installation and a paper product benchmark sub-installation. It is not uncommon that an integrated paper mill also has a heat benchmark sub-installation, which is only needed if:

- The integrated paper mill also produces products which are not covered by a benchmark
- The integrated paper mill also exports heat to non-ETS entities (other than for district heating, which has its own sub-installation type)

There is a special rule for the pulp and paper industry: only the part of the pulp (short fibre kraft pulp, long fibre kraft pulp, thermo-mechanical pulp and mechanical pulp, sulphite pulp or other pulp not covered by a product benchmark) that is placed on the market is eligible for allocation. Pulp consumed within the integrated paper mill is not eligible for allocation (FAR, Art. 26(6)<sup>14</sup>, which also applies to heat produced or consumed within the pulp benchmark boundary.

The same specific rule applies to pulp producing sub-installations exporting heat to other technically connected sub-installations or installations.

### Schematic

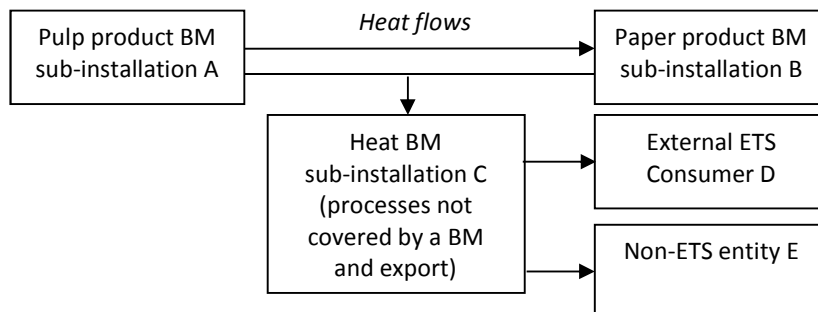
Figure 8 shows the situation discussed in this section.

**Figure 8. Heat flows in an example of an integrated paper mill**

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<sup>14</sup> “Where an installation encompasses sub-installations producing pulp (short fibre kraft pulp, long fibre kraft pulp, thermo-mechanical pulp and mechanical pulp, sulphite pulp or other pulp not covered by a product benchmark) exporting measurable heat to other technically connected sub-installations, the preliminary total amount of emission allowances allocated free of charge shall, without prejudice to the preliminary annual numbers of emission allowances allocated free of charge for other sub-installations of the installation concerned, only take into account the preliminary annual number of emission allowances allocated free of charge to the extent that pulp products produced by this sub-installation are placed on the market and not processed into paper in the same or other technically connected installations.” (FAR Art. 26(6))

*Integrated paper mill or group of technically connected pulp and paper installations*



### **Preliminary allocation**

As a general rule, the preliminary allocation for the integrated paper mill will be based on the sum of the allocation for the two product benchmark sub-installations and the heat benchmark sub-installation. For the determination of the pulp product benchmark sub-installation, a special rule applies: The preliminary allocation for the pulp product benchmark sub-installation A will be calculated based on the product benchmark for the pulp product and the historic activity level of pulp produced and placed on the market and not processed into paper in sub-installation B. As is the case with all product benchmark sub-installations, any heat produced and/or consumed in within the boundaries of a pulp benchmark sub-installation is included in the benchmark definition and therefore this heat will not receive any additional allocation under a heat benchmark sub-installation.

The preliminary allocation for the paper product sub-installation B will be calculated based on the product benchmark for the paper product and the historic activity level of paper production. It will not receive any additional allocation for consumed heat as this is included in the product benchmark.

The heat benchmark sub-installation C will only receive allocation for the heat consumed at the installation outside the boundaries of the product benchmark sub-installations for pulp and paper and for the heat delivered to external non-ETS consumers. In case any heat is exported to district heating it received allocation under a district heating sub-installation.

An overview of the preliminary allocation is given Table 9.

### **Carbon leakage exposure factor**

For both product benchmark sub-installations and the heat benchmark sub-installation(s), the respective carbon leakage exposure factors have to be applied.

**Table 9. Overview of preliminary allocation for an example case of an integrated paper mill with heat flows both within and across its boundaries**

Sub-installation	Preliminary allocation
Preliminary allocation to pulp product sub-installation A	<p><i>The part of the pulp produced in sub-installation A that is transferred to paper sub-installation B is not eligible for allocation</i></p> <p><i>All heat consumed in sub-installation A, even if produced outside of its boundaries, is included in the the benchmark definition, therefore this sub-installation does not receive any additional allowances for the production or consumption of heat</i></p> <hr/> <p>Allocation is given to the pulp product sub-installation based on the respective pulp benchmark, but <u>only</u> for the production of pulp that is put on the market and not processed into paper in sub-installation B.</p> $F_{P,preliminary} = BM_P \cdot HAL_{P,export} \cdot CLEF_P$ <p><i>Allocation = Product Benchmark x amount of produced pulp put on market x Carbon leakage exposure factor of pulp production</i></p> <p>where:</p> <p><i>F<sub>P,preliminary</sub></i>: annual preliminary allocation to the pulp producing sub-installation (expressed in EUA/year)</p> <p><i>BM<sub>P</sub></i>: product benchmark (expressed in EUA/tonne)</p> <p><i>HAL<sub>P,export</sub></i>: the historical activity level related to the production of <u>pulp that is placed on the market and not processed in sub-installation B</u> (expressed in tonne/year)</p> <p><i>CLEF</i>: carbon leakage exposure factor of pulp production</p>
Preliminary allocation to paper product sub-installation B	<p>Allocation is given to the paper product sub-installation based on the respective paper benchmark.</p> $F_{P,preliminary} = BM_P \cdot HAL_P \cdot CLEF_P$ <p><i>Allocation = Product Benchmark x amount of Product produced x Carbon leakage exposure factor of paper production</i></p> <p>where:</p> <p><i>F<sub>P,preliminary</sub></i>: annual preliminary allocation to the paper producing sub-installation (expressed in EUA/year)</p> <p><i>BM<sub>P</sub></i>: product benchmark (expressed in EUA/tonne)</p> <p><i>HAL<sub>P</sub></i>: the product-related historical activity level (expressed in tonne/year)</p> <p><i>CLEF</i>: carbon leakage exposure factor of paper production</p> <p>The sub-installation does not receive any additional allowances for the production or consumption of heat.</p>

<p>Preliminary allocation to heat producing sub-installation C</p>	<p><i>In case heat consumed inside the installation <u>and</u> outside the boundaries of all product benchmark sub-installations:</i></p> $F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$ <p><i>Allocation = Heat Benchmark x heat consumed outside boundaries of product benchmarks x Carbon leakage exposure factor of the heat consuming process</i></p> <p>where:</p> <p><i>F<sub>H,preliminary</sub></i>: annual preliminary allocation to the heat importing sub-installation (expressed in EUAs/year)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUAs/TJ)</p> <p><i>HAL<sub>H,total</sub></i>: the heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of over the baseline of the annual heat consumption outside the boundaries of product benchmark</p> <p><i>CLEF<sub>H</sub></i>: carbon leakage exposure factor of the heat consuming process</p> <hr/> <p><i>In case of heat <b>export</b> to an external ETS consumer D:</i></p> <p>The exporting sub-installation receives no allocation for heat exported to ETS consumers.</p> <hr/> <p><i>In case of heat <b>export</b> to a non-ETS entity (other than for district heating) E:</i></p> <p>The heat exported to non-ETS entities is taken into account in the historical activity level of the heat exporting sub-installation:</p> $F_{H,preliminary} = BM_H \cdot HAL_H \cdot CLEF_H$ <p><i>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage exposure factor</i></p> <p>where:</p> <p><i>F<sub>H,preliminary</sub></i>: annual preliminary allocation to the heat exporting sub-installation (expressed in EUAs/year)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUAs/TJ)</p> <p><i>HAL<sub>H</sub></i>: the heat-related historical activity level (expressed in TJ/year); i.e., the annual arithmetic mean of historical heat produced and exported to non-ETS entities over the baseline period, unless used for electricity production or district heating.</p> <p><i>CLEF<sub>H</sub></i>: The carbon leakage exposure factor for non-carbon leakage exposed sectors is used, unless the heat exporter provides evidence that it exports heat to a non-ETS entity that is exposed to a significant risk of carbon leakage</p>
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	<p><i>In case of heat <b>export</b> for district heating, the exporting ETS installation receives allocation under a district heating sub-installation:</i></p> <p>If heat is exported to district heating then an additional district heating benchmark sub-installation would be needed (not shown in Figure 8). Allocation to that additional sub-installation would take into account in the historical activity level of the district heating sub-installation.</p> $F_{DH,preliminary} = BM_H \cdot HAL_{DH} \cdot CLEF_{DH}$ <p><i>Allocation = Heat Benchmark x amount of net exported Heat x Carbon leakage exposure factor</i></p> <p>where:</p> <p><i>F<sub>DH,preliminary</sub></i>: annual preliminary allocation to the district heat exporting sub-installation (expressed in EUAs/year)</p> <p><i>BM<sub>H</sub></i>: heat benchmark (expressed in EUAs/TJ)</p> <p><i>HAL<sub>DH</sub></i>: the district heat-related historical activity level (expressed in TJ/year); i.e., the arithmetic mean of annual measurable heat produced and exported for district heating.</p> <p><i>CLEF<sub>DH</sub></i>: The carbon leakage exposure factor district heating is used.</p>
Preliminary allocation to External ETS Consumer D	<p><i>The allocation to an ETS installation which imports heat from another ETS installation that includes a pulp benchmark sub-installation is the same as import from any other ETS installation: the free allocation goes to the importing installation. See section 3.1 for the preliminary allocation calculation in this case.</i></p>
Preliminary allocation to non-ETS entity E	<p><i>Non-ETS entities cannot receive free allocation</i></p>