

Free allocation methodology for the ETS post 2012

Consultation paper on project approach and general issues

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Disclaimer and acknowledgements

For the third trading period (2013 – 2020) of the EU-wide greenhouse gas allowance trading scheme (EU-ETS), community-wide and fully-harmonised implementing measures are foreseen for the free allocation of allowances. These measures, to be adopted by 31 December 2010, shall, to the extent feasible, determine Community-wide ex-ante benchmarks. The European Commission contracted a consortium of consultants (Ecofys Netherlands, Fraunhofer Institute and Öko-Institut) to assist them in the preparation of the implementing measures (allocation methodology). The project runs from January – September 2009.

This consultation paper reflects the status of the work by the consortium by the 19th of May 2009. It was written to give stakeholders an opportunity to react to the key choices made by the consortium so far regarding the overall project approach and cross-cutting issues regarding the allocation methodology. The paper is written in a concise way focusing on the key issues rather than all implementation details.

This paper is open for written comments until 1 July 2009. Received comments will be given due consideration in the final study that is currently scheduled to be delivered to the European Commission on 23 September 2009.

Given the draft status of this report, the authors preserve the right to change any of the approaches and issues discussed in this report. The views in this report represent only the views of the consortium and not necessarily those of the European Commission.

Table of content

| | | |
|----------|--|-----------|
| 1 | Introduction | 1 |
| 2 | Benchmarking principles in the text of the EU ETS Directive | 3 |
| | 2.1 Benchmarks for products rather than for inputs..... | 3 |
| | 2.2 Benchmarks developed to the extent feasible | 3 |
| | 2.3 Average of the 10% most efficient installations as starting point..... | 3 |
| | 2.4 Cross-sectoral correction factor and carbon leakage..... | 4 |
| | 2.5 The link to the financial compensation for indirect emissions..... | 4 |
| | 2.6 High-efficiency cogeneration..... | 5 |
| 3 | Design of benchmark based allocation rules | 6 |
| | 3.1 Starting points | 6 |
| | 3.2 Sectors for the development of product benchmarks | 7 |
| | 3.3 Product definition, grouping of products | 8 |
| | 3.4 Fall-back options..... | 9 |
| | 3.5 Average of the best 10% | 11 |
| | 3.6 Electricity and fuel use..... | 12 |
| | 3.7 Allocation for cross-boundary heat and CO ₂ containing waste gases..... | 13 |
| | 3.8 Activity levels | 14 |
| 4 | References | 16 |

1 Introduction

An EU-wide greenhouse gas allowance trading scheme (EU-ETS) was implemented in January 2005 in accordance with the Greenhouse Gas Emission Allowance Trading Directive (EU, 2003). Following a review of the EU ETS in 2006 and 2007, an amended ETS Directive was adopted on 17 December 2008. Throughout this report, we refer to this amended Directive as the revised ETS Directive (EU, 2008).

According to the revised ETS Directive, the general principle for allocation from 2013 onwards will be auctioning, with free allocation being considered only a transitional measure. No free allocation shall be given in respect of any electricity production except for electricity produced from waste gases and some other exceptions. Some MSs are for example allowed to give free allocation to electricity producing installations with the aim to modernise electricity generation. No free allocation shall be given to installations for the capture, pipelines for the transport or to storage sites for carbon dioxide (Article 10a and 10c).

For other emissions, transitional free allocation is foreseen in the revised ETS Directive. This free allocation is 80% of the quantity determined via Community-wide and fully-harmonised implementing measures (i.e. allocation methodology) in 2013, *“and thereafter, the free allocation shall decrease each year by equal amounts resulting 30% free allocation in 2020, with a view to reaching no free allocation in 2027”* (Article 10a, paragraph 11). Exceptions are installations in sectors which are exposed to significant risk of carbon leakage, i.e. *“an increase in greenhouse gas emissions in third countries where industry would not be subject to comparable carbon constraints”* (Recital 25). Those installations will receive free allowances for 100% of the quantity determined via the implementing measures (Article 10a, paragraph 12).

The Community-wide and fully-harmonised implementing measures shall, to the extent feasible, determine Community-wide ex-ante benchmarks. These benchmarks shall, in principle, be calculated for products rather than for inputs (Article 10a, paragraph 1). The European Commission contracted a consortium of three consultancies¹ to support them in developing the Community-wide and fully-harmonised implementing measures in the period January – September 2009 by

1. Developing a suitable classification of installations included in the ETS to apply allocation rules for free allocation in a transparent and unambiguous way.
2. Designing allocation rules that are transparent, credible, and as simple as reasonably possible and include fall-back approaches in case certain preferred allocation options turn out to be unfeasible.

¹ Ecofys Netherlands, Fraunhofer Institute for Systems and Innovation Research and Öko-Institut

3. Assessing (additional) data necessary to apply the allocation rules (not yet included in this draft report).

This consultation paper reflects the status of the work by the consortium by the 19th of May 2009 regarding cross-cutting issues in relation to the allocation methodology. It consists of

Section 2: An explanation on how the text of the revised ETS Directive is used by the consortium

Section 3: Starting points in developing benchmarks

Under the same study contract, the European Commission is also supported in the assessment of carbon leakage. This part of the project is not included in this report.

2 Benchmarking principles in the text of the revised ETS Directive

Below we clarify how certain key parts of the revised ETS Directive text are used by the consortium in the development of the allocation methodology for free allocation.

2.1 Benchmarks for products rather than for inputs

The text of Article 10a (paragraph 1) states that, *“in principle, the benchmarks shall be calculated for products rather than for inputs”*

This implies to the consortium that, at least for those activities included in the EU ETS via a product definition in Annex I of the revised ETS Directive, the aim should be to develop product benchmarks (i.e. a specific number of allowances per unit of product) rather than benchmarks for e.g. the energy output of specific process units operated in these installations. For activities included in the EU ETS only via the “combustion of fuel” activity in the revised ETS Directive, another approach might be necessary (see further Section 3.1).

2.2 Benchmarks developed to the extent feasible

The text of Article 10a (paragraph 1) states that, *“to the extent feasible”*, Community-wide-ex-ante benchmarks should be developed. We further elaborate this “to the extent feasible” in Section 3.1 – 3.3 and also discuss there fall-back options in case benchmarking is deemed not feasible.

2.3 Average of the 10% most efficient installations as starting point

The text of Article 10a (paragraph 2) states that *“in defining the principles for setting ex-ante benchmarks in individual sectors or sub-sectors, the starting point shall be the average performance of the 10% most efficient installations in a sector or sub-sector in the Community in the years 2007 – 2008”*

We use this text in the following way:

- In view of the overall text of the revised ETS Directive as a policy instrument aiming at reductions of greenhouse gas emissions “most efficient” is interpreted as “most greenhouse gas efficient”. The key individual drivers determining the greenhouse gas efficiency (energy efficiency, fuel mix and sometimes process emissions) will be individually discussed in the study to explain key differences in the overall greenhouse gas efficiency. However, the final proposed benchmark value should be based on the overall greenhouse gas intensity.

- For the full period from 2013 onwards, a single benchmark value is used in the allocation formula².
- The starting point for the benchmarks is based on the average of the 10% most efficient installations. This study aims to find this starting point to which we further refer as “the benchmark”.
- Installations outside the Community in 2007 – 2008 (e.g. in Norway and Iceland) need not to be taken into account in determining the benchmark, despite the fact that installations from those countries participate in the EU ETS.
- All installations that are in the ETS according to Annex I of the revised ETS Directive (including those with emissions lower than 25 000 tonnes of CO₂ equivalent) should, in principle, be taken into account in the development of benchmarks even if they are outside the current EU ETS. Any exceptions must be exceptional and based on clear criteria (Section 3.5).
- All installations (regardless their emission or production volume) should be given an equal weight in determining the benchmark³, see also Section 3.3.
- Given that benchmarks are envisioned for products rather than for “sectors” or “sub-sectors” as a whole, the words “*most efficient installations in a sector or sub-sector*” in this paragraph are used as “*most efficient installations producing a certain product or product group for which a benchmark can be defined*”.

2.4 Cross-sectoral correction factor and carbon leakage

The text of Article 10a (paragraph 5) on the maximum annual amount of free allowances is used by the consortium in the following way. The allocation at installation level is calculated in a two-step approach:

- First, preliminary allocations at installation level are calculated using the appropriate measures (either benchmark or a fall-back option). The sum of these preliminary allocations is used to determine a cross-sectoral correction factor ensuring that the total cap available for free allocation (subject to the linear reduction factor) is not exceeded.
- Second, after multiplication with the cross-sectoral correction factor, the final free allocation of allowances per installations is determined by multiplication with the envisioned shares according to paragraph 11 and 12 of Article 10a (i.e. 100% for sectors exposed to a risk of carbon leakage and 80% (2013) to 30% (2020) for others).

2.5 The link to the financial compensation for indirect emissions

The revised ETS Directive allows that “*Member States may also adopt financial measures in favour of sectors or sub-sectors determined to be exposed to a significant risk of carbon leakage due to costs relating to greenhouse gas emissions passed on in electricity prices....*”

² The cross-sectoral correction factor (see below) ensures that the sum of the benchmarks never exceeds the total amount of free allowances available.

³ In other words, on the benchmark curve with on the y-axis the specific emissions, the x-axis should be “number of installations”, not “cumulative production volume” or “cumulative emissions”.

These measures shall be based on ex-ante benchmarks for the indirect emissions of CO₂ per unit of production” (Article 10a, paragraph 6).

This provision raises the question whether benchmarks for direct emissions⁴ (used for the allocation of allowances) could not be combined with the benchmarks for indirect emissions used for determining potential financial compensation⁵, e.g. via an overall (direct and indirect) CO₂ emission benchmark which can then be used for both allocation of allowances for direct emissions and the financial compensation for indirect emissions. Although the link between direct and indirect emission will in relevant cases get attention in the sector reports, this study is contracted to develop an allocation methodology for direct emissions only. Furthermore, it is currently not yet clear to which sectors or subsectors the financial compensation will be given and in which Member States.

The allocation methodology for direct emissions will thus being dealt with independently of any benchmarks linked to financial compensations for indirect emission. However, in terms of data collection and stakeholder interaction, the process goes hand in hand to some degree.

2.6 High-efficiency cogeneration

Article 10a (paragraph 4) stipulates that *“free allocation shall be given to district heating as well as to high efficiency cogeneration, as defined by Directive 2004/8/EC”*. Article 10a (paragraph 1 and 3) also states that free allocation is not possible for electricity production (with some exceptions), electricity generators and installations for the capture and storage of CO₂. Our interpretation is therefore that all heat production is in principle eligible for free allocation according to the harmonized rules, regardless the type of production. As high efficiency cogeneration needs to buy less emission rights per unit of electricity, it has an advantage over cogeneration which is not classified as high efficient.

⁴ With direct emissions, we mean all emissions with the exception of emissions related to the production of electricity, including also process emissions.

⁵ Emissions from electricity production

3 Design of benchmark based allocation rules

3.1 Starting points

In developing allocation rules for free allocation, the following starting points are used:

1. Do not use technology-specific benchmarks for technologies producing the same product
2. Do not differentiate between existing and new plants
3. Do not apply corrections for plant age, plant size, raw material quality and climatic circumstances.
4. Do not use fuel-specific benchmarks for individual installations or for installations in specific countries
5. Take technology-specific fuel choices into account in determining benchmarks

These starting points were taken from a study performed by part of the consortium in 2008 (Ecofys/Fraunhofer-ISI, 2009), but are also a direct consequence of the way the revised ETS Directive text “*average of the 10% most efficient installations in the Community*” is applied in this study. A single benchmark based on all installations in the Community producing a certain product (see Section 2.3) “automatically” rules out corrections for plant age and size etc. and also is inconsistent with fuel specific benchmarks for certain countries or installations.

Before considering different aspects of the design of benchmark based allocation rules, we introduce the following general equation to come to an allocation that an installation would receive for the production of a certain product:

$$A = e(P_{h/st}, BM_{10\%}) \cdot LF \cdot AF$$

with

| | |
|-------------|------------------------------------|
| A | Allocation |
| e | Emission benchmark function |
| $P_{h/s}$ | Production (historic/standardized) |
| $BM_{10\%}$ | 10% best emission benchmark |
| LF | Leakage factor (100% or 80...30%) |
| AF | Adjustment factor |

where, the leakage factor (LF) is 100% in case the considered product is part of a carbon leakage sector, and otherwise would decrease from 80% in 2013 to 20% in 2020). The adjustment factor (AF) is the cross-sectional correction factor to keep the total amount of allowances below the cap. In the equation only the production ($P_{h/s}$) should be installation specific and no other specific parameters (company specific, etc.) should be used for the benchmark allocation.

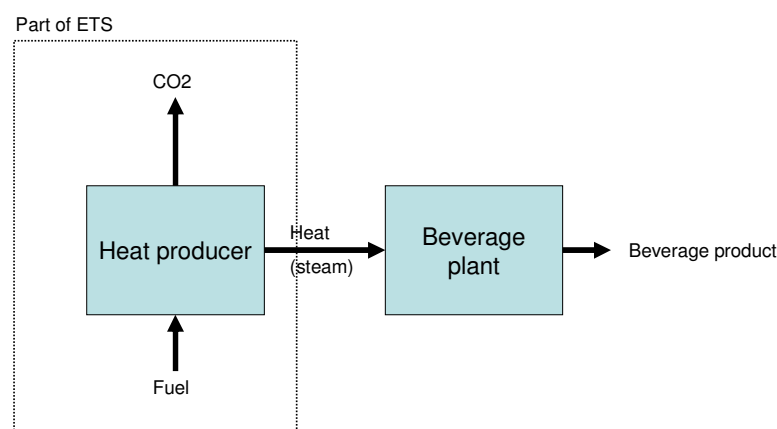
3.2 Sectors for the development of product benchmarks

Annex I of the revised ETS Directive determines which activities are included in the ETS. The list contains three different types of definitions of activities:

1. Definitions of activities using the product output of industrial processes (e.g. production of pulp) or a clear description of the activity based on the type of products made (e.g. coke ovens, mineral oil refineries), in some cases combined with a minimum production capacity.
2. Definitions of activities (i.e. production or processing of ferrous metals and non-ferrous metals, production of secondary aluminium and production of carbon black) using the product output of industrial processes in combination with the criterion that combustion units with a total rated thermal input exceeding 20 MW should be operated
3. The activity “combustion of fuels in installations with a total rated thermal input exceeding 20 MW”.

The latter activity contains combustion installations (furnaces, dryers, steam boilers, CHP installations) from a variety of sectors including installations in e.g. the food and beverage and other industrial sectors, but also in non-industrial sectors such as hospitals. Since the combustion installation determines the inclusion in the ETS, many of the sectors are only partly represented in the EU-ETS, because they contain installations that either have a total rated thermal input less than 20 MW or because or that have a heat supply from an installations under different ownership. Developing benchmarks for the products of these sectors would imply that for the application of the benchmark-based allocation, production data would be required from entities that by itself are not necessarily included in the EU-ETS. As schematically is indicated for a beverage plant with heat supply from a heat producing installation included in the EU ETS.

Figure 3-1 Benchmark for the heat producer in terms of CO₂ per unit of beverage product would require a transfer of production data from the beverage plant (outside ETS) to the heat producer



For this reason, we follow the following step-wise approach:

1. First test the feasibility of product benchmarks for the non-energy products that are specified in Annex I of the revised ETS Directive (i.e. the first and second group identified above), as outlined in Section 3.2.
2. Develop an alternative approach (see Section 3.4) for free allocation to installations only included in the EU-ETS via the activity “combustion of fuels” (i.e. the third group identified above)
3. Finally, based on an assessment of the type of activities including via the “combustion of fuel activity” criterion⁶, consider additional product benchmarks for certain specified sectors, e.g. if the sector produces a relatively homogenous product for which benchmarking is a feasible option and if a substantial part of the production facilities producing the product are included in the EU-ETS.

3.3 Product definition, grouping of products

In the study on allocation principles (Ecofys/Fraunhofer-ISI, 2009), two criteria regarding the number of products to be distinguished are given.

- Intermediate products that are traded between installations could, for pragmatic reasons, be given separate benchmarks, because otherwise, the allocation to installations only producing the intermediate or only producing the final product using bought intermediates, would become very difficult.
- Any product for which an individual benchmark is proposed should be distinguishable using an unambiguous and justifiable product classification.

Neither of these two principles provides direct guidance on the number of products for which individual benchmark should be developed and on the possible grouping of products into different product groups.

We use the following criteria to make the choice for the number of products to distinguish:

1. Different products should only be considered if the difference in emission intensity is significant. As guiding rule, in grouping comparable products, a 20% difference in the benchmark⁷ emission intensity will be guiding in determining whether different benchmarks will be proposed.
2. The share of emissions of a product group in the total emissions of a sector. We aim to develop, to the extent possible, similar allocation rules (i.e. either benchmarking or an alternative approach) for a large share of clearly distinguishable sectors (NACE 4 or other more appropriate sector definitions⁸) within the EU ETS. For sectors where a wide variety of diverse products are produced (e.g. the chemical and paper industry), applying an 80:20 principle (a limited number of different products covers 80% of the emissions) can be a pragmatic way of limiting the total number of individual benchmarks, thereby keeping the overall allocation methodology transparent.

⁶ Information on this is gathered via questionnaires to the Member States.

⁷ This does thus not mean the difference of 20% between good and bad performing plants producing a single product, but a difference in benchmark emission intensity between different products.

⁸ Some products are produced by installations that, due to their overall activity, are classified under a variety of NACE codes.

3. The share of emissions of a product group in the overall EU-ETS emissions. Similar to the 2nd criterion, also the contribution of product groups to the overall EU ETS emissions will be used as criterion. This could mean that for smaller sectors (in relation to the overall EU ETS emissions) a limited number of benchmarks will be proposed.
4. The number of installations producing a certain product group. The number of installations is important to assess whether a reasonable benchmark (i.e. a benchmark approaching the average of the 10% most efficient installations in the Community) can be established (see Section 3.5).

We will be flexible in applying these criteria (which by their nature cannot be applied to yield one unique solution for the number of product groups to distinguish) to ensure that the development of benchmarks is not discouraged for those sectors for which benchmarking would be appropriate, but which do not strictly meet all criteria (e.g. those on the number of installations). For the products of sectors for which no product benchmark is developed and for sectors for which no product benchmarks are developed, a fall-back approach should be developed (Section 3.4).

3.4 Fall-back options

On basis of the criteria as laid out in Section 3.1 and 3.2, fall-back options are required for:

- Sectors for which no product benchmarks are developed
- Products for which no product benchmarks are not developed, although most products in the sector will get a product benchmark.

Two main types of fall-back approaches can be considered:

1. Grandfathering combined with an efficiency improvement factor
2. A benchmark for combustion processes (i.e. heat production) instead of a benchmark for non-energy products of sectors.

Both options need careful consideration. We favour the use of combustion process benchmarks above the use of a grandfathering approach, because the combustion process itself is benchmarked using this fall-back approach. For the expected small amount of non combustion related process emissions that are not covered via a product based benchmark, grandfathering is the preferred option.

Table 3-1 provides an overview of different options for approaches for different Annex I categories of activities of the revised ETS Directive.

Table 3-1 Overview of options for approaches to come to an allocation for different revised Annex I categories of activities

| Annex I category of activities | Product based benchmarks | Combustion process benchmark | Grandfathering |
|---------------------------------------|--|--|--|
| Combustion of fuels | Possible after assessment (Section 3.2) | Default option | Default option for non-fuel related process emissions |
| Other activities | Default option if feasible (Section 3.2) | Fall-back option for non-benchmarked products (combustion processes) | Fall-back option for non-benchmarked products (non-fuel related process emissions) |

A number of issues need further consideration such as:

- How differentiated the combustion process benchmark should be (e.g. sector-specific or not).
- How to benchmark combustion of fuel processes in which heat from off-gases is directly used (e.g. in direct drying processes) which are difficult to benchmark, because the “heat product” is difficult to monitor⁹.
- Whether or not during a trading period, efficiency improvements for heat consumption for products for which no product benchmark is developed should be monitored and registered so that these improvements can be taken into account in the allocation for the next trading period, thereby creating a uniform method for the sector as a whole.

Another issue is whether or not the allocation based on a combustion process benchmark should be corrected with a (generic) efficiency factor to account for efficiency improvement potential in the end-use application of the heat (e.g. improvements in building insulation that will reduce the demand for space heating).

Such an efficiency factor could be calculated by considering the differences between historical emissions and allocation based on benchmarks for all products for which a product benchmark is developed. It should be noted that an improvement factor calculated via this method can not directly be applied in the case of a combustion process benchmark, because part of the improvement potential (i.e. the potential related to heat production) would in this case be double-counted.

Another option for an improvement factor could be to make a sector-specific assessment of the most greenhouse gas technology. Just as an example, a heat benchmark for district heating could for example be multiplied with a factor that takes into account best practice end-use efficiency improvements (best commonly used insulation) in the building sector.

⁹ For these processes, one could make the allocation fuel independent by converting the calorific intake into the process via a uniform fuel emission factor to an allocation or use a generic efficiency assumption for the equipment and subsequently convert via a generic heat production benchmark.

Regarding the stringency of a possible (generic) efficiency factor and of the fall-back option in general, the fall-back approach should be comparably stringent to ensure a level playing field between the sectors for which product benchmarking is reasonably possible, and for non-benchmarked sectors. At the same time, the number of product benchmarks should remain within limits so that the overall transparency of the allocation methodology is guaranteed. After assessing in more detail which end-use sectors and combustion of fuel activities are included in the combustion of fuel activity (see footnote 6) and after testing the feasibility of product benchmark for the other activities (Section 3.1), a further decision will be made regarding the use of (generic) efficiency improvement factors.

3.5 Average of the best 10%

Within the scope of this study, the consortium aims to involve to the extent possible the European sector organizations representing the relevant sectors. Ideally, the organizations would prepare benchmark curves that can be used, after verification, to determine the average of the 10% most efficient installations in the Community in 2007 – 2008. In assessing the benchmark curves that are supplied by the relevant European sector organizations, we used the following rules:

- On the x-axis, installations should be given rather than cumulative production or cumulative emissions.
- On the y-axis, the actual GHG intensity per unit of production should be given (see also Section 3.2). The GHG intensity should reflect real emission levels not based on assumptions, e.g. using energy efficiency and certain average of typical fuel mix instead of the actual applied fuel mix.
- Installations outside the Community in 2007 – 2008 (e.g. in Norway and Iceland) should not be taken into account in the development of benchmarks.
- All installations that are in the ETS according to Annex I of the revised ETS Directive (including those with emissions lower than 25 000 tonnes of CO₂ equivalent) should in principle be included in the benchmark curve.
- No installations should a-priori be excluded from the benchmark curves. Exclusion of installations for specific reasons (see below) should be made transparent as input for the discussions on potentially removing them from the complete benchmark curve that includes all installations.
- The methodology used to construct the benchmark curves should be publicly available, including information on the compatibility with e.g. the ETS monitoring guidelines.
- The actual data points on the curve should in principle be verifiable by independent verification¹⁰.

Given the limited timeframe available for this study, not all sector organizations are able to deliver benchmark curves already within the scope of this study or can only deliver partial information (representative sample, different years etc.). This can be due to the fact that data

¹⁰ Guided by confidentiality arrangements if necessary. The verification is not within the scope of the current study

collection only has started recently and/or is rather cumbersome (many installations, multiple products per installation, missing guidance on how to divide emissions over multiple products etc.). In some cases, also confidentiality concerns are important, e.g. if a product is only produced by a rather limited amount of producers. The background of the benchmark curve data used in our study and the difficulties in constructing the benchmark curves will be carefully described in the final deliverables of this study. If necessary, actual benchmark data will be supplemented by additional sources such as information on most greenhouse gas efficient technology from literature such as BAT reference documents, etc.

Many sectors argue that the resulting benchmark curves contain installations that are for several reasons not representative for the sector as a whole. The consortium will assess these arguments carefully, but is, in view of the “one product – one benchmark” approach reluctant to exclude installations from the curve because of e.g. the use of certain energy carriers or raw materials by certain installations.

A more generic method (compared to assessing on a case-by-case basis) ensuring that the average of the 10% most efficient is not dominated by installation with specific circumstances is by making a linear regression of e.g. the 10th to 90th percentile part of the benchmark curve and to based the benchmark value on this linear curve¹¹. Advantage of such method is that the benchmark value is determined on the behaviour of the majority of the installations. This option will be considered carefully, but no choice has been made yet.

3.6 Electricity and fuel use

Certain products can be produced via production routes with significantly different shares of electricity (indirect emissions) versus fuel or heat use. Examples are:

- Electrical or fuel fired furnaces in the glass and stone wool industries
- Steam driven or electricity driven compressors in the chemical industry

Since the allocation will take place for the direct emissions only, this raises the question how to take the differences in electricity intensity into account when constructing a benchmark curve and how to derive from such a curve an allocation methodology that is applicable to direct emissions only.

The following solutions can be thought of:

1. Not correcting for these differences and basing the benchmark for direct emissions on a curve including all installations. Electricity-intensive installations will in this case strongly determine the benchmark which in general would result in very low benchmark values.
2. Taking the indirect emissions into account in the curve via a uniform emission factor for electricity (e.g. the one used in the carbon leakage assessment) and base the

¹¹ This is the methodology that the Cement Sustainability Initiative uses to present benchmark values based on the data in the Getting the Numbers Right database.

benchmark on the primary (i.e. including indirect emissions). For that purpose only the indirect emissions of those process steps in which fuel and electricity use are interchangeable should be included. The resulting “primary” benchmark will be used for calculating the allocation to avoid giving a free allocation to electricity production. In developing rules for financial compensation for electricity consumers based on benchmarking, the same benchmark curve could form the basis to avoid double compensation of the CO₂ price signal in the electricity price.

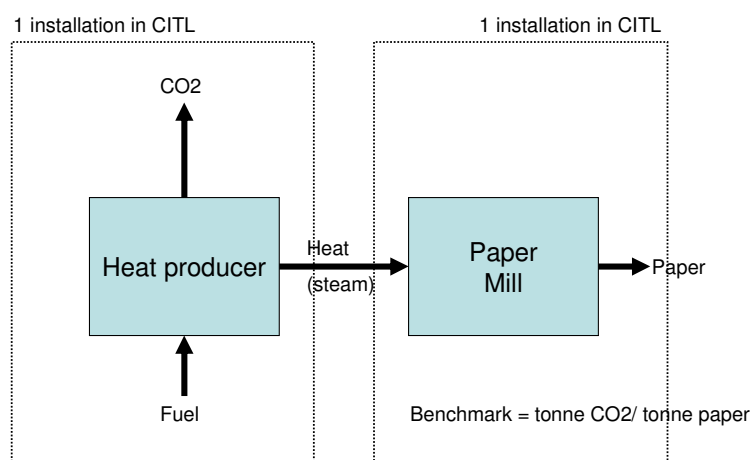
3. Allowing technology-specific benchmarks in these cases by developing benchmark curves for the different product routes. This is difficult to apply where many different shares of electricity versus fuel use occur (rather than two or three very distinct process route with widely differing shares of electricity and fuel use).
4. Automatically use a fall-back option for products where this problem occurs.

The first method is regarded as undesirable if the electricity-intensive route is from an overall greenhouse gas efficiency point of view not beneficial (which can only be assessed based on the emission intensity including the indirect emissions). The feasibility of the other three methods will be further tested by investigating the actual benchmark curves for the relevant industries. It will only be considered in cases where the differences are of significant influence.

3.7 Allocation for cross-boundary heat and CO₂ containing waste gases

Developing product benchmarks for sectors that consume a heat product such as steam that is sometimes crossing the system boundaries between individual installations inevitably results in situations that the producer of heat (and thus the emitter) is not the same installation as the installation where the heat is consumed and the benchmarked product is produced. An example is given in Figure 2

Figure 3-2 Example of a situation where the emitting installation and the installation producing a benchmarked product have different GHG emission permits



As a guiding principle, the total amount of allowances for the heat consumed for the production of a product for which a product benchmark is developed should be equal,

regardless of the ownership structure of the heat producing and heat consuming installations. In other words, from an end-use perspective, all heat should be treated equal, regardless the installation where the heat is produced. In the 2008 report on allocation principles (Ecofys/Fraunhofer-ISI, 2009), three possible options are worked out that all comply with this principle:

1. Allocation of allowances to consumers of heat based on the benchmarked production and consumption of the heat.
2. Separate allocation rules for producers of heat (receiving allowances based on performance of heat producing equipment) and consumers of heat (receiving allowances based on benchmarked consumption of heat).
3. Allocation of allowances to heat producers based on the benchmarked production and consumption of the heat.

In that study, the choice was made for the third methodology, because the first option is not in line with the overall ETS architecture of allocating allowances to those entities that have to surrender allowances and the second option could result in negative allocations in case an installation performs worse than the product benchmark and imports heat from other installation. It was recommended to further assess whether the allocation methodology could work in practice, because it requires for each installation with cross-boundary heat flows a rather detailed understanding of the heat flows within the system boundary.

The consortium will work together with the chemical industry (CEFIC) and the organisations representing combined heat and power generation (COGEN Europe, Euro Heat and Power and EFIEES) on a number of case studies to further test the feasibility of the second and third approach¹².

Another problem related to “emissions” crossing system boundaries across installations are caused by carbon-containing waste gases in e.g. the iron and steel, chemical and refinery industries. Since the waste gases by their nature result from certain production processes, we propose taking their emissions into account in the benchmarks for the products that results in waste gases, comparable to the approach envisioned for the iron and steel industry in the study on allocation principles (Ecofys/Fraunhofer-ISI, 2009). For the relatively limited number of cases where waste gases cross the system boundaries of ETS installations, this will require a transfer of allowances between the producer and consumer of CO₂ waste gases. However, this transfer should not be regulated by the allocation provisions and let to private agreements between the operators.

3.8 Activity levels

It is not the primary focus of this study to assess in detail which activity levels are to be used to come from a benchmark (i.e. specific emissions per unit of production) to the actual allocation. The two starting points on allocation principles as included in the 2008 study on

¹² The 2nd methodology is e.g. used in Germany for benchmarking the paper industry in the second allocation methodology.

activity levels were based on the requirement of a full ex-ante distribution of allowances to incumbents. These starting points also form the basis for this study:

- Use historical production figures to allocate allowances to existing installations¹³
- Use product-specific capacity utilization rates (e.g. based on the historic production rates of a sector) with verifiable capacity data to allocate allowances to new installations.

For the reasoning behind this choice, reference is made to the 2008 study on principles (Ecofys/Fraunhofer-ISI, 2009). The use of historical data from before the adoption of the revised ETS Directive limits the period to before or including 2008. The desire to have good quality of data makes it impossible to go too far into the past. Thus, the period 2005 – 2007 might be the most suitable reference period to be used, also in line with the determination of the share of free allowances according to Article 10a of the revised ETS Directive. Either the highest production in one of those years or the average production over the three years are reasonable options for using the 2005 – 2007 data. Both methods correct to some extent for special circumstances (e.g. planned maintenance etc.) in any of the three years.

¹³ As opposed to projected production or standard utilization rates in combination with capacity.

4 References

Ecofys / Fraunhofer-ISI (2009) *Developing benchmarking criteria for CO₂ emissions*, Ecofys Netherlands / Fraunhofer Institute for Systems and Innovation research, February 2009

EU (2003) *Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emissions allowance trading within the Community and amending Council Directive 96/61/EC*, Official Journal of the European Union, 25.10.2003

EU (2008) *Directive 2009/..../EC of .. of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community*, Official Journal of the European Union, ..