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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Commission Delegated Decision

**supplementing Directive 2003/87/EC of the European Parliament and of the Council
concerning the determination of sectors and subsectors deemed at risk of carbon leakage
for the period 2021 to 2030**

{C(2019) 930 final} - {SEC(2019) 86 final} - {SWD(2019) 21 final}

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1. INTRODUCTION: POLITICAL AND LEGAL CONTEXT

The revised EU Emissions Trading System (EU ETS) Directive (EU) 2018/410¹ provides the legal framework for the period from 2021-2030. This initiative supports the preparation of a delegated act implementing Article 10b of the Directive in relation to a Carbon Leakage act, from which the narrow scope of the impact assessment derives. More specifically, the scope of this initiative is to operationalise the assessment requirements set in the revised Directive for a limited number of sectors, and to ensure objectiveness and fairness in the assessment.

1.1. EU ETS and free allocation

The EU Emissions Trading System (EU ETS) has been a core element of EU climate and energy policy since 2005 and is a key tool for achieving the EU's objective of reducing greenhouse gas (GHG) emissions cost-effectively. The EU ETS puts a price on GHG emissions and uses market forces to drive the necessary emission reductions. The EU ETS works as a 'cap and trade' system: a cap is set on the total amount of GHG emissions allowed; companies receive or buy emission allowances, which they can trade freely (Figure 1). Each year, every installation under the system has to cover the volume (tonnes) of CO₂ it has emitted with allowances.

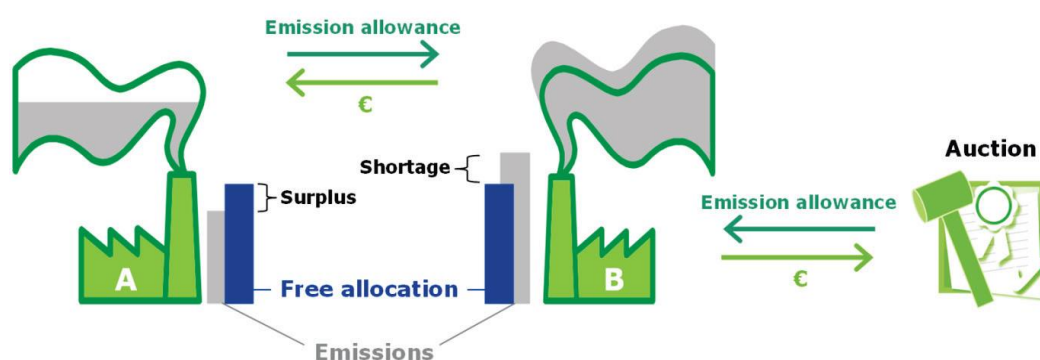


Figure 1. Simplified illustration on how the EU ETS works²

The EU ETS should incentivise emission reductions of industry and ensure a transition to low-carbon technologies while also considering the competitiveness of EU industry and avoid "carbon leakage" (see Box 1. Carbon Leakage). An OECD study³ published in February 2018 on "The Joint Impact Of The European Union Emissions Trading System On Carbon Emissions And Economic Performance" concluded that the EU ETS has had no negative impact on the economic performance of regulated firms' revenues and fixed assets. This demonstrates that competitiveness concerns are addressed, and that environmental policies can effectively reduce pollution without damaging firms' economic performance.

¹http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.076.01.0003.01.ENG&toc=OJ:L:2018:076:TOC

² EU ETS Handbook: https://ec.europa.eu/clima/sites/clima/files/docs/ets_handbook_en.pdf

³ OECD EPOC March 2018 Working Party on Integrating Environmental and Economic Policies: "The Joint Impact Of The European Union Emissions Trading System On Carbon Emissions And Economic Performance"

Box 1. Carbon Leakage

"Carbon leakage" refers to the possible increase in global greenhouse gas emissions if, because of costs related to climate policies in the EU, businesses were to transfer production to other countries where industry is not subject to comparable climate policies, with associated negative impacts on economic growth, employment and the environment. This is especially true if the installations outside of the EU are more carbon intensive.

The carbon price (i.e. each emission allowance refers to 1 tonne of CO₂ and has a market value) is one factor which influences corporate strategies regarding investments in new or existing production installations (with regard to new investments, the term 'investment leakage' has also been developed). If it occurred, carbon leakage would, therefore, reduce the efficiency of the EU's mitigation policies and would reduce the economic output of energy intensive EU companies due to a loss in market share. However, there remains uncertainty on whether, and to what degree, "carbon leakage" and "investment leakage" can be identified and verified; and, in particular, whether there is a causal link to climate policies.

To create a free allocation system efficiently and rationally, the right balance should be found between allocating the limited amount of allowances available for free allocation, addressing the risk of carbon leakage (which varies across sectors according to how important the carbon costs are in relation to total costs in a given sector and how easily they can be passed on) and avoiding compensating beyond the actual need for allowances (over-compensating). This initiative aims to support the efficient and rational carbon leakage assessment of industrial sectors.

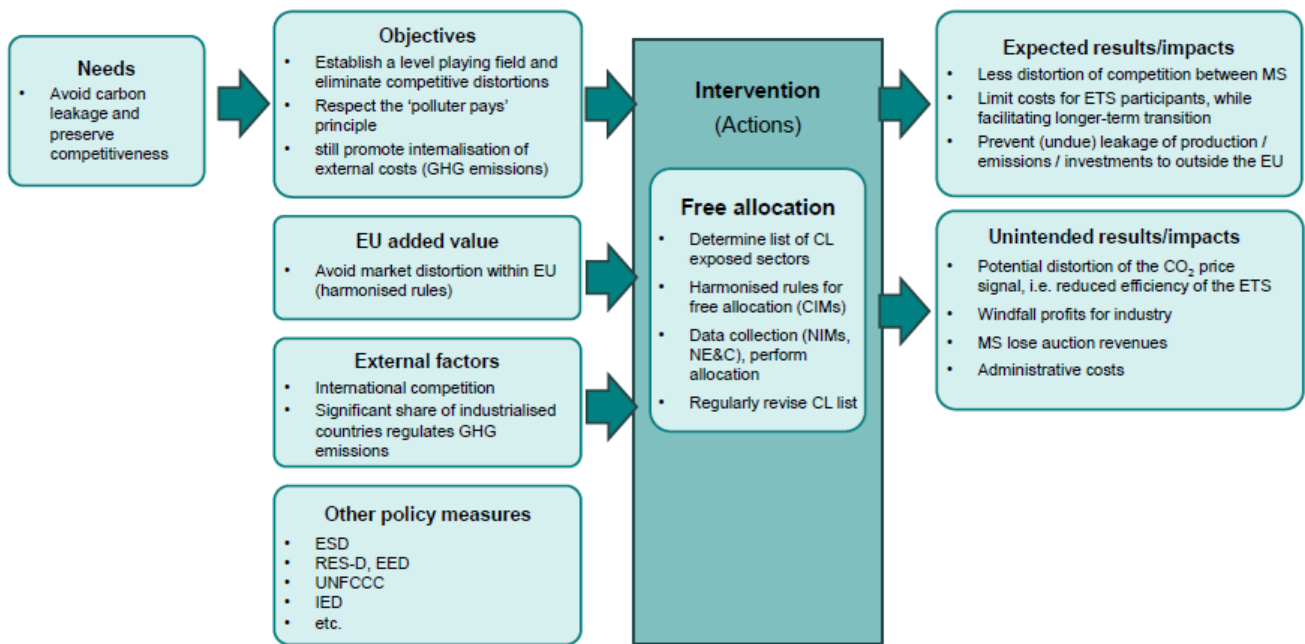
Incentives to reduce emissions and improve technology and efficiency are driven by the fact that each tonne of CO₂ to be covered by an allowance has a value (the carbon price, which arises from the scarcity of allowances). To avoid the risk of carbon leakage, energy intensive industries receive a share of allowances for free (see Figure 2). Free allocation reduces costs for European industries that can arise if they cannot pass such costs on through the supply chain. This sheltering from costs is even greater for industries on the carbon leakage list. In EU ETS phase 3 (2013-20) more than 10,000 industrial installations received free allocation of around 6.6 billion allowances in accordance with harmonised allocation rules.

Free allocation is determined by a benchmark-based system awarding the most efficient installations. Allocation to individual installations is overall established *ex ante* (for the entire trading period) by benchmarks⁴ multiplied by historical activity levels. Installations of sectors identified at relatively high risk of carbon leakage receive 100% of this calculated level of free allocation whereas for others, this rate is below 100% (in phase 3 it decreases from 80% in 2013 to 30% in 2020, in phase 4 it is fixed to 30% from 2021 until 2026, decreasing to 0% in 2030).

⁴ 54 Benchmarks (52 for products and 'fallback' benchmarks for heat and fuel) reflect the performance (in 2007/2008) of the most efficient 10% of installations.

In case of need, a correction factor ('cross-sectoral correction factor') is applied to uniformly reduce levels of free allocation for all installations if the total demand is higher than the supply of free allocation. For phase 3, a cross-sectoral correction factor had to be applied as from 2013.

Furthermore, to compensate certain energy intensive sectors for the indirect costs induced by the EU ETS, Member States are provided with the possibility to adopt financial measures in accordance with State aid rules⁵ while not causing undue distortions of competition on the internal market.



Picture by Umweltbundesamt **umweltbundesamt**

Figure 2. Overview of free allocation under the EU ETS (Evaluation of the EU ETS Directive, 2015⁶)

1.2. The revised legal framework for free allocation rules in phase 4 (2021-2030)

The revised Directive¹ implements an important part of Europe's contribution to the Paris Agreement to reduce greenhouse gas emissions domestically by at least 40% by 2030, compared to 1990 levels. It developed the existing framework further, while maintaining the general approach for free allocation.

The total number of allowances available in the system is limited and decreasing (as determined by the EU-wide cap which is subject to the annually applied linear reduction factor), and so is

⁵ EU ETS State Aid Guidelines: Annex II sets out a list of eligible sectors (13 sectors and 7 sub-sectors) based on the indirect costs related to electricity consumption:

[http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52012XC0605\(01\)](http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52012XC0605(01))

⁶ Evaluation accompanying the EU ETS Directive revision proposal:

https://ec.europa.eu/clima/sites/clima/files/ets/revision/docs/review_of_eu_ets_en.pdf

the defined number of allowances available for free allocation. The rules for phase 4 are more focused to make rational use of the limited free allocation resources. If needed, allocation to all individual installations has to be adjusted (by application of correction factor (see section 1.1)).

The total number of allowances available to be given for free to industrial sectors over the ten-year period (2021 to 2030) is in the order of 6.3 billion allowances. The value of these allowances depends on the market price at the time and could be in the order of €100 billion⁷. Free allowances are a public resource as these could be auctioned by Member States, providing revenues, if not handed out for free. Given the considerable volume and value of the free allocation involved (billions of euros), and the possible impact and interest shown by stakeholders, in particular by industries, it is necessary to follow a very transparent and fair process regarding the various implementation choices used to support the determination of the carbon leakage list.

The revised EU ETS Directive sets the frameworks for the system of free allocation post-2020, focusing the free allowances on energy-intensive industries at highest risk of carbon leakage. As in phase 3, industry sectors on the carbon leakage list will receive 100% of their calculated free allocation based on the benchmarks, whereas those not on the list will receive 30% (up to 2026), decreasing to 0% over the period 2027-2030. Whether a sector is in or out of the carbon leakage list therefore has considerable economic significance for the sector.

As in phase 3, free allocation is determined by historical production levels and benchmarks and might be subject to correction factors. The current 54 benchmarks (52 product and 2 fall-back approaches based on heat and fuel) represent the performance of the 10% best performing installations in the EU. They will be updated twice in phase 4 according to the revised Directive. The first update, based on 2016-2017 data, will be applied in the first half of phase 4 (2021 – 2025). The second update will follow five years later and will be applied in the second half of phase 4 (2026-2030).

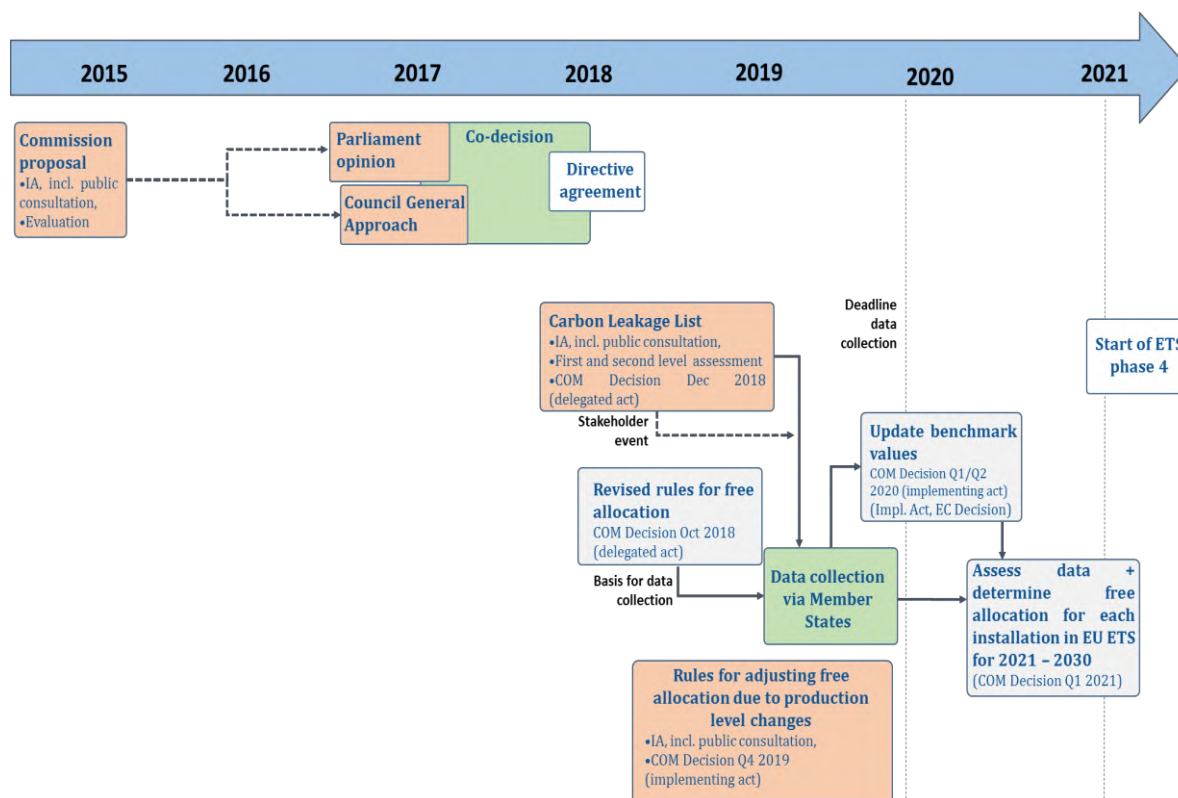
Similarly, the historical production levels are determined twice, for the first half of phase 4 (2021 – 2025) based on data from the 2014 – 2018 period, as provided by industry when applying for free allocation in 2019. A similar exercise for the second half of phase 4 will be carried out five years later. In phase 4, there will also be more frequent adjustment of allocations with significant changes in production levels.

To implement the provisions of the revised ETS Directive described above, the following set of acts will serve to determine the free allocation that industries will receive to protect against the risk of carbon leakage (see Figure 3):

- Determining the carbon leakage list
- Revising rules for free allocation
- Updating benchmark values on technological progress in industrial installations
- Establishing rules for adjustments to free allocation due to activity changes
- Determining free allocations for each installation

⁷ Average EUA price of 16€ for phase 4 period based on Thomson Reuters December 2017 price forecast

Figure 3. Overview of EU ETS Directive revision process and of acts needed to implement the free allocation to industry



The revised Directive also maintains a reserve of over 300 million allowances for new entrants and for extensions of installations (Article 10a (7)), which helps address the risk of "investment leakage". Furthermore, the revised Directive continues to allow for indirect cost compensation to sectors which are exposed to a significant risk of carbon leakage because of costs related to greenhouse gas emissions passed on in electricity prices. This compensation is subject to State Aid rules and it is related to the future review of the dedicated State Aid Guidelines in this area.

1.3. Carbon leakage criteria

Under the revised EU ETS Directive (EU) 2018/410, the Commission is required to determine a list of sectors and subsectors deemed to be exposed to a significant risk of carbon leakage ('carbon leakage list'), following an assessment of the relevant industry. Two previous decisions determining carbon leakage lists have been adopted, first covering the years 2013–2014 and second covering the period 2015–2019. The revised EU ETS Directive extends the second Decision to cover the year 2020.

The new carbon leakage list will be valid for the period 2021–2030, which will provide industry with a high level of system security and certainty relevant to their long-term investments. As for phase 3, the carbon leakage list is to be established in two subsequent steps (first and second level assessments). Criteria for inclusion in the list have changed in the revised Directive⁸ with the aim to "better identify sectors at genuine risk of carbon leakage"⁹. As a general rule, the

⁸ The earlier criteria are set out in Article 10a(13)–(18) of Directive 2009/29/EC.

⁹ Recital 10 of Directive (EU) 2018/410.

Directive states that the carbon leakage analysis is to be done at NACE-4¹⁰ level. This approach was followed in the 2013-14 and the 2015-20 lists, and is therefore the industry sector reference used. The analysis will focus on 245 industrial sectors¹¹ classified under NACE rev.2¹².

In the same way that the EU ETS system has evolved by drawing on lessons from each implementation phase, so too have the carbon leakage criteria and their implementation. Table 1 provides an overview of the main carbon leakage elements between the EU ETS phase 3 and 4.

¹⁰ NACE is the nomenclature of economic activities in the EU. The term NACE is derived from the French *Nomenclature statistique des activités économiques dans la Communauté européenne*. NACE is a four-digit classification providing the framework for collecting and presenting a large range of statistical data according to economic activity in the fields of economic statistics.

¹¹ There are 18 sectors classified under division B 'Mining and Quarrying' and a total of 221 sectors classified under division C 'Manufacturing'.

¹² RAMON - Reference And Management Of Nomenclatures:

http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NACE_REV2

Table 1. Overview of Carbon Leakage provisions in EU ETS Directive EU ETS phase 3 and phase 4

	EU ETS phase 3 (2013-2020) ¹³		EU ETS phase 4 (2021-2030)
Adoption	Dec-09	Oct-14	planned for Dec 2018
Validity	2013-2014	2015-2019 (extended to 2020)	2021-2030
Updates	2011; 2012; 2013	Possible yearly addition (no removal)	No update foreseen
Carbon Leakage Criteria – first level assessment ¹⁴			
Quantitative assessment	Step-wise criteria: - Emission costs exceed 5 % of the sector's Gross Value Added (GVA) and trade intensity above 10 %; or - Emission costs exceed 30 % of the sector's GVA; or - Trade intensity above 30 %.		Trade and Emission intensity ¹⁵ combined indicator (Box 2)
Eligibility criteria for second level assessment			
Qualitative assessment	No eligibility criteria set in the Directive; Flexible approach for sectors		Eligibility criteria set in the revised Directive
Disaggregated assessment	No eligibility criteria set in the directive; Flexible approach for (sub)sectors		Eligibility criteria set in the revised Directive
Second level assessment process			
Assessment criteria			
Qualitative assessment	Abatement potential; market characteristics; profit margins		Abatement potential; market characteristics; profit margins
Disaggregated assessment	Qualitative assessment or (step-wise) Quantitative assessment criteria		Quantitative criterion (combined indicator) as used for first level assessment
Application provisions			
Qualitative assessment	No requirements set in the Directive		- Duly substantiated, complete and independently verified data - Data period and deadline specified
Disaggregated assessment	No requirements set in the Directive		- Duly substantiated, complete and independently verified data (and audited for Member State route) - Data period and deadline specified

¹³ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02003L0087-20140430&from=EN>

¹⁴ Further details on Carbon Leakage indicator are explained in Annex V: Indicative comparison of 2015-20 CLL and 2021-30 CLL.

¹⁵ Emission intensity is the ratio of CO₂ emissions (Direct and Indirect emissions) produced to Gross Value Added at factor cost.

Compared to EU ETS phase 3 the revised ETS Directive sets out in a more detailed manner how the free allocation rules and the carbon leakage list (CLL) are to be established, thereby providing more clarity, fairness and transparency for industry in terms of who, after the main quantitative assessment (first level assessment), will be eligible for further assessment, i.e. second level assessment. As seen in Table 1, the first level assessment consists of a simple multiplication of trade and emissions intensities and the second level assessment is done according to clear criteria.

First level assessment

The first level assessment is set in Article 10b, paragraph 1 of Directive (EU) 2018/410, where a sector is deemed to be exposed to a significant risk of carbon leakage if it fulfils the quantitative criterion (QT):

- the product of the (sub)sector intensity of trade with third countries with the (sub)sector's emission intensity (called carbon leakage indicator, Box 2) exceeds 0.2.

Compared to EU ETS phase 3, (carbon) emission intensity is used instead of carbon cost, the notions are very similar, but using emission intensity does not require setting a “right” carbon price for the assessment which has proven to be a difficult exercise. Similarly, the emission intensity avoids the use of an auctioning factor, which had to be estimated because it can only be determined after the benchmarks are determined (which is an exercise dependent on the carbon leakage list).

Box 2. Carbon Leakage indicator

The phase 4 carbon leakage indicator is set as (see Annex IV: Quantitative Assessment Methodology):

$$(1) \quad CL \text{ indicator} = Trade \text{ Intensity} * Emission \text{ Intensity}$$

Where:

$$(2) \quad Trade \text{ Intensity} (TI) = \frac{(Imports+Exports)}{(Imports+Turnover)}$$

$$(3) \quad Emission \text{ Intensity} (EI) = \frac{(Direct \text{ Emissions}+Indirect \text{ Emissions})}{(GVA)}$$

Where Trade Intensity is defined in the revised Directive as the relation between the total value of exports to third countries plus the value added of imports from third countries and the total market size for the European Economic Area (annual turnover plus imports from third countries) and Emission Intensity is defined as the Sector Direct Emissions plus Indirect Emissions divided by their Gross Value Added.

Around 45 sectors representing around 90% of industrial emissions are estimated¹⁶ to be classified based on the first-level assessment, the well-defined quantitative assessment (QT). Examples of such sectors and their relative share of emissions as a percentage of total industrial emissions include: Manufacture of basic iron and steel and of ferro-alloys (NACE 24.10) with about 26% of EU ETS industrial emissions, Manufacture of cement (NACE 23.51) with about 19%

¹⁶ Estimates are based on phase 3 data, since the phase 4 carbon leakage exercise is ongoing and requires more recent data being collected and processed.




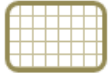
of EU ETS industrial emissions, or Manufacture of refined petroleum products (NACE 19.20) with about 14% EU ETS industrial emissions.

Second level assessment - eligibility

Sectors that do not exceed the 0.2 carbon leakage indicator for the first level assessment, have the possibility to apply for a second level assessment if the eligibility criteria are fulfilled (Figure 4 and Table 2). This second level assessment includes either a qualitative assessment (QL) carried out according to the criteria outlined in the revised Directive (see below), or a quantitative assessment at a disaggregated level (QT*) at product/Prodcom¹⁷ level based on the quantitative carbon leakage indicator.

Table 2 provides an illustration of the eligibility criteria and application routes and deadlines for second level assessments as set in the revised Directive as well as the relevant Article reference. For each route the possible assessment type is given (Qualitative and/or Quantitative at Disaggregated level) and the relevant application route and deadline set in the Directive.

Table 2. Overview of second-level assessment eligibility criteria as set in the revised EU ETS Directive

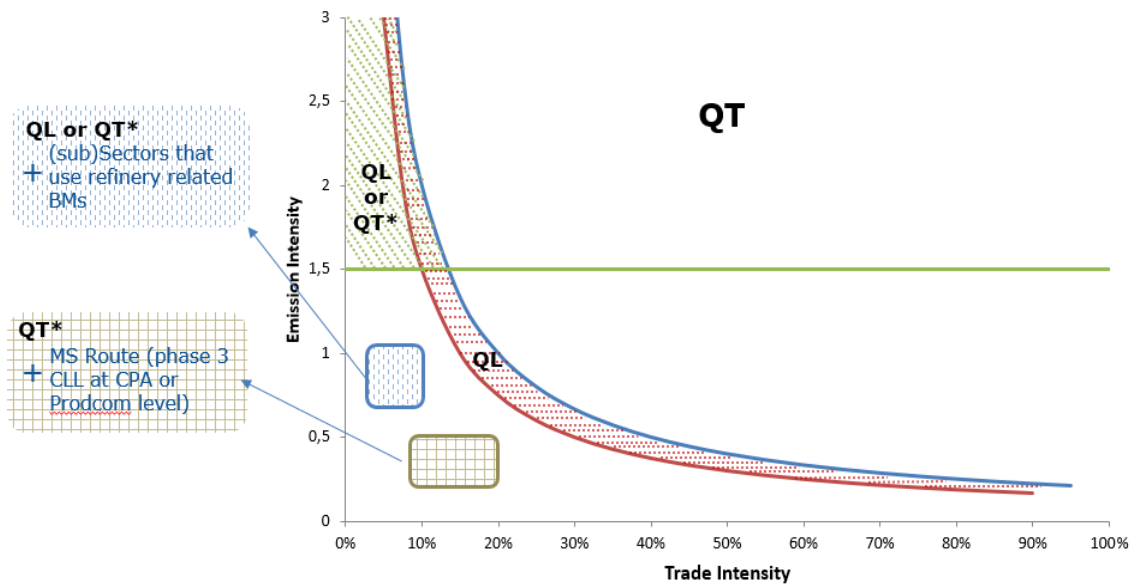
Criteria		Article	Assessment process	Sector application route	Application deadline	Figure 4 reference
A	carbon leakage indicator between 0,15 and 0,2	Art 10b (2)	Qualitative assessment (QL)	to Commission	3 months after publication of preliminary CLL	
B	emission intensity exceeds 1,5	Art 10b (3)	Qualitative assessment (QL) OR Quantitative at Disaggregated level (QT*)	to Commission	3 months after publication of preliminary CLL	
C	free allocation is calculated on the basis of the refineries benchmarks	Art 10b (3)	Qualitative assessment (QL) OR Quantitative at Disaggregated level (QT*)	to Commission	3 months after publication of preliminary CLL	
D	listed in the EU ETS phase 3 CLL at a 6-digit or 8-digit level	Art 10b (3)	Quantitative at Disaggregated level (QT* via MS)	to one Member State before final decision by Commission	by the 30 June 2018	

¹⁷ PRODCOM refers to statistics on the production of manufactured goods. The PRODCOM headings are coded using an eight digit numerical code, the first four digits of which are identical to the respective NACE code.

				("MS route")		
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Figure 4 provides a visualisation of the carbon leakage eligibility criteria where the limited set of sectors eligible for further assessment are identified as follows: CL indicator between 0.15 and 0.2 is marked as Area A; Emission intensity above 1.5 is marked as area B; Sectors which use refinery related benchmarks are marked as area C; Sectors eligible for "Member State route" are marked Area D. The refinery related sectors and Member State route sectors are illustrative references as the placement depends on the individual sector/sub sector assessment result. Sectors less exposed to carbon leakage and therefore not eligible for further assessment fall within the white area below the graphs.

Figure 4. Illustration of Carbon Leakage List (CLL) eligibility criteria and assessment routes



The eligibility criteria set in the revised Directive for the second level assessments will determine the number of sectors and subsectors that can apply for such assessments (estimated¹⁶ to be around 20 sectors representing about 5% of EU ETS industrial emissions). Examples of sectors that could be eligible to apply under the specific criteria include:

- Manufacture of bricks, tiles and construction products, in baked clay (NACE 23.32) with about 1.2% of EU ETS industrial emissions eligible under criterion B based high emission intensity;
- Industrial gases (NACE 20.11) with about 1.3% of EU ETS industrial emissions eligible under criterion C based on the refinery related benchmarks;
- Manufacture of other non-metallic mineral products n.e.c. (NACE 23.99) with about 0.3% of EU ETS industrial emissions eligible under criterion D based on disaggregated sectors that are on the 2015-2019 carbon leakage list;

A more detailed overview of the sectors that could be eligible for the second-level assessment is presented in Table 3 using the trade and emission intensity data used in phase 3 (2009-2011)) plus the updated electricity emission factor for indirect emissions (reference year 2015, instead of 2005 used in phase 3). This is because the data collection for the carbon leakage list (CLL) exercise (Annex IV: Quantitative Assessment Methodology) is still ongoing and the new Carbon Leakage List will use official Eurostat data for trade and Gross Value Added (GVA), emissions data from EUTL (European Union Transaction Log) and data submitted by Member States on

electricity consumption from the three most recent years (2013 to 2015) as well as the updated electricity emission factor.

Table 3. Industry sectors (at NACE 4 level) which are possibly eligible for second level assessment¹⁸

Code	Activity description	Phase 3 status		phase 4 status		Number of installations	% of EUTS industrial emissions
		Quantit. crit. met?	Comment	Eligible under criteria	Type of assessment possible		
25.50	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	YES*	Subsector added	D	Disaggregated QT via MS	17	0,05%
06.10	Extraction of crude petroleum	YES		A	QL	192	2,71%
27.20	Manufacture of batteries and accumulators	YES		A	QL		0,00%
13.95	Manufacture of non-wovens and articles made from non-wovens, except apparel	YES		A	QL	5	0,02%
23.49	Manufacture of other ceramic products	YES		A	QL	7	0,00%
26.80	Manufacture of magnetic and optical media	YES		A	QL		0,00%
23.42	Manufacture of ceramic sanitary fixtures	YES		A	QL	15	0,02%
32.99	Other manufacturing n.e.c.	YES		A	QL		0,00%
23.44	Manufacture of other technical ceramic products	YES		A	QL	6	0,01%
13.20	Weaving of textiles	YES		A	QL	21	0,01%
20.11	Manufacture of industrial gases	YES*	Subsectors added	A;B;C; D	aggregated QT or Disaggregated Q	37	1,30%
20.59	Manufacture of other chemical products n.e.c.	YES		A	QL	52	0,17%
24.31	Cold drawing of bars	YES		A	QL	2	0,00%
26.11	Manufacture of electronic components	YES		A	QL	17	0,02%
22.11	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres	YES		A	QL	54	0,16%
10.39	Other processing and preserving of fruit and vegetables	YES*	Subsector added	D	Disaggregated QT via MS	107	0,11%
23.99	Manufacture of other non-metallic mineral products n.e.c.	YES*	Subsectors added	D	Disaggregated QT via MS	121	0,29%
23.32	Manufacture of bricks, tiles and construction products, in baked clay	YES*	Added based on qualit. crit.	B	Qualitative or Disaggregated QT	963	1,22%
10.31	Processing and preserving of potatoes	YES*	Subsectors added	D	Disaggregated QT via MS	33	0,10%
10.51	Operation of dairies and cheese making	YES*	Subsectors added	D	Disaggregated QT via MS	174	0,29%
20.30	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	YES*	Subsector added	D	Disaggregated QT via MS	27	0,06%
10.82	Manufacture of cocoa, chocolate and sugar confectionery	YES*	Subsectors added	D	Disaggregated QT via MS	12	0,01%
10.89	Manufacture of other food products n.e.c.	YES*	Subsector added	D	Disaggregated QT via MS	29	0,06%
05.20	Mining of lignite	NO		B	Qualitative or Disaggregated QT		0,00%
08.12	Operation of gravel and sand pits; mining of clays and kaolin	YES*	Subsectors added	D	Disaggregated QT via MS	8	0,02%

Table 4 provides an estimate of the number of sectors eligible under different eligibility criteria and routes for a second-level assessment. In addition, the type(s) of second-level assessment the sector would be eligible for is identified: Qualitative Assessment (QL); Disaggregated quantitative assessment (QT*) directly to EC or via Member State (MS).

¹⁸ Indicative list based on phase 3 trade data and emission data corrected to the updated electricity emission factor for indirect emissions.

Table 4. Estimated maximum number of applications under each type of assessment (indicative assessment)

Type of second level assessment		Number of assessments (maximum)	Eligible under routes	Comments
QL	Qualitative Assessment	16	A; B; C	Assessment done at NACE level
QT*	Disaggregated quantitative assessment	15	B; C	Assessment done at product level
QT* via MS	Disaggregated quantitative assessment via Member State	22	D	Assessment done at product level

The remaining sectors (representing about 5% of industrial emissions) are considered less exposed to carbon leakage and will not be further assessed. They include sectors with limited emission intensity and trade intensity, some indicative sectors are: Building of ships and floating structures (NACE 30.11) with about 0.01% of EU ETS industrial emissions and Manufacture of motorcycles (NACE 30.91) with less than 0.01% of EU ETS industrial emissions.

Second level assessment – assessment criteria

Sectors eligible for second-level assessments must provide sound arguments for why they are exposed to a risk of carbon leakage at similar level to those sectors meeting the carbon leakage criterion of the first level assessment. Otherwise, it would not be justified that they receive the same level of free allocation as those on the carbon leakage list based on the first-level assessment. Therefore, in addition to setting the second level assessment eligibility criteria, the revised EU ETS Directive also establishes assessment criteria and application (process and content) provisions, specifically on verification and completeness requirements in order to guarantee a transparent, fair and equal treatment of sectors in the whole process.

Concretely, for the **qualitative assessment**, the revised Directive under Article 10(b) specifies the assessment criteria:

- (a) *the extent to which it is possible for individual installations in the sector or sub-sectors concerned to reduce emission levels or electricity consumption;*
- (b) *current and projected market characteristics, including any common reference price where relevant;*
- (c) *profit margins as a potential indicator of long-run investment or relocation decisions, taking into account changes in costs of production relating to emission reductions.*

To enable the Commission to carry out the qualitative assessments, the Directive also requires the submission of "*duly substantiated, complete and independently verified data*" by sectors, covering the years 2014-2016.

For the **quantitative assessments at disaggregated level**, Article 10(b) of the revised Directive stipulates that:

A (sub) sector at Prodcom level may be included in the Carbon Leakage List where the product of trade intensity (TI) with emission intensity (EI) exceeds 0.2. The revised Directive also defines the provisions regarding the required data quality to ensure the equal treatment of sectors in the whole process:

- (a) *duly substantiated, complete and independently verified data* – Emission Intensity/Refinery related route
- (b) *duly substantiated, complete, verified and audited data for the five most recent years* - MS route

The quantitative assessment at disaggregated level makes use of the same carbon leakage indicator established for the first quantitative assessment (Box 2). This indicator is calculated based on the product of the sub-sector trade intensity with third countries and the sub-sector emission intensity, where the parameters and data analysed are at product/Prodcom¹⁷ level. The revised Directive foresees that the quantitative assessment at disaggregated level methodology is the same under all the routes for which this assessment is possible. The only differences are related to the data period to be used and to the level of data verification required. Sub-sectors eligible to apply via the Member State route need to submit data for five years, while others submit data for three years. For sectors applying via the Member State route the submitted data is additionally required to be audited.

The Directive does not specify the requirements further than outlined above in this section, and it does not prescribe application procedures.

The extensive stakeholder consultation that was made as part of this initiative confirms that industry and Member State request further and complementary operationalisation of the revised Directive as regards the second level assessment provisions. Stakeholder consultation analysis in Annex III provides a more detailed overview of the results of these consultations with Member States, industry and other stakeholders.

The present impact assessment evaluates the different implementation options to operationalise "second-level assessment", i.e. Qualitative assessments and Quantitative assessments at disaggregated level, to complement the requirements set in the Directive. The aim is to ensure a sound and fair carbon leakage assessment comparable to the first-level assessment. It is not within its scope to look at the carbon leakage eligibility criteria which are set in the revised EU ETS Directive.

1.4. Subsidiarity and procedure

The carbon leakage list is determined at EU level in order to ensure a harmonised approach whereby all industry sectors across all Member States and EEA/EFTA countries are treated the same way as participants in the internal market.

This is reflected by the legal framework, in particular Article 10(b) paragraph 4 of the revised EU ETS Directive (EU) 2018/410 whereby, the Commission is empowered to adopt a delegated act concerning sectors and subsectors exposed to the risk of carbon leakage. The Commission is empowered to determine the new carbon leakage list valid for phase 4 (2021-2030). The carbon leakage list will be a delegated act to be adopted via the relevant framework: expert group consultation; 12-week public consultation by means of a questionnaire; 4-week stakeholder feedback on the inception impact assessment and on the draft act; adoption and scrutiny of the European Parliament and the Council.

The first carbon leakage list from 2013 to 2014 was adopted through the regulatory procedure with scrutiny in Commission Decision 2010/2/EU and an impact assessment was carried out by the Commission in 2009¹⁹. The second carbon leakage list from 2015 to 2019²⁰ was adopted in October 2014 by Commission Decision 2014/746/EU. An impact assessment was carried out by the Commission in 2014²¹.

Subsequently, the revised Directive (EU) 2018/410 Article 10(b) paragraph 2 and 3, outline the eligibility criteria which need to be fulfilled for a sector to be analysed in the "second-level assessments", either qualitatively or quantitatively at a disaggregated level. The application requirements are also outlined for these assessments in terms of data period reference, assessment criteria and data quality. There are data constraints with regard to the availability of data from official sources for the second-level assessments, which is the supporting subject of this impact assessment. A comparison between the 2015-20 carbon leakage list and the indicative phase 4 carbon leakage list²² is presented in Annex V.

The current impact assessment builds to a considerable extent on the previous exercises, taking into account lessons learned from phase 3 Carbon Leakage implementation, and from the Impact Assessment accompanying the EU ETS Directive revision proposal. These lessons learned define and frame the scope under which the current impact assessment's methodological elements are reviewed.

¹⁹ SEC (2009) 1710 :

https://ec.europa.eu/clima/sites/clima/files/ets/allowances/leakage/docs/sec_2009_1710_en.pdf

²⁰ extended to 2020 by the revised EU ETS Directive (EU) 2018/410

²¹ 27/10/2014 - SWD (2014) -

https://ec.europa.eu/clima/sites/clima/files/ets/allowances/leakage/docs/20140502_impact_assessment_en.pdf

²² Phase 4 indicative list based in phase 3 trade data and emission data corrected to the updated electricity emission factor for indirect emissions. Phase 4 list depends on the ongoing Carbon Leakage List indicator calculation exercise.

2. PROBLEM DEFINITION

As stated in the previous section **the current impact assessment evaluates how the criteria on the second level assessment²³ are implemented**. In that regard, what remains to be decided in this initiative will first be outlined. The elements that have already been decided in the revised EU ETS Directive are described in section 1.3.

In the qualitative assessment, when assessing emissions reduction potential, market characteristics and profit margins, the revised EU ETS Directive does not specify data sources, indicative values, thresholds or further details. Whereas in the previous carbon leakage lists for 2013-14 and 2015-20 the qualitative assessment²⁴ was used to assess borderline cases on the first-level quantitative assessment or where data was missing from official sources (e.g. on trade), for phase 4 the revised Directive clearly specifies a carbon leakage indicator between 0.15-0.2 to be eligible for the analysis (see section 1.3 for more details on eligibility). However, the absence of comprehensive details such as data quality criteria may allow for a considerable margin of interpretation in a non-transparent manner, which may trigger a criticism that sectors carbon leakage risk may be treated unequally. Such criticism was expressed regarding the ETS phase 3 carbon leakage exercise.

In phase 3 a disaggregated assessment was considered an exception to the rule of the revised Directive and thus needed to be restrictively applied as well as robustly justified, for example with substantially different production, trade, energy consumption and emissions profile characteristics in the context of a heterogeneous NACE-4 code. The Directive also allowed for either a quantitative or qualitative assessment in phase 3, and most assessments were based on trade intensity only. Additionally, all submissions were made to the Commission.

For phase 4, there is a possibility for sending an application via a Member State. This means that there are up to 32 competent assessment authorities (Commission + all EEA countries). The revised Directive does not specify procedures, i.e. concerning applications and assessments. This could lead to the risk of sectors being treated unequally. Ensuring similar assessments among all the competent authorities is therefore a concern.

For phase 4, the revised Directive specifically requires substantiated data. Therefore, where available, the use of official data sources and statistics should ensure equal and transparent treatment, similar to the first-level assessments that are done at NACE-4 level by using official data sources. Where no official data sources and statistics are available at the relevant level of disaggregation (6 and 8-digit level Prodcom), there is room for interpretation on what data can be used. This could lead to the risk of sectors being treated unequally. Ensuring data quality is therefore a major concern.

²³ Second level assessment is the Carbon Leakage assessment for a limited number of eligible (sub)sectors at Qualitative or Disaggregated quantitative level.

²⁴ Qualitative assessments have been done for the following cases:

2013-14 CLL (NACE rev. 1 reference): (1730) Finishing of textiles; (2020) Manufacture of veneer sheets; manufacture of plywood, laminate board, particle board, fibre board and other panels and boards; (2416) Manufacture of plastics in primary forms; (2640) Manufacture of bricks, tiles and constructions products, in baked clay; (2751) Casting of iron; (2753) Casting of light metals.

2015-20 CLL (NACE rev. 2 reference): (1330) Finishing of textiles; (2332) Manufacture of bricks, tiles and construction products, in baked clay; (2362) Manufacture of plaster products for construction purposes; (2451) Casting of iron; (2453) Casting of light metals; (1106) Manufacture of malt.

Box 3. Lessons learned from the previous carbon leakage lists in phase 3

The use of a framework for supporting the qualitative assessments in the phase 3 carbon leakage exercise was the preferred option in the accompanying impact assessment²⁵. However, the proposed framework was afterwards deemed to be too rigid to ensure an equal assessment treatment among sectors and it was finally not used. More details on why, will be found in section 4.1. The qualitative assessments for the two phase 3 carbon leakage lists were therefore conducted without the use of a harmonised framework which made it difficult to ensure consistency of applications, was considered to lack transparency, and contained potential for unequal treatment of sectors. Additionally, the review (as part of the 2014 impact assessment) of phase 3 carbon leakage annual additions in 2011, 2012 and 2013 concluded that a structured and harmonised framework allowing equal treatment, clarity and transparency of such assessments was preferable.

The supporting Impact Assessment on EU ETS State aid guidelines²⁶ assessed the EU ETS phase 3 carbon leakage relevant criteria and made the qualitative criteria operational by providing a sub-set of indicators (e.g. Cost-related proxies and Market related proxies) without prescribing a sequential assessment nor a rigid methodology as proposed and agreed in the IA phase 3.

In the context of the 12-week online consultation (see Annex III for details), stakeholders in general indicated that for the establishment of the Carbon Leakage List 2015-2020 the workload for applications was substantial, but it was considered to be proportional to the scale and significance of the task. Administrative simplification, it was argued, should only be permitted if it does not endanger the robustness of the assessment.

In summary, experience from the preparation of the two previous Carbon Leakage Lists shows that data source could lead to long and iterative assessment processes and unfairness between sectors. Furthermore, a lack of clearly defined quality criteria increase the risk of an un-focussed Carbon Leakage List including too many sectors, so the sectors risk receiving less free allocation because a cross-sectoral correction factor (CSCF) is applied. This will be especially harmful for those sectors most exposed to carbon leakage.

This initiative therefore focuses on complementing the revised Directive second level assessments in terms of:

- **Content:** developing the assessment criteria; application verification, identify data sources;
- **Process:** developing the application and assessment procedure and timeline; ensuring that applications are complete.

²⁵ 27/10/2014 - SWD (2014) -

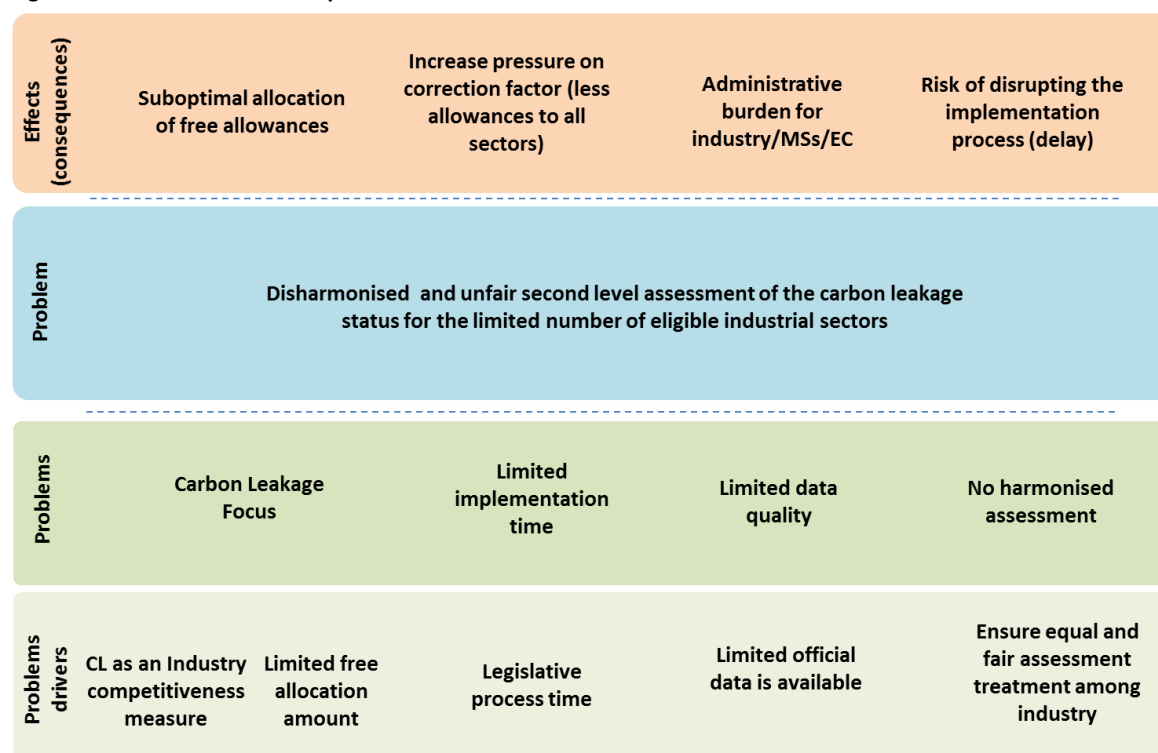
https://ec.europa.eu/clima/sites/clima/files/ets/allowances/leakage/docs/20140502_impact_assessment_en.pdf

²⁶ 2012/C 158/04 [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012XC0605\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012XC0605(01)&from=EN)

2.1. What is the problem?

The specific problem that requires action is the implementation of the carbon leakage second-level assessments, which will assess the limited number of industrial sectors eligible for either Qualitative or Disaggregated quantitative assessment (see Table 4). The main problems and relevant drivers are presented in a schematic view in Figure 5.

Figure 5. Schematic view of the problem



- Carbon Leakage Focus:

In the EU ETS phase 3 (2013-2020) the carbon leakage lists covered more than 97%²⁷ of total industrial emissions covered by the ETS (around 170 sectors), therefore, there was very limited differentiation among industrial sectors and the vast majority of industrial activities received the same treatment irrespective of the differences in their degree of exposure to carbon leakage risk and in their capability to pass-through carbon costs.

In the EU ETS phase 3 (2013-2020) the wide emission coverage of the carbon leakage list impacted free allocation, as it contributed to the cross-sectoral correction factor being applied. When assessing the coverage of sectors by the currently existing carbon leakage list (2015-20), as part of the Evaluation⁶ of the EU ETS Directive, it becomes apparent that many sectors are on the carbon leakage list due to their trade exposure only, while relatively few sectors are on the list due to their emission intensity alone. Of 245 sectors assessed (under sections B (Mining and quarrying) and C (Manufacturing) which cover all ETS installations), 153 are included at NACE-4 level, some of which do not have any emission intensive installations (e.g. musical instruments,

²⁷ 258 sectors were assessed at NACE-4 level for the first list, and 245 for the second. The number of sectors assessed at NACE-4 level varied only due to changes in statistical classification, all mining and manufacturing industries were assessed in both cases.

jewellery), 12 at PRODCOM-8 level and 10 at PRODCOM-6 level. This fact has led to criticism⁶ that many installations may receive more free allocation than justified in respect of carbon leakage risk. A carbon leakage list lacking sufficient focus, which includes industrial sectors and subsectors that are considered carbon leakage exposed on the basis of unequal assessments, potentially leads to windfall profits for some sectors and to higher compliance costs for all other sectors due to a higher cross-sectoral correction factor which reduces allocation to all installations. The latter could trigger an increased carbon leakage risk for those sectors on the carbon leakage list.

- Implementation time

The carbon leakage list is the first in a series of legislative acts that are needed to implement free allocation to industry for the ETS phase 4 by 2021. Therefore, timing of the finalisation of free allocation by 2021 plays a pivotal role in the current analysis. As a consequence of the long co-decision process on the ETS revision, the timeline for the preparation and adoption of the carbon leakage delegated act has been shortened and is much shorter (roughly 50% shorter) compared to the available timeframe in phase 3.

In phase 3, the lack of clear assessment timeframes and eligibility criteria led to late applications and a delayed assessment process. The revised Directive sets a timeframe of 3 months relative to the publication of the preliminary carbon leakage list for applications submitted to the Commission, and an absolute deadline of 30 June 2018 for applications submitted by a Member State. In order to provide transparency and to increase efficiency of the submission and assessment process further considerations may be developed.

- Data quality

The parameters used for the first-level assessment (see Annex IV: Quantitative Assessment Methodology) are based on official statistics (e.g. Eurostat Comext for trade data) or other official data sources (e.g. EUTL for verified emission data, Member States reported electricity consumption data, electricity emission factor) and therefore ensure a high level of robustness for the exercise.

For the second level assessments the availability and quality of the data required are limited, i.e. for the qualitative assessments there is limited official data on sectors' abatement potential, market characteristics or profit margins; for the disaggregated assessments there is no emissions or Gross Value Added (GVA) data at Prodcom/product level. A similar data quality concern occurred in phase 3. In the revised Directive the co-legislators have set data quality provisions which must be ensured, specifically on data verification and completeness requirements for both the Qualitative and Disaggregated assessments. These data verification and completeness requirements aim to ensure that there is a similar level of data robustness compared to the first level assessment, however there is room to further operationalise these rather general quality provisions. If data completeness requirements were not specified, decisions on sectors could be based on non-representative data leading to incorrect conclusions.

One example for data verification from phase 3 is plastics in primary forms (NACE 20.16) for which the quantitative results (non-inclusion in the Carbon Leakage List) from the official statistics were contested by industry. This sector claimed that official emissions data was unavailable as the sector was only included in the ETS from 2013 onwards. Furthermore,

industry also claimed that data from Member States did not reflect the reality of the sector due to the high level of integration with other chemical sub-sectors. Industry provided complementary data without being verified by external parties. The Commission validated the data comparing the industry documentation with other sources such as Best Available Techniques Reference documents (BREF), sector studies, conclusions of the High Level Group on competitiveness of the EU chemical industry and other available literature. Commission validation confirmed the high risk of exposure to carbon leakage for this sector. However, due to lack of verification of data submitted, the whole assessment was time-consuming and inefficient.

- Lack of assessment harmonisation

The Impact Assessment accompanying the Carbon Leakage List for the period 2015-20²⁵ concluded that the use of *"the harmonised qualitative framework is streamlined and structured, allowing a transparent, defensible and coherent approach for all sectors, which will enhance equal treatment. In practical terms, it will facilitate sector associations in clarifying the data and arguments, and it will allow the Commission to ensure continuity and transparency. As such, this option is a highly effective one."*

However, the proposed framework for the Qualitative assessment in phase 3 was perceived by industry as being too prescriptive. This was also due to the limited stakeholder involvement in the development process. Moreover, the proposed framework in the last exercise included a sequential order for the assessment of the three qualitative criteria (abatement potential, market characteristics, profit margins) which did not follow the provisions of the ETS Directive. These criteria set in the Directive were interpreted and translated into a list of indicators structured in a 3-step approach. In the revised Directive the assessment process is more structured, having several application possibilities/routes, including also a new route where for a limited number of cases it will be possible to submit an application via a Member State who has no prior experience in this type of carbon leakage assessments.

The findings from the stakeholder consultation on the inception impact assessment, the 12-week public consultation and the bilateral stakeholder discussions (see Annex III: Stakeholder consultation analysis for a detailed analysis) also confirm that, considering the short deadlines for application and assessment, it is important to have guidance and a clear implementation approach for the second level assessment, while Member States and non-governmental organisations specifically called for assurance on transparency and the equal treatment of sectors in the assessments.

Therefore, taking into account the rules laid down in the revised EU ETS Directive, the overall problem is the risk that the exercise would deliver a range of non-harmonised second level assessments (of the carbon leakage status) and also a lack of harmonisation and consistency between first and second level assessments.

2.2. What are the problem drivers?

2.2.1. Ensure equal and fair assessment treatment

An unequal and non-harmonised assessment would lack comparability and contain potential for unfair treatment of sectors. Phase 3 experience shows that a non-harmonised approach requires a more resource and time-consuming assessment both for those applying and those

making the assessment. Main driver for this problem is the low degree of detail in the provisions of the revised Directive.

For phase 4, one entirely new assessment element is the case where, for a limited number of subsectors, the application can be submitted via a Member State. There are no previous experiences or guidance available that could ensure a harmonised assessment process. This means that there will be up to 32 possible authorities (Commission + 31 EEA countries) which will make assessments. A harmonised assessment would help to ensure equal treatment. This point has explicitly been raised by Member States in several meetings (further details in Annex III: Stakeholder consultation analysis).

2.2.2. Limited quantity of free allowances

The revised Directive sets a limited and decreasing number of free allowances in line with the necessary emission reductions. In view of this, the problem driver is to address the risk of carbon leakage for a limited set of sectors eligible for a second-level assessment in the most efficient and effective way possible. This is also relevant because the share of emissions covered by the carbon leakage list has an impact on the possible need of the cross-sectoral correction factor.

2.2.3. Stringent legislative process timeframe

The carbon leakage list must be adopted before the large-scale data collection for the update of benchmarks and for calculating free allocations can take place, involving around 11.000 installations. This is because the installation data to be reported is different depending on the carbon leakage status of the installations. According to the revised Directive, this large-scale data collection should be completed by 30 September 2019 and it therefore needs to start early in 2019. As a result, the carbon leakage list needs to be adopted by December 2018. Because of this interdependence with other implementation steps, there is a shorter timeframe to finalise the new carbon leakage list than there was in the previous exercises.

2.2.4. Limited official data availability

Whereas the first level assessment is based on official data sources, the revised EU ETS Directive does not specify data source, nor does it provide requirements for the second level assessments.

A lack of data from Eurostat and from Member States triggers the need for assessments to be carried out using alternative data sources, which could raise concerns about the quality of such data and could pose the risk of delays and political pressure from sectors not identified as being exposed to high risk of carbon leakage. Clearly defined data sources plus assessment and data quality criteria help mitigate these risks.

2.3. How will the problem evolve?

Article 10(b) of the revised Directive requires the Commission to adopt a delegated act to determine sectors and subsectors deemed at risk of carbon leakage. This list includes the results of the first and second-level assessments. Therefore, the problems described in section 2.1 would not evolve.

One further consideration regarding the problem evolution relates to the difference between phase 3 and phase 4 eligibility criteria for the second level assessments. The revised Directive sets the scope for the second level assessment by establishing clear eligibility criteria (Table 1). This limitation in assessment scope is relevant because the more focused carbon leakage criterion used in the first level assessment reduces the number of sectors expected to pass the first level assessment, and therefore many more sectors would be available for second level assessment, if the (no) eligibility criteria approach applied in phase 3 would be used.

In phase 3, 146 sectors were included on the carbon leakage list based on the first level assessment, compared to an indicative 45 sectors for phase 4 (Annex V: Indicative comparison of 2015-20 CLL and 2021-30 CLL). The majority of those sectors expected to fall out of the first-level assessment (around 100 sectors) would likely apply for second level assessment in a scenario where no eligibility criteria were set for second level assessment. The introduction of eligibility criteria for second level assessments is therefore needed as a consequence of a stricter first level carbon leakage criterion in order to limit the number of applications. Overall, still more second level assessments are expected for phase 4 than for phase 3. This is why it is important to avoid rounds of iteration of individual applications in order to keep the preparation process for the carbon leakage list manageable and feasible within the given timeframe.

3. OBJECTIVES

3.1. General objectives

The Paris Agreement was adopted on 12 December 2015 and entered into force on 4 November 2016. Its parties have agreed to hold the increase in the global average temperature well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels.

In the context of the Paris Agreement, the EU committed itself to reduce domestic greenhouse gas emissions by at least 40% by 2030 compared to 2005 levels. Therefore, the general objective of EU climate action policy, and of the EU ETS as a key instrument, is to ensure progress towards the Europe 2030 targets of reducing GHG emissions, contributing to achieving the EU climate objective of limiting the increase in the global average temperature to well below 2 degrees Celsius above pre-industrial levels. The 2030 target also ensures the EU is on the path of a low-carbon transition that will deliver emission reductions of 80-95% by 2050 in a cost efficient manner. The revised EU ETS Directive (EU) 2018/410 sets a linear reduction factor of 2.2% from 2021 onwards which ensures an emission cap at the 2030 emission level of -43% compared to 2005 levels.

Additionally, industry competitiveness concerns are regarded as a general objective of the EU ETS. It is addressed by the free allocation system in order to tackle the potential risk of carbon leakage, while incentivising emission reductions, the transition to a low-carbon economy and avoiding over-compensation. The EU ETS architecture sets a limited total number of allowances in the system (EU-wide cap) where allowances that are not given out for free are auctioned, and are, thereby, a financial resource for both Member States and industry. In that sense, the general objective can be deemed achieved when allowances resources are fair and optimally distributed in a way that they are likely to be used most coherently with the general policy objectives of EU climate policy.

3.2. Specific objectives

The specific objective is to ensure that first-level assessments and second-level assessments for the carbon leakage list 2021-2030 are carried out in a comparable manner, i.e. that both assessments ensure that only sectors at risk of carbon leakage are identified. It is also aimed to align the EU ETS free allocation architecture with the EU ETS emission reduction commitment, where free allocation is designed to lower the effective carbon cost for industry, and allow industry to retain financial resources that can be used to invest in low-carbon technologies. This mirrors the clear aim of the co-legislators to avoid over-allocation and to better identify sectors at genuine risk of carbon leakage. This aim is expressed by a more stringent carbon leakage criterion (combining trade and emission intensity) and by eligibility criteria for second level assessments set by the revised Directive.

The specific free allocation and carbon leakage list objectives are:

- i. Diminishing the potential risk of carbon leakage;
- ii. Ensuring a fair, comparable and objective carbon leakage assessment of (sub)sectors;
- iii. Avoiding over-compensation and minimize risk of applying a cross sectoral correction factor.

3.3. Operational objectives

The operational objective is to determine in the most accurate (possible) way within the criteria of the revised Directive and in view of the stringent implementation timeline, the new carbon leakage list, by using recent data and lessons learnt from the previous two exercises. A fair treatment of different sectors and different application routes is the overarching guiding principle for this purpose.

The Commission has a legal obligation to determine the new carbon leakage list valid for the ten-year period 2021-2030 (phase 4), therefore ensuring regulatory predictability which is an important concern raised by industry. Experience gathered during the previous carbon leakage list exercises suggests that there is still potential to reinforce the efficiency and transparency of the second-level assessment process. The revised Directive stipulates that a sector is less exposed to carbon leakage if it is below the major quantitative criterion (carbon leakage indicator above 0.2) or if it is unable to prove its carbon leakage exposure in the second-level assessment (possible only for eligible sectors).

Regarding time constraints, the carbon leakage list is first in a series of legislative acts to implement the free allocation to industry for which there are interdependencies, e.g. subsequent installation data collection to determine the free allocation is linked to the carbon leakage status. The new carbon leakage list will be a technical product framed by the revised Directive criteria and resulting from applying the implementation elements to the most recent data available within the set timeframe.

The operational objectives are to:

- i. Ensure fairness of the second level assessments and comparability between applications of same and different assessment routes;
- ii. Implement the second level assessment within the limited timeframe available and with most efficient use of resources (industry sectors; Member States and Commission);
- iii. Ensure the same level of robustness of assessment and result as in the first level assessment by implementing effectively the data quality provisions set in the revised Directive on data verification and completeness.

4. IMPLEMENTATION OPTIONS

As described in section 1, the revised EU ETS Directive (EU) 2018/410 determines the eligibility criteria, thresholds and types of assessments underpinning the determination of the carbon leakage list. This means that compared to the previous carbon leakage list (CLL) exercise, there is full clarity and transparency for industry in terms of who will be eligible for the second level assessments and according to which deadlines. Therefore, no policy options can be developed along these parameters. The present impact assessment develops and analyses implementation options for the second level assessments that are needed to complete the 2021 – 2030 carbon leakage list.

4.1. Qualitative assessments (QL)

Concerning the process for qualitative assessments, two main steps can be distinguished:

- Application by industry to the Commission
- Assessment of the applications by the Commission

Substance-wise, the main element of a qualitative assessment is the analytical methodology to be applied to identify the level of risk of carbon leakage, data quality and verification requirements and data sources.

Based on the legal provisions of the revised EU ETS Directive these elements are further described and implementation options are identified. Such implementation options could be integrated into guidance²⁸ to be provided by the Commission. At various occasions, stakeholders expressed their strong support for such guidance (see Annex III for more details).

To facilitate the analysis, the integrated implementation option packages are first introduced in section 4.1.1, and in section 4.1.2 where the detailed description of the different elements and their options is provided. The following packages are considered (similar to the phase 3 Carbon Leakage List Impact assessment, which used three options for qualitative assessments²⁹):

- **Baseline scenario – no guidance**
- **Flexible qualitative framework**
- **Rigid qualitative framework**

The identified two framework options package the main elements of qualitative assessments following two different philosophies: ensuring a high level of harmonisation by providing guidance with as limited as possible room for interpretation (rigid qualitative framework) and providing a maximum of flexibility to address sectors' specificities while ensuring harmonised minimum quality standards (flexible qualitative framework). Table 5 provides a schematic overview of the different option packages. The proposed option packages evolve from the lessons learned from the phase 3 exercise where only two polar options were considered (i.e. no guidance and rigid framework). Support for a framework had been demonstrated but some

²⁸ Section 1.3. Introduces the experience from phase 3 carbon leakage exercise regarding the use of a framework in the qualitative assessments.

²⁹ Impact assessment (2014), page 39: a) Baseline scenario, b) Harmonised qualitative framework, c) Harmonised qualitative framework with some quantification.

level of flexibility should also be considered. As a result a flexible qualitative framework is now proposed as a third (middle) option.

Table 5. Overview of qualitative framework elements (section 4.1.1.) by option packages

Framework elements	Provisions in ETS Directive	A. Baseline – no guidance	B. Flexible qualitative framework	C. Rigid qualitative framework
Applications: who	By sectors and subsectors	No further specification	Criteria for applicants	List of eligible entities (e.g. industry associations)
Applications: contents	-	No specification	Indicative list of documentation	Exhaustive list of documentation
Quality requirements	Duly substantiated, complete	No further specification	Require high coverage (85%) in case full coverage is not feasible	Require full coverage
Verification	Independently verified data	No further specification	Requirements for independence and competence	List of accepted verifiers
Analytical framework	3 criteria: abatement potential; market characteristics, profit margins	No further specification	Specification of criteria (develop questions/sub-criteria) with no prioritization of sequential process	Specification of criteria (develop questions/sub-criteria) with prioritization and sequential process
Data sources	-	No specification	Indicative list of data sources for the qualitative assessments	Prescriptive list of sources
Assessment of applications	-	No specification	Detailed qualitative assessment methodology	Detailed qualitative assessment methodology with quantification of conclusions

4.1.1. Packages of implementation options for the analysis of impacts

A. Baseline scenario – no guidance for qualitative assessments

The baseline scenario from which options are assessed are the parameters as stipulated in the revised EU ETS Directive, i.e. no further details provided by guidance documents. As in the previous exercises, this option means implementing the revised Directive provisions as stated and considering ad-hoc assessments of sectors and sub-sectors on a case-by-case basis without guidance provided through a harmonised framework.

B. Flexible qualitative framework

Develop a framework with template and specific guidance on data and format for presentation. The proposed framework is documented in Annex VI.

This option package would provide guidance aimed at reflecting the criteria set out in the revised Directive enriched with further questions that would operationalise these general criteria and specifying the application process and content.

While the revised Directive determines the criteria for eligibility for qualitative assessments, the preliminary carbon leakage list expected to be published in May 2018 will include the actual list of sectors that fall into this category. Only then will there be clarity on which sectors meet the criteria. The revised Directive also sets a limited time frame of 3 months from the date of publication of the preliminary carbon leakage list for the submission of such second-level assessments.

C. Rigid qualitative framework

Similar to option package B, a framework with template and specific guidance on data and format for presentation could be developed.

This option package would also provide guidance aimed at reflecting the criteria set out in the revised Directive enriched with further questions that would operationalise these general criteria and specifying the application process and content. The main difference to the flexible qualitative framework would be the rigid methodology for the qualitative assessment at the core of the frameworks. In addition, more restrictive approaches would be consistently applied concerning data quality and applications.

4.1.2. Description of the implementation options

Applications by industry to the Commission

Article 10b of the revised EU ETS Directive refers to "*sectors and subsectors*" which may apply to the Commission for an assessment. However, it is not specified which legal entities could apply and whom they should represent. Furthermore, there is no indication of whether more than one application per sector or subsector is possible.

To provide clarity on the process, two options are possible:

a) Specification of criteria for applicants

Set guidance requirements on the legal entity that can submit an application on behalf of the eligible sector by specifying the type of organisation, number of applications per (sub)sector, possibility for joint applications and application by consortium.

b) Specification of eligible entities

Alternatively it can be published a list of European associations representing industry (sub)sectors eligible for qualitative assessment as specified in the preliminary Carbon Leakage List. Such a list must ensure complete representation of the sector and reflect the specific organisation of a sector at EU level.

Regarding documents to be provided with each application, Article 10b of the revised EU ETS Directive has no specific provisions and the experience from the past (2014) shows that the applications for the qualitative assessment were in the form of a mini study or a discussion paper. They were either prepared by the industry associations themselves or in some cases in cooperation with consultancy firms. They followed a sequence of criteria and providing a qualitative and, where possible and existing, also quantitative evidence to support the conclusions on qualitative reasoning. An often used structure of such applications, even though not prescribed by guidance, was:

- NACE or PRODCOM codes for which the application is submitted;
- general information about a (sub) sector including the present carbon leakage status;
- representativeness and coverage of the data;
- description and conclusion on each of the three criteria separately by providing supporting documented evidence (with quantitative evidence where existing);
- a final conclusion on carbon leakage risk.

Concerning the content of application two options are considered for an application framework:

a) Indicative list of documents to be provided with the application

Stakeholders (further described in Annex III) have expressed their preference for having a guidance in place, provided by the Commission as early as possible, on what exactly sectors need to do when applying for a Qualitative Assessment and on the evidence they need to provide to support their application. Some asked for a sort of check list of the documents to be provided while others expressed a will to consider a possibility of filling in a template for the main application part.

The guidance on the documents to be provided specifies the information to be submitted to the Commission, such as a list of the installations in the sector that are covered by the EU ETS, complete documentation on data sets, data sources, calculations, estimates and methodologies applied. It also requests that any supporting documentation of the arguments for why the sector thinks it should be on the carbon leakage list, based on the three criteria set by the revised Directive, shall be added. The questions put forward by the framework are organized separately for each criterion. Given the interlinkages between criteria and their equal weight, the conclusive arguments are based on an assessment of the combination of all three criteria, and not only on an assessment of one of the criteria.

b) Prescriptive list of documents to be provided with the application

The second option raised and discussed with stakeholders include all of the items mentioned in the previous option but also prescribes the documents to be submitted with the application. Only the documents listed in the proposed framework are acceptable and no supporting data source would be assessed.

Throughout the stakeholder consultation a support to set up harmonised guidance and application frameworks that ensure a fair assessment has been confirmed. However it was continuously highlighted that sector specific characteristics should not be disregarded, doing so could risk the carbon leakage assessment fairness.

Data quality requirements

Concerning data quality, Article 10b of the revised EU ETS Directive provides that "*... sectors and subsectors shall submit duly substantiated, complete and independently verified data to enable the Commission to carry out the assessment together with the application.*"

The consultation of stakeholders and Member States indicated that there is no common understanding on the interpretation of "*duly substantiated*" and "*complete*". Completeness could be understood as coverage in terms of ETS installations, time period and geography/ Member States.

Two options are considered for checking completeness of data:

a) Strict requirement of full coverage

A literal interpretation of the completeness requirement suggests that data needs to be provided for all installations concerned. However, European associations of industry sectors may not represent all operators in the sector (given the voluntary nature of membership).

- b) Requirement of high coverage (85%) in case full coverage is not feasible

Alternatively, quantitative criteria for coverage (a certain percentage of installations, emissions and turnover to be covered by the dataset used for the qualitative assessment) can be set. A high percentage of coverage should be considered, e.g. 85% given the starting point of 100% coverage following the literal interpretation.

Verification

As far as verification is concerned, stakeholders inquired about concrete requirements for verifiers and the scope of their work for an application for qualitative assessment.

- a) Specification of requirements for verifiers (independence and competence)

As a first option, requirements for verifier are defined based on existing provisions for verification of emissions reports in the context of the ETS. The two key requirements concern independence from the applicant and their members (e.g. not owned or managed by the applicant) and the competence of verifiers to carry out the verification, which can be demonstrated by relevant accreditations (as required for verifiers for ETS emissions reports) or track records of similar services.

- b) Specification of a list of eligible verifiers

Alternatively, and suggested by some stakeholders, a list of eligible verifiers can in principle be provided by the Commission. It was argued that this option provides additional certainty on the verification process by predefining the entities whose verification report would be acceptable. Such a list must be exhaustive and ensure that the identified organisations have the required verification competencies and that no preferential treatment is given to identified organisations.

At the stakeholder event on 2 March both options were discussed and it was accepted that a closed list of acceptable verifiers risks not being complete and therefore can be unfair, while it was considered reasonable to determine the set of competence requirements and proof that must be fulfilled.

Analytical methodology to identify the level of risk of carbon leakage

In Article 10b the revised EU ETS Directive specifies that sectors may be included in the carbon leakage list *"on the basis of a qualitative assessment of the following criteria:*

- (a) the extent to which it is possible for individual installations in the sector or subsector concerned to reduce emission levels or electricity consumption;*
- (b) current and projected market characteristics, including, where relevant, any common reference price;*
- (c) profit margins as a potential indicator of long-run investment or relocation decisions, taking into account changes in costs of production relating to emission reductions."*

The assessment against the three criteria is obviously the key element of the qualitative assessment. Several stakeholders asked for an interpretation³⁰ of these three criteria and about

³⁰ Stakeholders were seeking more information on compatibility of different time periods prescribed in the revised EU ETS Directive for which various assessments are undertaken (data from 2014-16 for qualitative assessments vs. three most recent years for which data is available for quantitative

guidance on their application to the relevant cases. Discussions with industry and Member States also concluded that it would facilitate the work of industrial sectors, if the three general assessment criteria were broken down into more operational criteria for each sector. The following questions could be used for this purpose:

- Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption:
 - What is the current level of emissions and electricity consumption intensity in the sector?
 - What emissions and electricity consumption intensity is possible using the best available technologies?
- Market characteristics: assessing the extent to which producers can reject cost increases or pass cost increases on to customers:
 - How do trends in output prices compare to input/production costs, including carbon costs, and is there any pattern/correlation?
 - What do industry and market characteristics imply about the ability of producers to pass on cost increases? How do trends look like?
- Profit margins (as indicators of investment or relocation decisions): ascertaining the size of profit margins associated with EU production/market to assess the relative attractiveness of the ETS area as a place for long-term investment:
 - Are current and expected future profit margins high enough and stable enough to incentivise long-term investment?
 - If relocation is attractive, are transport costs low enough and how easy/costly is it to transport the product in question (e.g. value to weight ratio)?
 - Do current trade patterns imply this would be feasible?
 - Do recent investment trends provide any insight on recent decisions on where to locate?
 - Do recent trends in business demography (start-ups and closures) provide any insight on the attractiveness of the EU as a location to invest?

The assessment would then need to combine the individual criterion assessments to make an overall assessment and conclusion on the risk of carbon leakage. For this overall assessment step, the following two methodologies could be applied.

a) Comprehensive analytical methodology to assess the level of carbon leakage risk

This option for the overall assessment step combines the individual criterion assessments of all three criteria to make an overall assessment and conclusion on the risk of carbon leakage. Stakeholders involved in the 2015-2020 carbon leakage exercise, both industry and other Commission services, have claimed that it is highly important to look at the correlations or trade-offs between the three criteria, e.g. does the assessment for profit margins correlate with the market/industry characteristics? Such approach treats all three criteria as equally relevant and allows for the specific characteristics of the applicant sector to be reflected in the assessment. For example, if assessing the abatement potential and carbon cost of a sector the result would be considered to be low exposure to costs, and for the following criteria there is

assessment and disaggregated quantitative assessment and five most recent years for "MS route") and on the difference between "sequential" (as proposed last time) and "combined" qualitative assessment.

carbon leakage evidence, i.e. the market characteristics indicate limited possibility to pass cost increases on to customers and profit margins indicate an incentive to relocate/invest abroad, the combined assessment would conclude that the sector is carbon leakage exposed.

b) Sequential analytical methodology to assess the level of carbon leakage risk

Alternatively, the overall assessment can be done in a prescriptive and rigid methodology by assessing the three criteria sequentially (i.e. setting priority in the criteria set in the Directive) and quantifying the degree of risk of carbon leakage exposure, this approach is similar to the one proposed for the 2015-2020 carbon leakage list. For example, if in the first step (assessing the abatement potential and carbon cost of a sector) the result would be considered to be low exposure to costs, the assessment would stop after this first criterion and consider the carbon leakage risk to be low as the ETS compliance costs could be sufficiently reduced by emission abatement. Similarly, the rigid approach can specify a quantification of the qualitative methodology applied (e.g. the quantitative degree (in %), to which emissions can be reduced or costs can be passed on) and/ or a weighting of the three criteria.

Data sources

Apart from the requirement of "*duly substantiated*" (see above), the revised ETS Directive does not specify any data sources to be used for qualitative assessments or requirements for such data sources. However, the choice of data sources could have impact on the quality of data and therefore on the result of the assessments. Two options are considered for identification of data sources for the qualitative assessments:

a) Indicative list of data sources for the qualitative assessments

The requirements for data sources are defined, e.g. the use of official statistics, and, as supported by industry stakeholders, guidance includes examples of complementary data sources to be used to assess the three criteria (and the related underlying questions) provided by the revised EU ETS Directive. Such guidance facilitates the preparation of applications and save the amount of time needed, this option does not pre-empt the use of sector complementary data sources provided that a similar quality standard is ensured. Various stakeholders (industry, Member States) have highlighted their general support for making qualitative assessment more harmonized and structured and allowing for cross-sector comparability, therefore favouring the use of data source guidance.

b) Prescriptive list of data sources for the qualitative assessments

A prescriptive list follows the above data requirements and limits the acceptable data sources to the ones set in the framework, i.e. all complementary data sources not identified are not acceptable. The prescriptive list must ensure that all identified data sources cover all three criteria for all eligible sectors with the same quality standard.

Assessment of applications by the Commission

Regarding the assessment of the applications by the Commission, Article 10b of the revised EU ETS Directive does not specify how the Commission or Member States should assess the applications. Therefore, a harmonised assessment process for applications to be carried out by the Commission or Member States could be envisaged to ensure a comparable treatment of applications. A first step would include checks of eligibility, completeness of the files,

verification requirements and data sources used. It would need to be carried out within a given timeframe. A second step will consist of an assessment of the quality and evidence provided on the key questions/indicators of interest, leading to conclusions on the extent to which the argument (no abatement potential; no/little scope for passing on costs; low/negative profit margins) is supported. A final step consists of an assessment of the arguments in view of the likely magnitude of carbon leakage exposure risk. For this last step, a quantifying approach could be applied (e.g. the quantitative degree, e.g. in %, to which emissions could be reduced or costs can be passed on).

The following options for the assessment by the Commission could be envisaged (given that the above mentioned first two steps are considered as without alternative):

- a) Specification of qualitative methodology for the assessment by the Commission;
- b) Specification of qualitative methodology with quantification of conclusions for the assessment by the Commission.

4.2. Disaggregated quantitative assessments (QT*)

As for the qualitative assessments, the process for disaggregated quantitative assessments consists of two or three main steps, depending on the application route (see section 1.3, Table 2):

- Application by industry to the Commission or a Member State (for the 'Member State route' only)
- Assessment of the applications by the Member State concerned (for the 'Member State route' only)
- (Final) assessment of the applications by the Commission

Similar to qualitative assessments, the main elements of disaggregated quantitative assessments are data quality and verification requirements, data sources and – specifically – methodologies to fill data gaps for the calculations of the carbon leakage indicator.

These elements are further described, based on the legal provisions of the revised EU ETS Directive and implementation options are identified. Such implementation options could be integrated into guidance to be provided by the Commission. To facilitate the analysis the integrated implementation option packages are first introduced in section 4.2.1 and in section 4.2.2 the detailed description of the different elements and their options is provided. Similar to the qualitative assessment, three option packages for disaggregated assessments for the new carbon leakage list are introduced:

- **Baseline scenario – no guidance**
- **Flexible disaggregated framework**
- **Rigid disaggregated framework**

The two identified framework options package the main elements of qualitative assessments following two different philosophies: ensuring a high level of harmonisation by providing guidance with as limited as possible room for interpretation (rigid disaggregated framework) and providing a maximum of flexibility to address sectors' specificities while ensuring

harmonised minimum quality standards (flexible disaggregated framework). Table 6 provides a schematic overview of the different option packages. Similar to the qualitative assessment option packages, the proposed options at disaggregated level include, apart from the two polar options, i.e. no guidance and rigid framework, an intermediate option with some level of flexibility.

Table 6. Overview of disaggregated framework elements (section 4.2.1) by option packages

Framework elements	Provisions in ETS Directive	D. Baseline – no guidance	E. Flexible disaggregated framework	F. Rigid disaggregated framework
Applications: who	By sectors and subsectors	No further specification	Criteria for applicants	List of eligible entities (e.g. industry associations)
Applications: to whom (MS route)	Member State(s)	No further specification	Restriction to one MS per sector	Assign MS to (sub)sector
Applications: contents	-	No specification	Indicative list of documentation	Exhaustive list of documentation
Quality requirements	Duly substantiated, complete	No further specification	Require high coverage (85%) in case full coverage is not feasible	Require full coverage
Verification	Independently verified (and audited – for MS route) data	No further specification	Requirements for independence and competence	List of accepted verifiers and auditors
Methodology for data gaps	-	No specification	Default list of gap filling methodologies	Prescriptive list of gap filling methodologies
Data sources	-	No specification	Indicative list of data sources	Prescriptive list of sources
Assessment of applications	-	No specification	Detailed assessment methodology	Detailed assessment methodology

4.2.1. Packages of implementation options for the analysis of impacts

D. Baseline scenario – no guidance for disaggregated assessments

The baseline scenario from which options are assessed are the parameters as stipulated in the revised EU ETS Directive, i.e. no further details provided by guidance documents. This option means implementing the revised Directive provisions as they are set and considering ad-hoc assessments of sectors and sub-sectors on a case-by-case basis without a harmonised framework or guidance.

E. Flexible disaggregated framework

Develop a framework with template and specific guidance on data and format for presentation. The proposed framework is documented in Annex VII.

This option package would provide guidance aimed at reflecting the criterion set out in the revised Directive enriched with further elements and specifying the application process and content.

While the revised Directive determines the criteria for eligibility for disaggregated assessments, the preliminary carbon leakage list expected to be published in May 2018 will include the actual list of sectors that fall into this category. Only then will there be clarity on which sectors meet the criteria. The revised Directive also sets a limited time frame of 3 months from the date of publication of the preliminary carbon leakage list for the submission of such second-level assessments. However, for the 'Member State route', eligibility criteria and an absolute

application deadline (for Member States to the Commission) of 30 June 2018 are specified in the revised EU ETS Directive.

F. Rigid disaggregated framework

Similar to option package E, a framework with template and specific guidance on the data and format for the presentation could be developed.

This option package would also provide guidance aimed at reflecting the criterion set out in the revised Directive enriched with further element. The main differences to the flexible disaggregated framework are the rigid methodology for data gap filling and more restrictive approaches consistently applied concerning data quality and applications.

4.2.2. Description of the implementation options

Applications

Article 10b of the revised EU ETS Directive refers to "*sectors and subsectors*" which may apply to the Commission for an assessment. For the 'Member State route', the revised EU ETS Directive provides in Article 10b that "*a Member State may request, by 30 June 2018, that a sector and subsector ... be included...*" In practical terms, Member States will only be able to do so, if relevant information is provided by the sectors or subsectors concerned.

It is not specified which legal entities could apply and whom they should represent. Furthermore, there is no indication of whether more than one application per sector or subsector is possible.

There are two options for how to provide clarity on the process for qualitative assessments:

- a) Specification of criteria for applicants (i.e. type of organisation, number of applications per (sub)sector, joint applications)
- b) Specification of list of eligible entities (list of European associations representing industry (sub)sectors eligible for qualitative assessment as specified in the preliminary Carbon Leakage List)

In the absence of implementation provisions in the revised EU ETS Directive especially for the 'Member State route', it could be envisaged to limit the number of sector and subsector applications to one Member State per (sub)sector as multiple applications could be inefficient and burdensome for all actors involved (industry, Member States and Commission). To summarise, for the applications via 'Member State route' two approach options exist:

- a) Assignment of two or more Member States per (sub) sector

In this first approach, Member States are in principle assigned to specific sectors and subsectors to provide more clarity on the application process based on the geographical distribution of installations of that sector or subsector.

- b) Limitation to application via one Member State per (sub) sector

In this second option, the approach is to limit the number of applications by eligible sector while not pre-empting to whom that application should be addressed. Eligible (sub) sector is allowed

to discuss with the most relevant Member State regardless of geographical distribution of installations.

There are no provisions in Article 10b of the revised EU ETS Directive regarding the supporting documents to be provided with applications. As for the qualitative assessments (for details, see section 4.1.2), the following two options exist:

- a) Indicative list of documents to be provided with the application
- b) Prescriptive list of documents to be provided with the application

Data quality requirements

Concerning data quality, the revised EU ETS Directive provides that *"... sectors and subsectors shall submit duly substantiated, complete and independently verified data to enable the Commission to carry out the assessment together with the application."* For the 'Member State route', subparagraph 5 requires in addition that the data are audited.

The consultation of stakeholders and Member States indicated that there is no common understanding on the interpretation of *"duly substantiated"* and *"complete"*. Completeness could be understood as coverage in terms of ETS installations, time period and geography/ Member States.

As for qualitative assessments (see section 4.1.2), two options for completeness have been identified:

- a) Requirement of high coverage (85%) in case full coverage is not feasible
- b) Strict requirement of full coverage

Verification

In addition to the verification requirement, the revised Directive requires that the data are audited for the 'Member State route'.

The detailed difference between the tasks of the verifier and the auditor was demanded by Member States and industry for better comprehension. While verifiers are accredited to do technical assessment, the level of accreditation for auditors is higher. Auditors are also accredited to check accounting books and give financial information. Guidance could explain the differences more in detail.

In addition and similar to the considerations for qualitative assessments (see section 4.1.2 for more details), two options for verification and auditing have been identified:

- a) Specification of requirements for verifiers and auditors
- b) Specification of list of eligible verifiers and auditors

Methodology for data gaps for the calculation of the carbon leakage indicator

In principle, the disaggregated assessments should be carried out using the same official data sources as used for the quantitative assessments at NACE-4 level. However, certain data, e.g. gross value added (GVA) which is needed to calculate the emission intensity, is only available in Eurostat statistics at NACE-4 level and not at Prodcom-6 or 8 level.

Article 10b of the revised EU ETS Directive does not specify how such data gaps for the calculation of the carbon leakage indicator should be treated and the following data gap filling options have been identified:

- a) Default list of data gap filling methodologies for the disaggregated assessments

Methodologies to fill data gaps include estimates based on data at higher level of aggregation (i.e. NACE-4), extrapolation or interpolation in case data are missing only for specific years and the use of alternative data sources. The proposed default approach is based on official statistics and best statistical practices and therefore ensures that the data quality requirements as set in the Directive are respected. Where it is appropriately justified and supported, this option allows for a complementary approach to be submitted.

- b) Prescriptive list of data gap filling methodologies for the disaggregated assessments

An alternative option does not allow for any deviation from the default approach and should therefore ensure that the default approach (i.e. official statistics and best statistical practices) are equally applicable to all eligible (sub)sectors.

Data sources

Apart from the requirement of "*duly substantiated*" (see sub-section on quality requirements), the revised ETS Directive does not specify data sources to be used for disaggregated assessments or requirements for such data sources. However, the choice of data sources could impact the quality of data and therefore the results of the assessments.

As suggested for qualitative assessments (see section 4.1.2), guidance containing examples of data sources that could be used. This would facilitate the preparation of applications. There are two options for how such list could be provided:

- a) Indicative list of data sources for the disaggregated assessments
- b) Prescriptive list of data sources for the disaggregated assessments

Assessment of applications by the Commission or Member States

Regarding the assessment of the applications by the Commission or Member States Article 10b of the revised EU ETS Directive does not specify how these assessment authorities should assess the applications. Therefore, a harmonised assessment process for applications to be carried out by the Commission or Member States could be envisaged to ensure a comparable treatment of applications. A first step would include checks of eligibility, completeness of the files, verification requirements and data sources used. It would need to be carried out within a given timeframe. A second step could consist of an assessment of the carbon leakage Indicator methodology, leading to conclusions on the extent to which the applied data and methodology is duly substantiated, complete, independently verified and, in case of the 'Member State route', audited. A final step would consist of a check if the calculated carbon leakage indicator exceeds the 0.2 threshold value.

The assessment process could be specified in relevant guidance documents. In contrast to the qualitative assessments, no clear distinguishable options have been identified, apart from not having a harmonised approach.

5. IMPACTS OF THE IMPLEMENTATION OPTIONS

In this section the impacts of the implementation options are compared to the 'Baseline' and assessed in terms of achieving the specific and operational objectives. The analysis will consider the impacts on specific stakeholders while specifying the potential obstacles for an effective implementation by the stakeholders. Where relevant the impacts will be assessed in terms of the economic, environmental and social aspects. Additionally, the impact on the administrative burden associated with the implementation options' compliance costs are considered, i.e. costs incurred by the relevant parties (industry sectors, Member States and Commission).

5.1. Identification of impacts

5.1.1. Economic, social and environmental impacts (carbon leakage and fairness)

By definition, carbon leakage results in increased global CO₂ emissions and lower economic activity and employment in the EU. The environmental, economic and social impacts of carbon leakage are therefore tied together. A focused and fair implementation of the carbon leakage list (across the first- and second-level assessments) will minimize the risk of carbon leakage because those sectors, which are most exposed to the risk of carbon leakage, will receive a relatively higher share of free allocations.

A high quality standard of the second-level assessments, which is comparable to the quality standards of the first level assessment and based on publicly (and best) available data, is needed to minimize negative impacts. Alternatively, a loose implementation of the second level assessments (e.g. based on very weak criteria) would result in accepting all sectors eligible for the second-level assessment on the carbon leakage list. This would not address the real carbon leakage risk, and all installations could subsequently be subject to a uniform reduction of their free allocations (by application of a correction factor). This would in particular harm sectors with high emissions and in need of a large amount of free allocation, such as the steel industry. On the other hand, an overly rigid second-level assessment would risk that sectors, which are exposed to a high risk of carbon leakage, may not make it on the carbon leakage list. Also in this case, the available amount of free allowances is not optimally distributed.

Regarding the environmental aspect, a loose implementation of the second-level assessment for the carbon leakage list could result in placing on the list the sectors that are not in real risk of carbon leakage, and those sectors most in need of free allocation may experience a shortage of free allowances that could ultimately lead to carbon leakage and increased emissions outside the EU. Similar considerations apply to the social impacts. A too loosely implemented carbon leakage list could ultimately result in sectors being exposed to carbon leakage and jobs moving out of Europe.

Alternatively, a too restrictive application of the second-level assessment could lead to a situation that sectors that face a carbon-leakage risk – comparable to sectors that passed the first-level assessment – are not on the carbon leakage list.

The economic impact relates mainly to the external but also the internal competitiveness within the EU: as already said, a too loose implementation may negatively impact all industries through a hair-cut in the amount of free allocation. A fairer and more focused implementation will improve competitiveness and reduce the risk of carbon leakage. In addition, unequal treatment

of sectors also leads to an increased risk of competition distortion in the internal market; in particular for companies operating in similar markets.

5.1.2. Assessment process - transparency, objectiveness and comparability (linked with assessment harmonisation and fairness)

It is acknowledged that a non-harmonised assessment can lead to unequal treatment of sectors. In that regard the need to ensure process transparency, comparability and objectiveness between the second level applications is widely supported by all stakeholders. From industry side clarity is requested in the overall application and assessment process regarding the type of data and what verification should be done on the application (see Annex III). From the Member States side clarity is requested on what analysis is expected from their side and on how to address the concerns from the industry sectors that have already started to consult them.

The assessment should not discriminate between applicant sectors except on grounds of the criteria being assessed. The (sub)sectors for which a second level assessment is possible should be able to demonstrate their carbon leakage risk. This initiative assesses how to best support the application development by the sectors and the subsequent assessments by the competent assessment authority (Commission or Member States).

It is important to ensure that the eligible sectors are informed, understand and agree that the process is appropriate. This element has inherently been applied throughout the impact assessment process by extensively consulting the stakeholders on the implementation options development.

5.1.3. Length of procedure for application and assessment

As discussed in section 2, the carbon leakage list is one of the first legislative acts that needs to be in place to implement free allocation to industry for the EU ETS phase 4 by 2021. Additionally, the revised Directive sets a timeframe relative to the publication of the preliminary carbon leakage list of 3 months for applications submitted to the Commission, and of 30 June 2018 for applications submitted by a Member State. Therefore, the second level assessment is constrained in time both for the application by (sub)sectors and for the assessment by the competent assessment authority. The proposed options should be assessed on how they best support the timely implementation of the second level assessments.

5.1.4. Administrative burden impacts

All options involve an administrative burden on the eligible industry (sub)sectors in the form of application costs. For Member States, it involves analysis costs where the application is submitted via the Member State and for the Commission, it involves assessment costs. The burden is a one-off exercise for the 10 year period (2021-30) because the carbon leakage list will be valid for the entire phase 4.

The right balance should be found between the application and assessment requirements set in the revised Directive and the complementary implementation options proposed, in view of ensuring that all eligible sectors can apply and demonstrate their arguments. The same is also true for Member States' analysis process where guidance should allow that all Member States can perform the sector analysis. Assessing the impacts of the identified option packages in Section 4.1.3 and 4.2.3 takes account of both processes (i.e. application by industry to the

Commission or via a Member State and assessment by the Commission) and the application content/substance (i.e. analytical methodology to identify the level of risk of carbon leakage, data quality requirements including verification and data sources).

5.1.5. Impact on the assessments' robustness – data quality

The quality and availability of data affect the reliability and robustness of all second level assessments. The first level assessment is primarily based on official data sources whereas for the second level assessment (Qualitative and Disaggregated) no specific data sources, indicative values or thresholds or further details are set by the revised Directive.

How the completeness and verification provisions are addressed in the proposed options is particularly relevant for the assessments' robustness. It also impacts on the data collection costs.

5.2. Qualitative assessments (QL)

A. Baseline scenario – no guidance

This option would be the most flexible as industry could submit the data as they see fit without needing to adhere to any standards. The Commission would assess each submission on a case-by-case basis; based on the information that the concerned sector consider as the most relevant information to support its case. However, all stakeholders (see Annex III on the extensive consultations, e.g. industry workshop event, ad-hoc meetings with industry, meetings with Member States' authorities) have confirmed that a “no further guidance” approach would not ensure fairness and a robust assessment.

Equally this option may be mis-perceived as the least-costly option and fastest in terms of application preparation for sectors and subsectors, though the uncertainty in terms of application quality will risk delaying the assessment, impact its accuracy and risk that the final carbon leakage assessment outcome is based on ad-hoc choices. This would make it very difficult to ensure equal treatment of the different sectors and reduce the assessment fairness. Furthermore, if data completeness requirements are not further specified the implementation could lead to a selective use of sector data in order to lead to conclusions more favourable for certain (sub)sectors.

In most cases this option would negatively impact the administrative costs for the sector: either because several iterations would be needed leading to additional costs and a delayed process or because the application would be rejected on the grounds of poor quality. The challenge with this option is that it would not be predictable. While there would be no framework for industry to adhere to, there would also not be any guidance for what would be needed for the assessment. The experience from previous exercises shows that the Commission may need to come back several times requesting more or different information, thereby also increasing the administrative burden and time for assessment considerably that could result in delays in the finalisation of the carbon leakage list. The administrative effort and length of the assessments carried out in phase 3 are estimated in Table 7:

Table 7. Overview of phase 3 second level assessment process and delays

Task	By whom	How long (cumulative months)	Comments
1. Prepare application	Industry sector	4 M	No framework applied and assessment criteria interpretation was open
2. Submit application	Industry sector	5M	No pre-defined application deadline and assessment period
3. Assess application	EC	7M	EC internal assessment process was not streamlined
4. Reply	EC	8M	Overall replies questioned the data quality and criteria interpretation
5. Resubmit application	Industry sector	12M	Sector resubmission after clarifications were requested – new collection of data and redrafting of application
(...)		(+12M)	Process 3 and 5 are repeated until common quality level is reached
6. Final decision	EC	24M	Qualitative assessment exercise lasted a maximum of 2 years (from application to final decision)

Furthermore, the lack of a harmonised process and content would make it very difficult to assess different sectors against each other. Such uncertainty on the what and how could lead to the acceptance of many requests, thereby potentially increasing the overall free allocation demand beyond what should be the actual carbon leakage list and ultimately raising the likelihood of triggering the cross sectoral correction factor (an estimated additional CSCF of up to 6,5% could apply³¹ (average per year)) which would decrease the fairness of the overall carbon leakage list and disadvantage all sectors, in particular those with a higher carbon leakage risk.

B. Flexible qualitative framework

The flexible framework ensures a fair assessment because both the application and content elements are further detailed, discussed and validated by the stakeholders. As part of this initiative the industry sectors (some of which will be eligible to apply for a qualitative assessment), were informed and provided input on the framework elements, validating the proposed process at the workshop held on 2 March 2018. This option entails an analytical methodology to identify the level of risk of carbon leakage and data quality requirements that must be fulfilled. While setting clear requirements on application content and process, this flexible framework does not pre-empt any sector from applying by setting too restrictive application requirements that could be considered too lengthy, costly or not suited for a specific sector. On the framework elements (Table 5) regarding completeness, the flexible approach

³¹ In case the industry free allocation “demand” equals the available free allocation share (supply) and that the buffer is fully used to compensate for the “additional” free allocation demand resulting from all the sectors eligible for the second-level assessment making it into the carbon leakage list.

ensures a high representativeness of data, which limits the risk of selective data use and minimises the sampling error with limited impact on the application preparation time and cost.

Regarding the verification element the proposed approach sets independence and competence requirements that need to be fulfilled and proven. Similar to what happened for the 2015-20 carbon leakage list applications, it is expected that sectors will use support contracts with external consultants to develop the sector application. Depending on the sector size and required efforts needed in view of sector characteristics, data availability and pre-existing analysis, such projects are estimated to range from 20.000 to 40.000 EUR. This cost would likely be incurred regardless of the option package selected, because much of the cross-sectoral knowledge and ETS knowhow does not exist in a single sector association. However, the availability of a framework with clear data quality requirements will support the development of the contract terms of reference and technical requirements. In turn, this will help in specifying what type of knowledge and accreditation is required to validate the application data and its proposed approach.

The approaches for the analytical framework and data sources ensure the operationalisation of the qualitative criteria by setting questions and sub-criteria with the relevant data source based on reference data sources (e.g. EUTL, Eurostat and EU IPPC BAT). This positively impacts on the assessment transparency, objectiveness and comparability. Additionally, the procedure length and the administrative burden when compared to the experience from phase 3, where no framework was used, are expected to be significantly reduced. The upfront increase in the data collection requirements linked to the use of a framework is at least compensated by the reduced number of iterations that are expected to happen when no clarity is provided (and subsequent data requirements would increase after the application by the sector). Overall, this is expected to reduce the application and assessment time, while also limiting the administrative effort of the operators and the competent assessment authority.

With regard to the economic, environmental, and social impacts, this option ensures the most balanced assessment of the carbon-leakage risk that is comparable to the first-level assessment. Those sectors, which are in a comparable situation as sectors that passed the first-level assessment, should be put on the carbon-leakage list.

C. Rigid qualitative framework

This option provides a harmonised qualitative framework with prescriptive and predefined application and content elements. This approach negatively impacts the fairness of the assessment because it risks pre-empting a sector from applying by setting too restrictive application requirements that may be too lengthy, costly or not suited for a specific sector. This is particularly relevant for the framework elements (Table 5) on completeness and verification. Requiring a full coverage application is expected to be unfeasible in the available application timeframe and also require a high administrative and resources burden on the applicant side. Regarding the verification element, setting a predefined list of accepted verifiers risks setting a preferential treatment to some organisations while equally qualified organisations could be incorrectly left out of the list of verifiers. Additionally a list would need to be exhaustive and to include the different type of competencies needed to assess the required data, i.e. technical and financial, which would imply a need for a comprehensive assessment exercise before the application process could start. This would risk delaying the assessment exercise.

The analytical framework element for the rigid framework proposes to develop a prioritization and sequential assessment process that in principle could be perceived as highly predictable and transparent, where sectors would immediately know whether they would meet the criteria. However, such a sequential assessment prevents a full consideration of the sectors' specificities. This argument is also relevant for the relevance or weight (in %) of the qualitative criteria. Sectors may be at risk of carbon leakage with different configurations of the qualitative criteria, e.g. one sector may have limited possibility to pass cost increases on to customers, while the same sector could have some abatement potential, whereas another sector could be in the opposite situation, very limited abatement potential and some possibility to pass cost increases on to customers, and both could be at risk of carbon leakage. Therefore, a prescriptive framework applied to the qualitative criteria and a sequential assessment with quantification of conclusions risks favouring one sector assessment over another. There is a risk that a too restrictive application of the framework may fail to identify those sectors that have a higher risk of carbon leakage.

The proposed rigid framework is based on the framework proposed as part of the phase 3 carbon leakage list impact assessment, which failed to take into account different industry sectors characteristics and was in the end considered inappropriate to conduct the assessments. This is also confirmed by the court ruling regarding the Dyson Ltd Vs EU Commission of May 2017 regarding the limits of delegated powers (Case C-44/16 P). This ruling disqualifies the use of quantification in a qualitative assessment with reference to going beyond the powers of a delegated act.

For reference, Table 8 provides a summary of the qualitative assessment impacts per implementation option package.

Table 8. Summary of the qualitative assessments (QL) option packages' impacts

Operational objectives	Fair assessment (i)		Procedure length and needed resources (ii)		Data quality (iii)
Impacts	Economic, social and environmental impacts (carbon leakage focus and fairness)	Assessment process	Implementation time	Administrative burden impacts	Assessments' robustness
<i>A. Baseline scenario – no guidance</i>	Maximum estimated additional CSCF of 6,5% could apply ³² (average per year)	Ad-hoc assessments with negative impact on transparency, objectiveness and comparability	Risk of delays due to numerous iterations expected (based on phase 3 experience) resulting from incomplete applications	Additional admin burden is expected due to multiple iterations and ad-hoc assessments	Risk of selective use of data leading to incorrect qualitative assessment conclusions
<i>B. Flexible qualitative framework</i>	Balanced assessment allows identification of sectors with a level of carbon-leakage risk comparable to first-level assessment	Increased process transparency, objectiveness and comparability by operationalisation of the qualitative criteria (questions and sub-criteria are set)	Limited risk of delay because fewer iterations are expected (upfront and clear requirements)	Reduced admin burden in application (clear requirements) and in assessment (assessment framework)	Data quality ensured due to high data representativeness and sources required while allowing complementary data
<i>C. Rigid qualitative framework</i>	Risk of too restrictive assessment and not identifying those sectors with high carbon leakage risk	Increased process transparency, objectiveness and comparability, but risk of assessment (un)feasibility due to restrictive assessment requirements	Risk of some delays due to rigid requirements to be fulfilled	Additional admin burden is expected for the data collection	Data quality ensured due to high data representativeness and sources required

³² In case the industry free allocation “demand” equals the available free allocation share (supply) and that the buffer is fully used to compensate for the “additional” free allocation demand resulting from all the sectors eligible for the second-level assessment making it into the carbon leakage list.

5.3. Disaggregated assessments (QT*)

D. Baseline scenario – no guidance for disaggregated assessments

This option could be considered as fully flexible because industry could submit the data as they see fit without needing to adhere to any quantitative standards, i.e. no further details would be provided on methodology for data gaps or data quality and completeness requirements. Not providing additional guidance in terms of data representativeness and installation coverage may lead to incomplete applications from (sub) sectors. Incomplete applications due to the possible omission of efficient installations or poor geographical representativeness of a given sector could result in the rejection of applications or in incorrect carbon leakage assessments.

This may be mis-perceived as the least-cost and fastest option for sectors to prepare their application since data quality requirements are not further defined and are not harmonised across applications. However, the lack of further clarity in the requirements in both the process and content, could result in multiple iterations which would negatively impact the length of procedures for application and assessment, while also increasing the administrative burden. Additionally, compared to phase 3, there is the possibility for certain subsectors to apply via a Member State in the phase 4 carbon leakage exercise. For these applications the Member State will take over parts of the assessment responsibility that lies entirely with the Commission for the other assessments. Therefore, as part of the stakeholder consultation, Member States requested additional guidance and support to facilitate a harmonised assessment among Member States and to efficiently implement the assessments. This is paramount to keep a comparable level of assessment between different Member States and with the Commission. Otherwise, the number of iterations between industry and the Member State or the Commission could be expected to increase substantially.

Furthermore, it would be difficult to ensure equal treatment of the different sectors. It would also be difficult to ensure comparability to the first-level quantitative assessment, because no data requirements are predefined. Such uncertainty of who would be included in the new carbon leakage list could lead to the acceptance of sectors hardly exposed to carbon leakage, thereby increasing the overall demand and raising the likelihood of the need to introduce a cross-sectoral correction factor (an estimated additional cross sectoral correction factor of up to 6.5% could apply (average per year)) which would decrease the fairness of the overall carbon leakage list and put sectors of high carbon leakage risk in challenging positions on global markets.

E. Flexible disaggregated framework

A flexible disaggregated framework option would positively impact on the assessment fairness, and would ensure equal treatment among all quantitative assessments (first or second level). It could be very effective because of increased predictability as the process and requirements would be fully known upfront thereby mitigating most of the application uncertainties. Increased application costs may be perceived because there are clear and minimum thresholds for what data to be submitted. However, extra costs incurred through several iterations with the Commission would be avoided, and the sum of all costs is expected to be smaller. This would positively impact (decrease) the administrative burden and length of procedure for all stakeholders. This is particularly relevant for the disaggregated assessment route via the Member State, where a clear application deadline of 30 June 2018 is set in the Directive.

Applying a flexible framework for the disaggregated assessments would positively impact on the assessment harmonisation by allowing for a pre-screening, very well-structured work, and a transparent and objective judgment. It provides a high level of transparency for the applicants and the Commission.

The different application routes (Member States or Commission) would become more harmonised ensuring equal treatment of different applications. This is a clear request and result from the stakeholder consultation, confirmed by both the industry and the Member States.

On the disaggregated framework elements (Table 6), applying a flexible framework sets application criteria on the applicant entity and guidance on the application process which was developed with the key stakeholders (Member States and Commission Services). Both items ensure process clarity without restricting applications (e.g. an application from a group of companies from (sub)sector A is assessed the same way as an application from an industry association from (sub)sector B).

Regarding completeness, the flexible approach ensures a high coverage of data, limits the risk of selective data use and minimises sampling error while achieving the right balance between application time, cost and data representativeness. On verification, similar to option B (Flexible qualitative framework), the flexible approach for disaggregated assessments sets independence and competence requirements to be fulfilled which specify the type of knowledge and accreditation required to validate the application data and its proposed approach.

The framework element on methodology and data sources proposes a default methodology which complies with all the data quality and verification requirements if followed, because it is based on official statistics. However, it is acknowledged that a (sub)sector complementary methodology and data source may support the application. Such complementary methodology and data source can be accepted and be assessed in the flexible approach if all the data quality and verification requirements are respected.

F. Rigid disaggregated framework

Similar to the impacts noted for option C (Rigid qualitative framework), this approach negatively impacts the assessment fairness because it risks pre-empting a sector from applying by setting too restrictive application requirements that may be too lengthy, costly or not applicable for a specific sector.

The revised Directive sets clear application deadlines (i.e. 30 June 2018 for applications eligible via the Member State route and 3 months after the publication of the preliminary list for other applications) which need to be respected. A restrictive approach which sets very stringent requirements increases the risk of failing to meet the application deadline and may increase the overall application costs considerably.

On the disaggregated framework elements (Table 6) regarding the application process a rigid constraint on predefining the list of eligible entities (e.g. industry associations) would risk leaving out relevant (sub)sector stakeholders, specifically when the identified entity does not represent the full sector. For the Member State route, determining which sector could apply to which Member State could be perceived as a way to share the assessment effort, however this

risks failing to account for Member State assessment capacity and overburdening some Member States.

Where the rigid approach requires full coverage to ensure a stringent data completeness requirement, a (sub)sector who would be able to comply would have additional certainty on its assessment outcome, however there is a significant risk that sectors would not be able to collect data from the entire (sub)sector within the timeframe available. Regarding the verification element, similar to option C, setting a predefined list of accepted verifiers risks setting a preferential treatment to some verification organisations and equally qualified organisations could be incorrectly left out of the list of verifiers. As mentioned earlier, the exhaustive exercise of identifying all the organisations with the different technical and financial competencies needed, would risk delaying the assessment exercise.

The rigid approach for the elements on methodology data gaps and data sources would ensure a high level of transparency but fail to account for possible complementary methodologies and data sources which are specific to a (sub)sector and that for some (sub)sectors may be relevant to assess. This may be the case for a few sectors where official data sources are not complete or the default approach is not applicable.

Such an approach is expected to increase the objectiveness and robustness of the assessments, but it is strongly dependent on the quality of the prescribed data sources, since complementary approaches to the one specified would not be accepted. Therefore, if the rigid approach is too rigid for just one eligible (sub)sector that is not able to comply because of data unavailability or methodology inadequacy, the second level assessment process would risk leading to an unfair outcome.

For easier reference Table 9 provides a summary of the qualitative assessment impacts per implementation option package.

Table 9. Summary of the disaggregated assessments (QT*) option packages' impacts

<i>Operational objectives</i>	<i>Fair assessment (i)</i>		<i>Procedure length and needed resources (ii)</i>		<i>Data quality (iii)</i>
<i>Impacts</i>	<i>Economic, social and environmental impacts (carbon leakage focus and fairness)</i>	<i>Assessment process</i>	<i>Implementation time</i>	<i>Administrative burden impacts</i>	<i>Assessments' robustness</i>
<i>D. Baseline scenario – no guidance</i>	Maximum estimated additional CSCF of 6,5% could apply ³³ (average per year)	Ad-hoc assessments with negative impact on transparency, objectiveness and comparability; for Member State (MS route) there is a high risk of disharmonised and incomparable applications	Risk of delays due to numerous iterations resulting from incomplete and poor quality applications; for MS route there is a high risk of delay in view of stringent timeframe (set in the Directive)	Additional admin burden is expected due to multiple iterations and ad-hoc assessments; for MS route risk of significant admin burden to clarify the requirements	Risk of selective use of data leading to incorrect conclusions
<i>E. Flexible disaggregated framework</i>	Balanced assessment allows identification of sectors with a level of carbon-leakage risk comparable to first-level assessment	Increased effectiveness due to process and requirement transparency; for the MS route a comparable assessment process is ensured by common framework	Limited risk of delay because few iterations are expected (upfront and clear requirements); for MS route a timely feasibility is supported by the use of a common framework	Reduced admin burden in application (clear requirements) and assessment (assessment framework) side; guidance for MS route is provided to limit the admin burden	Data quality ensured due to high data representativeness and official sources required while allowing complementary data
<i>F. Rigid disaggregated framework</i>	Risk of too restrictive assessment and not identifying those sectors with high carbon leakage risk due to limited consideration of sector specificities	Increased process transparency, objectiveness and comparability but the risk of assessment (un)feasibility is strongly linked to data availability and methodology application	Risk of some delays due to rigid requirements to be fulfilled (e.g. entire sector data)	Additional admin burden is expected for the data collection	Data quality ensured due to high data representativeness and sources required but may fail to account for possible sector specific complementary data sources

³³ In case the industry free allocation "demand" equals the available free allocation share (supply) and that the buffer is fully used to compensate for the "additional" free allocation demand resulting from all the sectors eligible for the second-level assessment making it into the carbon leakage list.

6. COMPARING THE OPTIONS

The options for both the qualitative and disaggregated level assessments are similar in their approach but differ significantly in their content and analytical methodology, therefore the comparison of options will be done separately (Table 10 and Table 11). The options analysis considers two aspects: 1. the impact of each key element in each package (application process, assessment of the applications, analytical methodology, data quality requirements, data sources) on both flexibility and harmonization; and 2. how the option packages can be expected to contribute towards the operational objectives: estimated impact on a fairer second level assessment (operational objective i); estimated length of assessment procedure and resources needed for application and assessment (operational objective ii), estimated fulfilment of data quality provision in the revised Directive (EU) 2018/410, including data completeness and verification (operational objective iii).

The option packages and their elements are assessed qualitatively in terms of the extent to which they impact on flexibility, harmonization and overall the extent to which the packages minimise procedure length and needed resource and the trade-off between assessment fairness and the data quality. The comparison magnitude applied is: 0 neutral; (+) positive; (++) very positive; (-) negative; (--) very negative, relative to the baseline. The optimal option package achieves the assessment robustness and data quality objective (effectiveness) within the limited timeframe and with most efficient use of resources (efficiency), while ensuring the second level assessment fairness and comparability between applications of same and different assessment routes (coherence). The shaded areas indicate the relevance (or not) of the framework elements to the operational objectives.

Table 10. Comparison of qualitative assessments (QL) option packages

	Framework elements	Flexibility	Harmonisation	Fair assessment (i)	Procedure length and needed resources (ii)	Data quality (iii)
A. Baseline scenario – no guidance	Applications	(++)	(--)			
	Quality requirements	(++)	(--)			
	Verification	(++)	(--)			
	Analytical framework	(++)	(--)			
	Data sources	(++)	(--)			
	Assessment of applications	(++)	(--)			
				0	0	0
B. Flexible qualitative framework	Applications	(+)	(++)			
	Quality requirements	(+)	(+)			
	Verification	(+)	(++)			
	Analytical framework	(+)	(+)			
	Data sources	(+)	(+)			
	Assessment of applications	(+)	(+)			
				(++)	(++)	(+)
C. Rigid qualitative framework	Applications	(--)	(+)			
	Quality requirements	(-)	(++)			

	Verification	(-)	(+)			
	Analytical framework	(--)	(+)			
	Data sources	(-)	(++)			
	Assessment of applications	(--)	(++)			
				(-)	(+)	(+)

For the Qualitative assessments (QL) the preferred implementation option is B, i.e. a flexible qualitative framework, because it scores better on two objectives and equal on one objective compared to option C.

Table 11. Comparison of disaggregated assessments (QT*) option packages

	Framework elements	Flexibility	Harmonisation	Fair assessment (i)	Procedure length and needed resources (ii)	Data quality (iii)
D. Baseline scenario – no guidance	Applications: who; to whom	(++)	(--)			
	Applications content	(++)	(--)			
	Quality requirements	(++)	(--)			
	Verification	(++)	(--)			
	Methodology for data gaps	(++)	(--)			
	Data sources	(++)	(--)			
	Assessment of applications	(++)	(--)			
				0	0	0
E. Flexible disaggregated framework	Applications: who; to whom	(+)	(++)			
	Applications content	(++)	(+)			
	Quality requirements	(+)	(++)			
	Verification	(+)	(++)			
	Methodology for data gaps	(+)	(++)			
	Data sources	(+)	(++)			
	Assessment of applications	(+)	(++)			
				(++)	(++)	(+)
F. Rigid disaggregated framework	Applications: who; to whom	(--)	(+)			
	Applications content	(-)	(++)			
	Quality requirements	(-)	(++)			
	Verification	(-)	(+)			
	Methodology for data gaps	(--)	(++)			
	Data sources	(-)	(++)			
	Assessment of applications	(--)	(++)			
				(-)	(+)	(+)

For the Disaggregated assessments (QT*) the preferred implementation option is E, i.e. flexible disaggregated framework, because it scores better on two objectives and equals on one objective compared to option F.

Overall, the option of not providing any guidance to sectors for the application regarding either the qualitative criteria (Article 10b(2)) or the quantitative criteria at disaggregated level (Article 10b(3)) allows for maximum flexibility. Nevertheless, it has considerable drawbacks: it does not take into account lessons learnt from carbon leakage assessments made in the past, lacks procedural transparency, objectiveness, robustness, contains potential for unequal treatment of sectors, is potentially more costly for sectors submitting applications due to the required iterations, and requires a more resource and time-consuming assessment. Being overly flexible, means that there is also the potential for a negative impact between sectors which produce substitute products but whose carbon leakage assessments are not comparable. Furthermore, there would be a high risk that the assessments cannot be concluded within the available timeframe (operational objective ii).

Regarding the economic, social and environmental impacts (these are interlinked as mentioned in section 5.1.1) a loose implementation (baseline option) of the second-level assessment compared to the use of a framework could lead to the result that sectors that are not in real risk of carbon leakage are placed on the list. That could furthermore lead to the result that those sectors most exposed to carbon leakage would experience a shortage of free allowances that could ultimately increase the risk of carbon leakage (i.e. potentially increased emissions outside the EU and negative impact on EU competitiveness).

An overly rigid approach in either the Qualitative or Disaggregated assessment could in principle be considered to provide the highest up-front clarity and transparency on the data quality, verification and completeness requirements, but it has a significant risk of leading to the unfair treatment of the sectors being assessed, by not considering sectors' specificities (reference to the court case *Dyson Ltd Vs EU Commission* of May 2017 regarding the limits of delegated powers (Case C-44/16 P)). There is a risk that the rigid approach may fail to identify those sectors that have a higher risk of carbon leakage. Regarding the administrative burden and the assessment time stringency, this approach risks overstating the revised Directive second level assessment provisions leading to an unfeasible, unbalanced and delayed implementation.

Using a flexible framework is streamlined and structured, allowing a transparent, objective, defensible and coherent approach for all sectors, which will enhance fairness, comparability, equal treatment and robustness. It is expected that it will increase predictability of the assessment, reduce complexity as sectors have clarity in advance about the data and type of arguments to include in the submission. Furthermore, it will allow the Commission to ensure continuity and procedural transparency. This option is a highly effective one and is considered to achieve the right balance between the application and assessment requirements set in the revised Directive and the complementary implementation options proposed, in view of ensuring that all eligible sectors should be able to apply and demonstrate their arguments without administrative limitations. It also reduces the risk that the assessments cannot be concluded in the available timeframe. The stakeholder consultations support this approach and have been instrumental in its development, complemented by input from Commission services and Member States, while being confirmed by industry at the 2nd of March workshop.

7. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

The methodology assessed in this initiative for the second-level assessments takes into account the lessons learnt from phase 3 of the EU ETS.

The qualitative assessment framework, builds on the same three pillars (abatement potential, market characteristics and profit margins) as in phase 3. The best approach to operationalise them and to facilitate and harmonise the applications is discussed. Additionally, possible data sources, units of measure and formulas to guide an applicant to a greatest possible level of detail prescribed is presented. All of this is the result of discussions with industry and Member States.

When comparing the robustness of the proposed framework for the qualitative assessment and the approach applied in phase 3 (no framework), the positive trend towards harmonisation of the assessment could result in continuous work and replication of the data provided by the relevant sectors in the future. While the nature of qualitative criteria will always be inherently different from quantitative criteria, the Commission will work in cooperation with industry, Member States and other stakeholders to monitor the relevance of the three criteria and their sub-categories in line with development of carbon leakage scientific literature, international progress, technology development and market trends.

On the disaggregated quantitative assessment, the new application route ("Member State route") have brought an additional attention to the Member States authorities and consequently strengthens the stakeholder request for guidance from the Commission. An application can be submitted by any country participating in the EU ETS and this assessment exercise will show whether this initiative's objectives will be met, specifically on ensuring a fair, comparable and objective carbon leakage second level assessment.

The European and international research community undertakes regular empirical studies on carbon leakage which are carefully screened and also supported by the Commission. Additionally, the Commission regularly carries out studies on various pertinent aspects of EU climate policy. Such examples in the past years are the studies on evidence for the occurrence of carbon leakage³⁴, the study on effectiveness of benchmarks and the study on evaluation of ETS³⁵. A study from November 2015 looked into 6 energy-intensive sectors and their cost pass-through capacity.³⁶ This approach will also continue throughout phase 4.

The Commission will continue to monitor and evaluate the functioning of the EU ETS in its annual Carbon Market Report, as foreseen under Article 10(5) of the ETS Directive. This covers also free allocation and carbon leakage related issues.

³⁴ Available at:

https://ec.europa.eu/clima/sites/clima/files/ets/allowances/leakage/docs/cl_evidence_factsheets_en.pdf

³⁵ Available at: https://ec.europa.eu/clima/sites/clima/files/ets/revision/docs/review_of_eu_ets_en.pdf

³⁶ Ex-post investigation of cost pass-through in the EU ETS, An analysis for six sectors - iron and steel (NACE 2410); refineries (NACE 1920); cement (NACE 2351); organic basic chemicals (NACE 2014); fertiliser (NACE 2015); glass (NACE 231)

https://ec.europa.eu/clima/sites/clima/files/ets/revision/docs/cost_pass_through_en.pdf

A further assessment of the carbon leakage risk may take place as part of the EU ETS review in the light of international developments (revised EU ETS Directive (EU) 2018/410, Article 30). The assessment of implementation and collective progress under the Paris agreement (the "Global Stocktake") occurs every five years (2018, 2023, and 2028) for all countries. It serves as a mechanism of assessing implementation and progress towards achieving long-term Paris Agreement goals. It is part of the regular and ongoing process to review and increase ambition across all elements of the Paris Agreement.

Furthermore, the Commission will continue to monitor the developments of the competitiveness of the European industry covered by the EU ETS. In ETS phase 4 the production level data will be monitored and reported each year by the participating installations in order to implement the provision on activity/production level changes. This wealth of production data in conjunction with emissions data will be a good indicator for the development of industrial production and emission efficiency in various sectors. Another indicator that will enable the dynamic monitoring of the investment developments per sector is the number of new entrant applications submitted each year. Additionally in order to adequately document the improvement of the application and assessment process as compared to phase 3 in terms of fairness, time and resources needed and data quality, i.e. the operational objectives, the process will be managed using adequate project management tools.

As promoted by the Commission and linked to the Commission Roadmap for moving to a competitive low carbon economy in 2050, several industry associations³⁷ prepared in 2013 sector-specific roadmaps with the help of consultancies. These industry-specific energy and low carbon roadmaps and their eventual updates address the EU energy and low carbon ambitions and demonstrate the industry's opportunities and needs to realise them. They are an important input for a policy debate also for climate policy beyond 2030.

³⁷ Cembureau, Cefic, Cerame-Unie, Lime sector, Paper, Refining, Glass sectors (not exhaustive).

ANNEXES

ANNEX I: PROCEDURAL INFORMATION

Lead DG, Decide Planning/CWP references

Lead DG: DG CLIMA

Agenda Planning/WP Reference: PLAN/2017/1528

Organisation and timing

DG CLIMA is the lead DG on this impact assessment. Other Commission services (Secretariat-General, Legal Service, DG AGRI, DG COMP, DG ECFIN, DG ENER, DG GROW, DG ENV, DG TAXUD and DG TRADE) were consulted in the Inter-service Impact Assessment Steering Group.

The first meeting was organized on 12 September 2017. DG CLIMA introduced the context of the initiative (Commission Decision on the Carbon Leakage List for 2021-2030) and the steps needed before the Decision can be adopted. The core elements of the three documents were presented: Inception Impact Assessment, consultation strategy and the questionnaire for the open public consultation.

The second meeting took place on 18 December 2017. At a second meeting, DG CLIMA highlighted that the proportionate Impact Assessment is of a limited and targeted scope as many elements had already been regulated in the ETS Directive. It is a rather technical IA, focusing mainly on the development of guidance to support the second level assessments. The main aim of the Impact Assessment is to ensure transparency and consistency of the process.

The third meeting on 23 February 2018 was used to inform about and discuss the process and timing for adoption of new Carbon Leakage List, on the finalization of the Impact Assessment and favoured options (flexible qualitative assessment framework and flexible disaggregated quantitative assessment framework), possible sectors for second level assessments, and on presentation of results of the public consultation. Minutes from the third meeting have been submitted to the RSB.

Consultation of the Regulatory Scrutiny Board (RSB)

An upstream meeting with the RSB took place on 9 January 2018 to inform and agree on the proportionate Impact Assessment scope and expectations. It was required to start from the lessons learnt in the past and explain rationale for changes in the EU ETS Directive between Phase 3 and 4 including more focused carbon leakage list, provide more clarity on magnitude of impacts for sectors and the EU ETS as a whole, economic and environmental implications for the sectors on and off the list and how these have evolved since the last exercise in the Phase 3.

The RSB meeting took place on 21 March and the IA has been submitted to RSB on 7 March. The submitted version develops on the aspects raised by RSB on 9 January and on 21 March. Compared to the earlier version and following the recommendations from RSB in the scrutiny process, the revised text clarifies the scope of the initiative which is the eligibility criteria for sectors to be able to apply for the second-level assessments as stated in the revised EU ETS Directive: either a qualitative assessment or a quantitative assessment at disaggregated level (section 2, figure 4 and table 2) and the way how these assessments can be done (possible implementation options and the favoured ones are discussed in the Section 4). A reference has been made to the previous carbon leakage exercise and the reasons why the frameworks/guidance was not adopted at that time. This is better explained in the Section 1.3 with some additional details in the section 4.1.1. Different options for setting up a framework / guidance for qualitative and disaggregated quantitative assessment have been graphically

presented and discussed in the sections 4.1 (qualitative) and 4.2 (disaggregated quantitative assessment). To facilitate the analysis of impacts and the comparison, options for the main elements are combined to 3 option packages per each assessment presented in the Figures 6 and 7 (Section 4). Comparison between the options is presented in the section 6. The link between the methodology chosen and the economic, social and environmental impacts as well as their relation to the operational and specific objectives is explained in the section 5. The environmental, economic and social impacts of carbon leakage are adjacent. They are the result of the implementation of the carbon leakage list impacting all the relevant sectors because the identified sectors shall receive adequate free allocation in order to avoid carbon leakage.

The involvement of stakeholders has been instrumental in order to develop the guidance for second-level assessment. Stakeholders' views are presented alongside the report wherever relevant in the process, mainly in the Sections 4, 5 and 6. The Annex 3 provides more details on the outcome of the two recent consultations – feedback mechanism on the Inception Impact Assessment and the Public consultation on Methodological choices for determining the carbon leakage list. A synopsis in Annex 3 is focusing mainly on the details from the consultations that are in relation to the narrow scope of this Impact Assessment.

Evidence, sources and quality

The Impact Assessment³⁸ on the EU ETS revision for Phase 4 was carried out in 2015, based on views from stakeholders, on the analysis of EU climate policy targets for 2030 and on two written consultations - on post-2020 carbon leakage provisions and on EU ETS revision.

DG CLIMA is being assisted by consultants to perform the calculations for the forth-coming carbon leakage list for Phase 4 of the EU ETS, using the methodological elements which are presented and discussed in this impact assessment.

The technical working group with Member States on 22 February 2018 discussed the carbon leakage process and further work regarding second level assessments - quality criteria, analytical framework, default methodology, verification provisions etc.

On 2 March 2018 a stakeholder workshop was organized by DG CLIMA to give an overview to stakeholders on the revised legal framework and the implementation process of the EU ETS. The main issue discussed were the "second level assessments" in preparation of the Carbon Leakage List for Phase 4.

For the quantitative assessment, data on imports, exports and turnover are extracted from the Eurostat Comext database. Gross Value Added is available from Eurostat Structural Business Statistics (SBS). Eurostat is involved in addition in case of data confidentiality issues. Direct emission data, i.e. verified direct emissions per installation are taken from the European Union Transaction Log (EUTL) database. This approach was also used in the previous two carbon leakage exercises³⁹.

The electricity consumption data at sectoral level (NACE 4) is not officially available at Eurostat and has therefore been collected from Member States and EEA countries via a data collection exercise, as in the previous exercise 2015-20.

As one element to calculate the carbon leakage indicator for each sector, direct emissions (from EUTL) need to be assigned to NACE codes. For this purpose, the Commission compiled an installations' table which is based on verified information submitted by installations to the

³⁸ https://ec.europa.eu/clima/sites/clima/files/ets/revision/docs/impact_assessment_en.pdf

³⁹ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010D0002&from=EN>
<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014D0746&from=EN>

respective Member State Authorities in the context of the 2011 NIMs preliminary data collection exercise to determine free allocation to industrial installations in the EU Member States for phase 3. Similar verified information has been added for all new entrants. The list has been provided to industry sectors for possible identification of inconsistencies or updates of installations to NACE code matching.

After publication of the preliminary Carbon Leakage List (first level quantitative assessment), sectors eligible for a qualitative assessment or quantitative assessment at disaggregated level can apply to the Commission for inclusion on the Carbon Leakage List within three months after the publication of the preliminary Carbon Leakage List, or via Member States by 30 June for a specific group of eligible subsectors. Only submissions including a positive opinion from the verifier/auditor can be considered by the Commission.

ANNEX II: WHO IS AFFECTED AND HOW?

1. Practical implications of the initiative

The revised EU ETS Directive (EU) 2018/410 aims to simplify and streamline the administrative burden for all stakeholders by limiting and harmonising the requirements for the additional assessments. It does so by setting clear eligibility criteria for the “second level assessments”. Such assessments should be comparable and equally sound to ensure that the right sectors will receive the right number of free allowances.

This impact assessment accompanying the Commission Decision on the EU ETS Carbon Leakage List evaluates different implementation options for the assessment required for the "second-level assessment", i.e. the Qualitative assessments and the Quantitative assessments at disaggregated level, to ensure a comparable assessment to the first level assessments.

This initiative identifies the best way to operationalise the assessment requirements in order to determine, within the available ETS implementation timeframe and with most efficient use of resources (industry sectors, Member States and Commission), which sectors under the second-level assessment should be treated as carbon leakage exposed. It also aims to provide a harmonised and fair carbon leakage assessment framework for the second-level assessment while ensuring assessment comparability, objectiveness and robustness (between applications of same and different routes).

2. Summary of costs and benefits

The preferred option for both the qualitative assessment (Article 10b(2)) and the quantitative assessment at disaggregated level (Article 10b(3)) supports the development and use of a flexible framework. It is considered that a flexible framework is streamlined and structured, allowing a transparent, objective, defensible and coherent approach for all sectors, which will enhance comparability, equal treatment and robustness. It is expected that it will increase predictability of the assessment, reduce complexity as sectors would have clarity in advance about the data and arguments to include in the submission. Furthermore, it will allow the Commission to ensure continuity and procedural transparency. This option is a highly effective one and reduces the risk that the assessments cannot be concluded in the available timeframe.

The costs and benefits of the preferred implementation options identified in section 6 are compared to the 'Baseline'. The tables present systematically the main costs and benefits, which have been identified and assessed during the impact assessment process.

Qualitative assessments (QL)

For the Qualitative assessments (QL) the preferred implementation option is b), i.e. a flexible qualitative framework.

I. Overview of Benefits – Preferred Option: flexible qualitative framework⁴⁰		
Description	Amount	Comments
Direct benefits		
Compliance cost reductions for the CLL “second level assessment” application	Cost is comparable to the baseline option; Application process is similar in both options	Eligible industry sectors for qualitative assessment may submit an application for “second level assessment”
Administrative costs	Estimated 20-40% benefit	Benefit to eligible sectors by defining upfront what the application should contain; Benefit to the assessing authority (Commission); Avoid misuse and interpretation issues of the qualitative criteria (limiting the number of iterations and increasing the application quality)
Indirect benefits		
Carbon Leakage List focus	Estimated additional CSCF of 6,5% could apply ⁴¹ (average per year)	Benefit to industry sector with Carbon Leakage exposure, by efficient assignment of limited available free allocation allowances which would otherwise increase the risk of applying a cross sectoral correction factor (CSCF); Harmonised framework increases the assessment fairness and limits the political and criteria uncertainty in the process
Implementation time	Estimated 40-60% benefit	Benefit to overall EU ETS system implementation; available time for sector assessment is about 50% less than what was available in phase 3 where no framework (baseline) was used; limiting the number of iterations ; preferred option will support the assessment efficiency
Data quality	Estimated 30-50% benefit	Benefit to eligible sectors who apply and assessing authority (Commission); revised Directive qualitative criteria are operationalised with additional details (e.g. coverage of installations) and data source references
Assessment harmonisation		Benefit to overall EU ETS system implementation; assessment process fairness, transparency and equal treatment is supported; Upfront clarity in the framework avoids iterations (verified in phase 3 where no framework was used, i.e. baseline case) to harmonise the assessments

⁴⁰ Estimates are relative to the baseline for the preferred option as a whole (i.e. the impact of individual actions/obligations of the preferred option are aggregated together); the benefit compared to the baseline is measured as the percentage (%) increase/decrease benefit of the preferred option.

⁴¹ In case the industry free allocation “demand” equals the available free allocation share (supply) and that the buffer is fully used to compensate for the “additional” free allocation demand resulting from all the sectors eligible for the second-level assessment making it into the carbon leakage list.

Disaggregated assessments (QT*)

For the Disaggregated assessments (QT*) the preferred implementation option is c), i.e. a flexible disaggregated framework.

II. Overview of Benefits – Preferred Option: flexible disaggregated framework ⁴⁰		
Description	Amount	Comments
Direct benefits		
Compliance cost reductions for the CLL “second level assessment” application	Cost is comparable to the baseline option; Application process is similar in both options	Eligible industry sectors for qualitative assessment at disaggregated level may submit an application for “second level assessment”
Administrative costs	Estimated 40-60% benefit	Benefit to eligible sectors by defining upfront what the quantitative methodology is and providing a default approach to be used; Clarity and quantification of the quality requirements, set in the Directive (e.g. completeness and verification), that the application should fulfil is provided; Benefit to the assessing authority (Member States and Commission) by providing assessment detail and supporting the harmonisation of assessments
Indirect benefits		
Carbon Leakage List focus	Estimated additional CSCF of 6,5% could apply ⁴¹ (average per year)	Benefit to industry sector with Carbon Leakage exposure, by efficient assignment of limited available free allocation allowances which would otherwise increase the risk of applying a cross sectoral correction factor (CSCF); Harmonised framework increases the assessment fairness and limits the political and criteria uncertainty in the process
Implementation time	Estimated 40-60% benefit	Benefit to overall EU ETS system implementation; available time for sector assessment is about 50% less than what was available in phase 3 where no framework (baseline) was used; for Member States, where a limited number of sectors may submit an application to them, there is a bigger time stringency (approx. 3 months application and assessment) only feasible with a supporting framework
Data quality	Estimated 30-50% benefit	Benefit to eligible sectors who apply and assessing authority (Member State and Commission); revised Directive quality requirements (e.g. completeness and verification), are operationalised with default approach, data source references and quantification of data representativeness
Assessment harmonisation		Benefit to overall EU ETS system implementation; assessment process fairness, transparency and equal treatment is supported; Upfront clarity in the framework avoids iterations (verified in phase 3 where no framework was used, i.e. baseline case) to harmonise the assessments; particularly relevant where multiple assessing authorities can be involved (Member States and Commission)

III. Overview of costs – Preferred option			
	Industry Sectors ⁴²	Member State (where relevant) ⁴³	Commission
	One-off	One-off	One-off
Qualitative assessments (QL): harmonised qualitative framework			
Prepare application	20K-40K EUR per application; estimated maximum 16 QL applications (see 3) 320-640K EUR	NA	NA
Review application		NA	2 FTE for 3 months + Support contract
Final assessment		NA	2 FTE for 3 months + Support contract
Disaggregated assessments (QT*): flexible disaggregated framework			
Prepare application	20K-40K EUR per application estimated maximum 22 QT* applications (see 3) 440-880K EUR	NA	NA
Review application		11 FTE for 1 month ⁴⁴	2 FTE for 3 months + Support contract
Final assessment		NA	2 FTE for 3 months + Support contract

⁴² Limited number of eligible sectors after application of the eligibility criteria as set in the revised Directive; One-off costs range accounts for the estimated cost of an external consultancy project.

⁴³ Art 10b (3) sets that (sub)sectors listed in the EU ETS phase 3 CLL at a 6-digit or 8-digit level may submit an application via a Member State.

⁴⁴ Estimated at 2 weeks per application, which for the estimated 22 applications leads to 44 weeks or 11 FTE for 1 month.

ANNEX III: STAKEHOLDER CONSULTATION ANALYSIS

Public consultations on the new rules for the assessments for the carbon leakage list 2021-2030 have come to end. Stakeholders and citizens had the possibility to provide feedback on the Inception Impact Assessment open for a 4-week period in October 2017. This provided a possibility to collect views on preparatory work already. The Inception Impact Assessment collected the views from both the first-level and second-level assessments. The specific feedback provided was either on the carbon leakage methodology as a whole or on specific elements of the methodology and how the calculation can be made as fair as possible from the respondents' point of view.

III.I The four-week feedback period on the Inception Impact Assessment ended on 13 November 2017 and 42 stakeholders provided their feedback. Most of the responses (36) were from industry representatives, three were from individual companies, and there were only two responses from NGOs and 1 from a trade union. With regard to the size of the organisations that responded to the consultation, most of the responses (27) were from micro and small organisations because the European sectoral associations are mostly smaller organisations. Yet, they represent a mix of small to very large member companies.

Most respondents emphasised their support for the fair and equal assessment of the risk of carbon leakage. From their responses, it appears that stakeholders agree that the methodology that has been established provides a fair and equal assessment, as there were not many far reaching critiques on the system. Most of the responses emphasise the need for the use of objective, realistic and unbiased data and some of them suggest the data to be provided by the sector associations.

The submissions also provided feedback on the level of detail required for quantitative assessments and additional assessments. 12 out of 39 respondents emphasised the importance of the possibility of a more detailed assessment due to the complexity of some sectors that represent many different activities with varying degrees of trade and emission intensities. Therefore, either in the first instance or via the qualitative assessments, an analysis on the basis of PRODCOM6 or 8-digit level should be made to distinguish between the different activities in a sector. At the same time, two associations mentioned that using more disaggregated data is actually discriminatory because treating different subsectors within NACE-4 sector differently may lead to unfair advantages.⁴⁵

III.II Furthermore, the 12-week open consultation on the methodological choices for determining the carbon leakage list was open until 12 February 2018 and 156 stakeholders provided their feedback. This time again, the largest group of respondents were the sector associations (102) followed by individual companies (43), NGOs (5), government institutions (5) and 1 citizen. While the questions primarily concerned the methodology on qualitative and disaggregated assessments, an input was sought also on the overall experience throughout the Phase 3 of the EU ETS as well as on perception about the international landscape of climate policy (latter not directly relevant for this initiative, thus excluding the analysis of the outcome).

⁴⁵ Summary stakeholder report on the Inception Impact Assessment of CLL 2021 – 2030, Trinomics, December 2017.

The main lessons learnt from the stakeholders' input can be summarised as:

1. perceived risk of carbon leakage is confirmed (84%),
2. support for a transparent and uniform assessment framework guidance (Qualitative (QL) and Disaggregated quantitative (QT*),
3. availability and quality of data at disaggregated level (QT*).

The majority (84%) of respondents expressed opinion that the risk of carbon leakage increased since the beginning of Phase 3 of the EU ETS. Businesses and industry associations representing businesses were the group that perceived the upward evolution of the risk of carbon leakage throughout the Phase 3 while regulatory authorities had brighter takeaway on contemporary risk of carbon leakage. Reasons given for this outlook highlighted the slow pace of climate action in third countries and the disproportionate impact of other 'cost-push' factors on EU manufacturing. Many stakeholders also argued that the application of the cross-sectoral correction factor (CSCF) exacerbated the risk of carbon leakage. Government institutions and NGOs had a more optimistic view, with most arguing that the risk had either decreased or remained constant throughout Phase 3. These respondents acknowledged many of the aforementioned challenges to international competitiveness, but also argued that this was outweighed by the success of international agreements (e.g. Paris).

Concerning the feedback on administrative burden linked to the establishment of the carbon leakage list 2015-20, most respondents felt that while the workload was substantial, it was proportional to the scale and significance of the task. Administrative simplification, it was argued, should only be permitted if it does not endanger the robustness of the assessment. Specific suggestions were however provided on potential improvements to the process, such as the inclusion of a streamlined process for small businesses and the amalgamation of assessments for indirect and direct emissions.

The submissions also provided feedback on specific methodological choices for the qualitative and disaggregated quantitative assessments. They can be categorised into the following three groups:

(1) The need for a transparent and uniform assessment framework that relies upon the involvement of stakeholders. However, there were diverging views on who should be consulted during the process with industry advocating that only the representatives of the sector should be involved whereas others expressed the need for a wider selection of stakeholders (i.e. civil society). The form of this interaction also varied with industries arguing that their involvement should occur before the assessment is finalised in order to provide a reaction in advance of the adoption of the list. In contrast, NGOs requested that the Commission reports publicly on how the views of other stakeholders beyond industry were taken into account when finalising the list.

(2) Key indicators suggested in a range of views for the qualitative assessment included:

- Cost pass through rate: this indicator should be reflected based upon observed empirical data. When proposing the best way to estimate the extent to which businesses are able to pass on costs through product prices, stakeholders provided a number of helpful improvements and alternative measures. Participants suggested incorporating upstream and downstream activities into the existing measure. With respect to alternative measures, various

suggestions were made, including: the percentage share of European production in a global production, the price elasticity of demand, the homogeneity of product and the bargaining power of businesses (via market concentration).

- Ability of a sector to reduce emissions or electricity consumption: this indicator should be based on assessments of available technologies and the potential for new advances in technology, improved process efficiency and emission reductions by decentralized energy converting facilities.
- Sector's current and projected market characteristics: this indicator should be based on an assessment of the competition impacts between carbon intensive and clean industries as a result of placing the sector on the carbon leakage list. Geographic location and whether the sector contributes to food security should also be considered.
- Profit margins: this indicator should assess the long-term profit impacts of placing the sector on the carbon leakage list and should also reflect which level of utilisation rate is required for a sector to operate economically. It should also be identified whether or not a sector is a price taker and the price elasticity of demand.

(3) Disaggregation level of the assessment

Representatives from industry advocated the ability to use sector specific data in order to calculate the carbon leakage ratio where public database information contains unreliable or unrepresentative information. Views on the appropriate level of disaggregation of the further assessment varied from those who deem the 8-digit (PRODCOM) level as appropriate especially in sectors with very heterogeneous products to those who argued that the assessment should be carried out at 2-digit (NACE) level (e.g. for the oil and gas sector). It was expressed that the same quantitative criteria is to be applied for the assessment at the sub-sector or PRODCOM level. In the case where no PRODCOM code applies, it was advocated by representatives from industry that installations should be allowed to submit individual data to the Commission in order to be assessed.

The respondents in the stakeholder consultation were in favour of disaggregated assessments that attempt to reproduce the level of robustness, fairness, transparency and equity of the standard NACE assessments.

More key issues have been identified from the results of the stakeholder consultation that include:

- Accuracy of data sources

Although there was a consensus on the need for accurate data, views diverged on the requirements for data verification ranging from those that argued for no additional requirements apart from simple verification by a consultant to those that stressed the need for company data to be verified by independent accreditors and/or at national level. It was also suggested during the stakeholder consultation that a simplified gross value added (GVA) disaggregation methodology should be available for integrated industries. There was also support amongst the respondents for the development of a clear approach to the collection of data in the event of missing data, which should be reviewed by an independent third party. It

was also put forward that the collection of additional data should be publicly available to ensure complete transparency of the process.

- Assessment process

Respondents argued that the rules of data submission should be clear, flexible and user-friendly with feasible deadlines. Guidelines for data collection and quality should be clear and the need for communication between sectors, Member States and the Commission was strongly emphasised – especially with regards to the application process for a sector applying for further assessment.

- Sector / company eligibility

A view was expressed that companies from small sectors should be able to provide their own data and to allow assessments to be conducted by certified/accredited inspectors. Companies active in smaller sectors are willing to pay for controllers, if at an individual level emission and production data can be assessed. Allowing for assessments at disaggregated level for individual companies was considered to be important for Phase 4 of the ETS for some of the respondents.

III.III A Stakeholder workshop on new carbon leakage list was held on the 2 March 2018.

Around 70 stakeholders representing industry associations, companies and Member States attended the event. The purpose of the meeting was to inform stakeholders of the process and discuss the requirements for the second level assessments on the carbon leakage list that will be possible for certain (sub)sectors following the publication of the preliminary list.

In particular, following the impact assessment analysis, the framework elements that were being considered and which aim to support the process and to ensure transparency and equal treatment, were presented and discussed. An overview of the limited timeframe available for the assessments and the data needs were also presented and clarified.

Stakeholders' views and argumentation on the framework elements being considered have been collected and reflected in the analysis. Key issues raised include:

- A number of representatives supported the fact that operationalisation of the criteria set in the Directive is needed in view of the timeframe available.
- The need for guidance/framework was confirmed, though some stakeholders expressed concerns in terms of data availability in the required disaggregated level or to ensure that sector specificities would be accounted.
- Request for continuing the transparent process and ensuring that stakeholders are heard throughout the process.
- Clarifications on how to ensure the verification and auditing requirements set in the Directive. It was discussed whether a list of accepted verifiers would be published or a list of competence criteria to be confirmed.

ANNEX IV: QUANTITATIVE ASSESSMENT METHODOLOGY

Quantitative assessment (QT) is done on NACE⁴⁶ level and covers all mining and manufacturing industries in the activity sections B (Mining and quarrying) and C (Manufacturing). This results in a starting point of 245 sectors; 15 sectors under B and 230 under C sections.

Current initial assessment, done to estimate the possible impacts and implementation options, can only be done on a basis of the data from the third trading period taking into account the revised CL formula because data for the three most recent years is being collected and processed.

The carbon leakage indicator is defined in the EU ETS directive Article 10(b) as the product of the sector intensity of trade with third countries by the sector's emission intensity.

$$CL\ indicator = emission\ intensity * trade\ intensity > 0.2$$

Emission intensity is measured in kgCO₂, divided by their gross value added (in euros), and consists of:

$$Emission\ Intensity\ (EI) = \frac{(Direct\ Emissions + Indirect\ Emissions)}{(GVA)}$$

Intensity of trade with third countries is defined as the ratio between total value of exports to third countries plus the value of imports from third countries and the total market size for the European Economic Area (annual turnover plus total imports from third countries)

$$Trade\ Intensity\ (TI) = \frac{(Imports + Exports)}{(Imports + Turnover)}$$

Sectors and subsectors where the product exceeds 0.2 from multiplying their emission intensity and intensity of trade shall be deemed to be at risk of carbon leakage. Such sectors and subsectors shall be allocated allowances free of charge for the period up to 2030 at 100% of the quantity determined pursuant to Art 10a.

Emission Intensity:

Direct emissions - verified emissions per installation will be taken from the **EUTL data base**⁴⁷, this approach was also used in the previous two carbon leakage list (CLL) exercises⁴⁸ as EUTL data is regarded as the "most accurate and transparent source of CO₂ emissions data at installation level", because it provides up to date, verified and cross-checked data for all participating countries. Then, a matching between the EUTL identifier and the NACE code of the installation takes place using the NIMs data reference (where Member States report verified emission data, including NACE codes per installation). An updated list of installation to NACE

⁴⁶ Eurostat, Statistical classification of economic activities in the European Community, NACE Revision 2.

⁴⁷ EU Transaction Log, EUTL, provides aggregated data on emissions and allowances, by country, sector and year.

⁴⁸ 2015-2019 Carbon Leakage List decision 2014/746/EU.

code matching is maintained reflecting Member States reported changes by installations. Although more recent data are available, to ensure consistency with the GVA data, direct emissions data for 2013 – 2015 will be used for the calculations.

Gross Value Added - Gross value added at factor cost is the value of output produced at market prices minus the value of intermediate consumption at purchaser prices. It is a measure of the contribution to GDP made by an individual producer, industry or sector and is GVA at market prices less any indirect taxes plus any subsidies. GVA is available from Eurostat Structural Business Statistics (SBS) and the latest EU28 aggregate data published by Eurostat at NACE4 level is for 2015, thus availability of GVA will determine which will be "the three most recent years for which the data is available". For some countries and sectors the GVA is available yet not published by Eurostat due to confidentiality concerns (e.g. when the number of firms in the sector is very low or one firm dominating the sector).

Indirect emissions - are emissions linked to the electricity consumed by the sector. To determine the emissions related to the production of consumed electricity, electricity consumption needs to be converted into emissions by using an electricity emission factor representing the emission intensity of the electricity generation.

$$\text{Indirect Emissions} = (\text{Electricity consumption in kWh} * \text{Emission factor in tCO}_2/\text{kWh})$$

Electricity consumption in kWh - The electricity consumption data at sectoral level (NACE 4) is not officially available at Eurostat and is therefore collected from Member States and EEA countries via a data collection exercise, as in the previous CLL exercise, and ensuring that no double counting of electricity consumed occurred between different NACE codes. While the timing for the electricity data collection was demanding, 17 MS were able to submit the relevant electricity data (NACE-4 level) by the deadline (18 January 2018). The coverage of the data collection resulted in cca. 70% of total indirect emissions covered. The data will be subject to several robustness checks, including analysis of previous CLL exercise, comparing with other data sources, MS clarifications, aiming to get the highest possible accuracy.

Electricity emission factor in tCO₂/kWh - The indirect emissions are converted into percentage of indirect costs with the use of the electricity emission factor. Since the Carbon Leakage List exercise is a community level assessment and due to an increasingly integrated internal energy market, a uniform emission factor should be used across the EU and EEA/EFTA countries. Because the carbon leakage list under assessment will be valid for 10 years (period 2021-30), the emission factor value should be robustly defined and updated to the most recent data period. For consistency as well as feasibility, the same methodology used in phase 3 will be used to calculate the updated value for phase 4. The updated factor will reflect the decarbonisation of electricity system and the increasing share of renewables since the last reference indicator⁴⁹

⁴⁹ As referenced in the Carbon Leakage Methodology study, Capros (2008): Model-based Analysis of the 2008 EU Policy Package on Climate Change and Renewables:
https://ec.europa.eu/clima/sites/clima/files/strategies/2020/docs/analysis_en.pdf

(the share of renewables in the energy mix in 2005 was about 13% and in 2015 it increased to about 25%⁵⁰).

The general approach to calculate the average emission factor is to divide the overall annual amount of CO₂ emissions from the power sector by the corresponding amount of electricity generation. The reference emission factor used in the previous two CLL exercises (in 2009 and 2014) and applicable for all Member States was an emission factor of 465g CO₂/kWh. The updated value should refer to EU28 and to the most recent reference year for which data is readily available, which is 2015, this is also justifiable based on the revised EU ETS Directive "three most recent years", where the GVA availability sets the CLL indicator analysis to the period 2013-15.

The updated emission factor for 2015 calculated using the net electricity generation from EUROSTAT⁵¹ and the total CO₂ emissions sourced from the EEA data⁵² for public power and district heating (emissions were corrected on CO₂ emissions from district heating plants, and auto produced electricity) is 376g CO₂/kWh, which represents a 20% reduction from the baseline value of 2005 using the same methodology.

Trade Intensity:

It measures the importance of imports and exports in relation to the domestic market. Data on imports, exports and turnover are extracted from the COMEXT database. In case of data gaps, they can be filled with the use of SBS database. Imports/exports represent total imports/exports expressed in value and turnover represents the domestic production in value, based on Eurostat (COMEXT) data.

Geographic scope for the QT is clearly set in the Directive as being the European Economic Area (EEA) countries. The Impact Assessment accompanying the Commission proposal for the revised EU ETS Directive supports the defined EEA scope and a complementary assessment confirmed that there is an increasing number of carbon markets being implemented worldwide, which are acknowledged to have some level of commonalities, nevertheless, they remain quite heterogeneous across countries due to differences in coverage, operation and implementation. Many of the policies are still relatively new, and until such new data will become available in future to support a more thorough assessment, currently and due to feasibility considerations, the trade intensity geographical scope set in the revised EU ETS Directive (the European Economic Area (EEA)) is confirmed. The further assessment of countries with comparable climate policies may take place as part of the EU ETS review in the light of international developments (revised EU ETS Directive, Article 30).

The data will be used for the **3 most recent calendar years available** based on the Art 10b(4) of the revised ETS Directive. In practice this will most probably result in the data collection for

⁵⁰ EEA Overview of electricity production and use in Europe : <https://www.eea.europa.eu/data-and-maps/indicators/overview-of-the-electricity-production-2/assessment>

⁵¹ Table nrg_105a

⁵² In particular, total emissions (EEA, Table 1.A.1.a) were multiplied with the share of fuel input in thermal plants over total fuel input in both thermal plants and district heating plants, in order to approximate total CO₂ emissions only from thermal plants (ESTAT, Table nrg_110a). The auto-producer emissions were approximated by the ratio of fuel input in auto-producers over the one of thermal fuel plants, multiplied by the thermal power plant emissions as calculated above.

2013-2015 time range due to availability of the GVA data. The GVA data is available with a 2-year delay and while it is possible that direct emissions and trade data will be available for 2016, they will not be taken into account for coherence reasons of the exercise.

Use of complementary data sources is possible in case where there would be no official statistics available. This shall be the case for a limited number of NACE codes. Such a data-driven exercise shall be well documented on what has been done and how calculations were made. Constraints and data gaps have to be well explained. There are several approaches for a data gap filling that will have to be robust and defensible.

Indicative list of sectors eligible for second level assessment

The sectors eligible for second level assessment are identified based on the eligibility criteria set in the revised Directive (EU) 2018/410 and Table 12 and Table 13 provide an indicative of the limited number of sectors which are likely to be eligible for the second level assessment. Table 12 uses the trade and emissions intensity data used in phase 3 (2009-2011) plus the updated electricity emission factor for indirect emissions (reference year 2015, instead of 2005 used in phase 3). This is because the data collection for the carbon leakage list (CLL) exercise (Annex IV: Quantitative Assessment Methodology) is still ongoing and the new Carbon Leakage List will use official Eurostat data for trade and Gross Value Added (GVA), emissions data from EUTL (European Union Transaction Log) and data submitted by Member States on electricity consumption from the three most recent years (2013 to 2015) as well as the updated electricity emission factor). The list of sectors is supplemented by the criteria under which the sector is eligible to apply for a second-level assessment, as stated in the revised Directive under Article 10(b) paragraph 2 and 3:

- A. (Art 10(b) (2)) (sub)sector carbon leakage indicator exceeds 0.15;
- B. (Art 10(b) (3)) (sub)sector emission intensity exceeds 1.5;
- C. (Art 10(b) (3)) (sub)sector for which free allocation is calculated on the basis of the refineries benchmarks;
- D. (Art 10(b) (3)) (sub)sectors listed in the EU ETS phase 3 CLL (Annex to Commission Decision 2014/746/EU) at a 6-digit or 8-digit level (Prodcom) classification.

In addition, it is identified the type(s) of second-level assessment the sector would be eligible for: Qualitative Assessment (QL); Disaggregated quantitative assessment (QT*) directly to EC or via Member State (MS).

Table 12. Industry sectors (at NACE 4 level) which are possibly eligible for second level assessment⁵³

		Phase 3 status		phase 4 status			
Code	Activity description	Quantit. crit. met?	Comment	Eligible under criteria	Type of assessment possible	Number of installations	% of EUTS industrial emissions
25.50	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	YES*	Subsector added	D	Disaggregated QT via MS	17	0,05%
06.10	Extraction of crude petroleum	YES		A	QL	192	2,71%
27.20	Manufacture of batteries and accumulators	YES		A	QL		0,00%
13.95	Manufacture of non-wovens and articles made from non-wovens, except apparel	YES		A	QL	5	0,02%
23.49	Manufacture of other ceramic products	YES		A	QL	7	0,00%
26.80	Manufacture of magnetic and optical media	YES		A	QL		0,00%
23.42	Manufacture of ceramic sanitary fixtures	YES		A	QL	15	0,02%
32.99	Other manufacturing n.e.c.	YES		A	QL		0,00%
23.44	Manufacture of other technical ceramic products	YES		A	QL	6	0,01%
13.20	Weaving of textiles	YES		A	QL	21	0,01%
20.11	Manufacture of industrial gases	YES*	Subsectors added	A;B;C; D	aggregated QT or Disaggregated Q	37	1,30%
20.59	Manufacture of other chemical products n.e.c.	YES		A	QL	52	0,17%
24.31	Cold drawing of bars	YES		A	QL	2	0,00%
26.11	Manufacture of electronic components	YES		A	QL	17	0,02%
22.11	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres	YES		A	QL	54	0,16%
10.39	Other processing and preserving of fruit and vegetables	YES*	Subsector added	D	Disaggregated QT via MS	107	0,11%
23.99	Manufacture of other non-metallic mineral products n.e.c.	YES*	Subsectors added	D	Disaggregated QT via MS	121	0,29%
23.32	Manufacture of bricks, tiles and construction products, in baked clay	YES*	Added based on qualit. crit.	B	Qualitative or Disaggregated QT	963	1,22%
10.31	Processing and preserving of potatoes	YES*	Subsectors added	D	Disaggregated QT via MS	33	0,10%
10.51	Operation of dairies and cheese making	YES*	Subsectors added	D	Disaggregated QT via MS	174	0,29%
20.30	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	YES*	Subsector added	D	Disaggregated QT via MS	27	0,06%
10.82	Manufacture of cocoa, chocolate and sugar confectionery	YES*	Subsectors added	D	Disaggregated QT via MS	12	0,01%
10.89	Manufacture of other food products n.e.c.	YES*	Subsector added	D	Disaggregated QT via MS	29	0,06%
05.20	Mining of lignite	NO		B	Qualitative or Disaggregated QT		0,00%
08.12	Operation of gravel and sand pits; mining of clays and kaolin	YES*	Subsectors added	D	Disaggregated QT via MS	8	0,02%

Table 13. Estimated maximum number of applications under each type of assessment (based on Table 12 indicative assessment)

Type of second level assessment		Number of assessments (maximum)	Eligible under routes	Comments
QL	Qualitative Assessment	16	A; B; C	Assessment done at NACE level
QT*	Disaggregated quantitative assessment	15	B; C	Assessment done at product level
QT* via MS	Disaggregated quantitative assessment via Member State	22	D	Assessment done at product level

⁵³ Indicative list based on phase 3 trade data and emission data corrected to the updated electricity emission factor for indirect emissions.

ANNEX V: INDICATIVE COMPARISON OF 2015-20 CLL AND 2021-30 CLL⁵⁴

In phase 3, the carbon leakage criteria were defined based on increased production costs due to the EU ETS and trade intensity of the specific (sub) sector. The relevant main quantitative criteria⁵⁵ were:

1. EU ETS-induced costs exceed 5 % of the sector's Gross Value Added (GVA) and trade intensity is above 10 %; or
2. EU ETS-induced costs exceed 30 % of the sector's GVA; or
3. Trade intensity is above 30 %.

Throughout phase 3 many stakeholders, industrial and from the civil society, raised the issue that the stepwise approach (i.e. looking at trade and cost criteria individually) may not be fully adequate because each criteria is assessed in an isolated manner, while what is important is their interaction in conjunction. The carbon leakage criteria indicator set out in the revised EU ETS Directive (EU) 2018/410 (Article 10b (1)) addresses those concerns by defining the carbon leakage indicator as the product of the sector intensity of trade with third countries by the sector's emission intensity. This is a combined indicator and not a step-wise approach as in phase 3 carbon leakage list (CLL) which is considered to create a fairer system based on curves:

$$CL\ indicator = Trade\ Intensity * Emission\ Intensity$$

Compared to EU ETS phase 3 criterion, (carbon) emission intensity is used instead of carbon cost, the notions are very similar, but using emission intensity does not require setting a “right” carbon price for the assessment which has proven to be a difficult exercise. Similarly, the emission intensity avoids the use of an auctioning factor, which had to be estimated because it can only be determined after the benchmarks are determined (which is an exercise dependent on the carbon leakage list).

Similarly, the geographic scope for Carbon Leakage List assessment is clearly set out in the revised EU ETS Directive as being the European Economic Area (EEA) countries. This is supported by the Commission Impact Assessment accompanying the EU ETS Directive revision proposal which considers that although there is an increased and encouraging number of jurisdictions implementing or considering carbon markets or carbon taxes, it is premature to consider that carbon leakage is not relevant anymore and, as such, the trade intensity calculations will be based on the European Economic Area (EEA).

Regarding the Emission Factor used in the conversion of electricity consumption to indirect emissions, the reference value used in the 2015-20 Carbon Leakage List was maintained in the revision of the ETS Directive and the subsequent assessment thresholds in the impact assessment. Therefore, for consistency the Emission Factor methodology⁵⁶ is not assessed further and in this Carbon Leakage List exercise the existing methodology is maintained

⁵⁴ The indicative results for the 2021-30 are based on the phase 3 collected data, since the data collection exercise (with data reference period 2013-15) and subsequent calculation is on-going. The sectors identified as eligible for the second level assessments, either Qualitative or Quantitative (at disaggregated level) would still require to submit an application and be assessed.

⁵⁵ Art 10a(15) and (16) of the EU ETS Directive 2009/29/EC

⁵⁶ Total CO₂ emissions from thermal power plants divided by net electricity generation

(explained in the Annex IV). The updated value reflects the evolution in the overall energy mix, including the increased share of renewables in the energy mix (the share of renewables in 2005 was about 13% and in 2015 it increased to about 25%) (reference to Annex IV for further details).

Therefore a comparison between the 2015-20 Carbon Leakage List and the indicative Carbon Leakage List for 2021-30 is summarised in Table 14:

Table 14. Carbon Leakage List (CLL) overall comparison in terms of emissions coverage

		CLL for 2015-2019			CLL for 2021-2030		
	Criterion	number of sectors (NACE 4)	Verified emissions ⁵⁷	% of industrial emissions	number of sectors (NACE 4)	Verified emissions ⁵⁸	% of industrial emissions
First level assessment	(main) Quantitative criteria	I (Carbon costs > 5%; Trade Intensity > 10%)	11	388	53%	NA	-
		II (carbon costs >30%)	2	141	19%	NA	-
		III (Trade intensity >30%)	133	160	22%	NA	-
		CL indicator > 0.2	NA	-	45	676	93%
Second level assessment ⁵⁹	Qualitative assessment	no eligibility criteria	6	10	1%	NA	-
		CL indicator [0,15;0,2]	NA	-	(max) 14	17	2%
		Emission Intensity >1,5	NA	-	(max) 1	6	1%
		Refinery related BM	NA	-	(max) 1	10	1%
	Disaggregated assessment	no eligibility criteria	11	20	3%	NA	-
		Emission Intensity >1,5	NA	-	(max) 1	2	0%
		Refinery related BM	NA	-	(max) 1	7	1%
		MS route	NA	-	(max) 11	20	3%

⁵⁷ Verified emissions are based on EU TL phase 3 data, the figures shown refer to the yearly average in phase 3 rounded to million tons of CO₂.

⁵⁸ Second level assessment figures for the CLL 2021-2030 are indicative and show the total number of eligible sectors. Only the final assessment will allow determining the final coverage. To note that in some cases sectors are eligible to apply under different routes and therefore care should be taken not to double count sectors and their emissions.

The analysis in Table 15 puts the importance of the industrial sectors further into perspective in terms of the Directive's criteria to determine the exposure to carbon leakage. It is indicated the sector's contribution in terms of employment, where it is evident that only a relatively low share of persons are employed in the energy/emission-intensive industries compared to the whole industry sector. This observation is consistent with the results on the GVA distribution. However it should be noted that pure sector statistics are unable to show the impact on whole value chains across sectors.

Table 15. Carbon Leakage List (CLL) overall comparison in terms of industrial GVA and employment coverage

		CLL for 2015-2019			CLL for 2021-2030		
	Criterion	number of sectors (NACE 4)	% of industrial employment	% of industrial GVA	number of sectors (NACE 4)	% of industrial employment	% of industrial GVA
First level assessment	(main) Quantitative criteria	I (Carbon costs > 5%; Trade Intensity > 10%)	11	3,2%	3,7%	NA	
		II (carbon costs >30%)	2	0,2%	0,3%	NA	
		III (Trade intensity >30%)	133	51,1%	59,4%	NA	
		CL indicator > 0.2	NA		45	8,7%	16%
Second level assessment	Qualitative assessment	no eligibility criteria	6	1,2%	0,9%	NA	
		CL indicator [0,15;0,2]	NA		14	3,4%	3,8%
		Emission Intensity >1,5	NA		1	0,2%	0,1%
		Refinery related BM	NA		1	0,1%	0,3%
	Disaggregated assessment	no eligibility criteria	11	5,5%	5,8%	NA	
		Emission Intensity >1,5	NA		1	0,2%	0,1%
		Refinery related BM	NA		1	0,1%	0,3%
		MS route	NA		11	5,5%	5,8%

Regarding the methodological options between the different Carbon Leakage List exercises it is noted that in the same way that EU ETS system has evolved by drawing on lessons from each implementation phase, so has the carbon leakage criteria and their implementation. The table below provides an overview of the scope and methodological differences for the three carbon leakage impact assessments.

Table 16: Overview of the scope and methodological differences for the three carbon leakage impact assessments

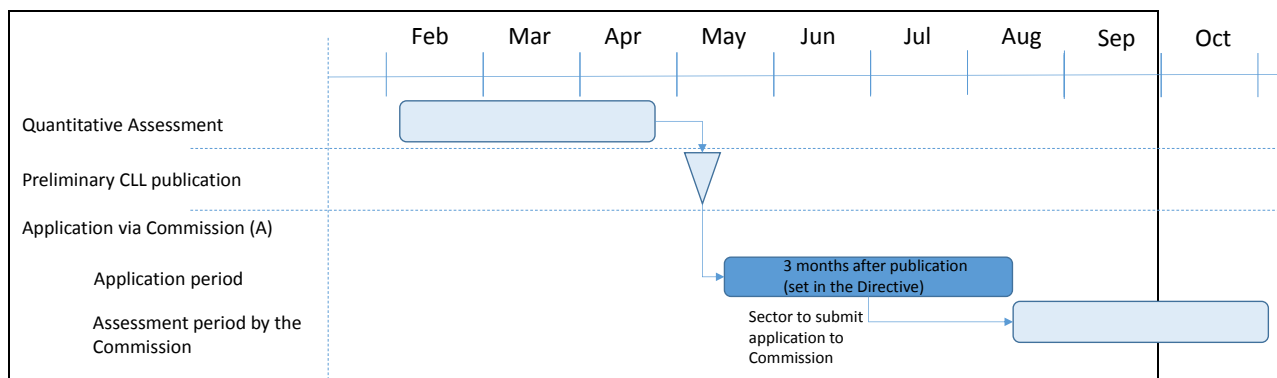
	CLL for 2013-2014	CLL for 2015-2019	CLL for 2021-2030	comments
Adoption	Dec-09	Oct-14	planned for Dec 2018	
Validity	2013-2014	2015-2019 (extended to 2020)	2021-2030	one CLL for the entire period
Updates	2011; 2012; 2013	possible yearly update	no update foreseen	
Methodological options				
auctioning factor	✓	✓	NA	no longer part of CL criteria
emission factor for electricity	marginal Vs average; reference value	marginal Vs average; reference value	reference value update	same methodology as in the past (used in the CLL criteria set in the revised Directive)
carbon price	✓	✓	NA	no longer part of CL criteria
trade intensity coverage	✓	✓	NA	coverage is set in the revised Directive (EEA countries)
qualitative assessment options	no framework assessed; assessment on scope of sectors to apply	Framework assessment based on qualitative criteria (set in the Directive)	Framework assessment based on qualitative criteria (set in the revised Directive)	
disaggregated assessment options	no framework assessed;	no framework assessed;	Framework assessment based on quantitative criteria (set in the revised Directive)	

ANNEX VI: QUALITATIVE ASSESSMENT (FLEXIBLE) FRAMEWORK

1. Process

After publication of the preliminary Carbon Leakage List (CLL), sectors eligible for a qualitative assessment can apply to the Commission for integration on the Carbon Leakage List within three months after the publication of the preliminary Carbon Leakage List (Figure 6).

Figure 6. Timeline of qualitative carbon leakage assessment



Applications

The sectors have to submit an application, following the proposed framework.

The entity who submits an application on behalf of the industry sector should ensure the completeness and representativeness of the application in terms of geographical distribution and number of installations (refer to criteria in section 4). The applicant entity may take the form of one industry sector association, a joint application by multiple industry sector associations, a joint application by multiple companies, or a combination of the above, in all cases a single point of contact must be clearly identified. For reasons of efficiency and effectiveness, together with increased application quality, only one application by eligible sector is advised.

Where a sector applies for a qualitative assessment it must:

- confirm its NACE 4-digit code and the activities it covers
- provide a list of all the installations in the sector that are covered by the EU ETS

Having done this, the sector must:

- put forward its argument for why it thinks the sector should be on the Carbon Leakage List, based on the three criteria:
 - the extent to which it is possible for individual installations in the sector concerned to reduce emissions and/or electricity consumption;
 - the extent to which there is scope to pass cost increases onto customers, and the influence of market characteristics on the ability to pass cost increases on;
 - the extent to which profit margins associated with serving the EU market are negative or too low to make further long-term investment economically viable (and provide a strong incentive to relocate production).

Given the interlinkages between criteria, it is expected the argument will be based on the combination of all three criteria.

In making its argument, the sector needs to set out its own reasoning and evidence on the special circumstances that prevail and why the sector should be placed on the Carbon Leakage List. In support of its application, the sector shall submit duly substantiated, complete and independently verified data to enable the Commission to carry out the assessment. Furthermore, complete documentation on data sets, data sources, calculations, estimates and methodologies applied need to be provided. The time period to be covered in the qualitative assessments is 2014, 2015, 2016.

A publishable summary has to be part of the application file.

Verification

The applications' data have to be assessed by a competent and independent verifier. The independent third party should review and assess the information or evidence (supplied by the sector/firm) and, using its own expert knowledge, judgement and standard analytical techniques, verify if that information/evidence is true or correct. The verification covers data used, assumptions applied, calculations of indicators and the link between indicators and conclusions on the criteria for the qualitative assessment as specified in section 3 of this paper. The information to be assessed can extend beyond financial information. It may relate to non-financial technical information, e.g. engineering, scientific, production process. The review itself is likely to be carried out by technical testing firms or specialist consultancy (e.g. engineering, environmental) firms, which have the appropriate qualification or accreditation to perform the verification.

A verification report containing the verification conclusions and the main findings is to be provided, together with evidence on the competence and independence of the verifier.

The independence of the verifier should be confirmed by demonstrating that, outside the work to verify the application, the verifier is not connected to, governed by or reliant on the applicant, i.e. that it is not owned, in part or full, by the applicant; that the applicant is not involved in the decision-making or in the management of the verifier; that there is no existing or intended contractual relationship that might constitute a conflict of interest.

The competence and independence of the verifier can be demonstrated by:

- Accreditation by National Accreditation Body
- Certified accreditation with representative industry organisations
- Certified quality standards (e.g. ISO) accreditation
- The track record of the verifier in providing similar services for other clients, including
 - past project/contract experience
 - letters of satisfactory completion

Only submissions including a positive opinion from the verifier can be considered by the Commission.

Assessment by the Commission

Application will be assessed by the Commission, using inter alia the quality criteria explained in section 4 of this annex. On that basis, the Commission will decide on the sector's inclusion on the CLL.

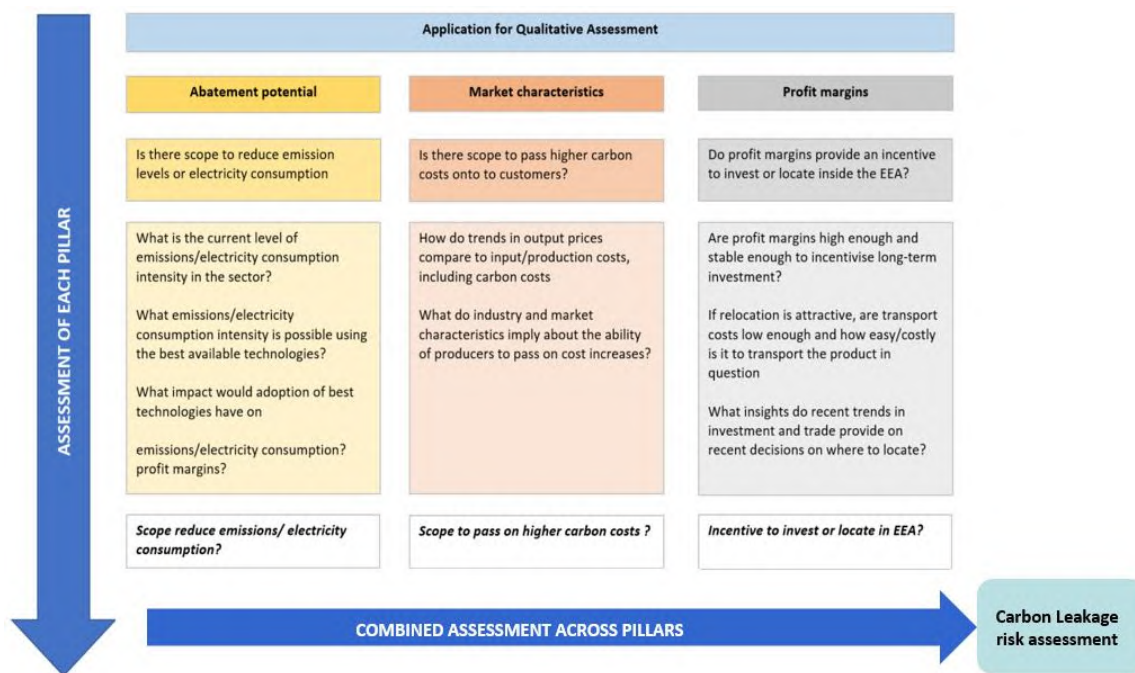
2. Analytical framework for the qualitative assessments

Overview

The analytical framework for the qualitative assessments is structured around the three criteria specified by the revised ETS Directive (Figure 7. Overarching analytical framework for Qualitative AssessmentsFigure 7):

1. Abatement potential
 - the extent to which it is possible for individual installations in the sector or sub-sectors concerned to reduce emission levels or electricity consumption;
2. Market characteristics
 - current and projected market characteristics, including any common reference price where relevant (i.e. commodity prices);
3. Profit margins
 - profit margins as a potential indicator of long-run investment or relocation decisions, taking into account changes in costs of production relating to emission reductions.

Figure 7. Overarching analytical framework for Qualitative Assessments



The first criterion, abatement potential, relates to the mitigation of risk (of carbon leakage) that occurs when carbon costs can be reduced by incorporating new technologies and/or alternative fuels/ raw materials into the production process. For sectors where there is little or no scope for

further reductions in the carbon cost of production through new technologies and/or fuels/ raw materials, this might be because firms in the sector have already adopted the best available technologies and cannot improve further by existing technology.

The focus of the second criterion, market characteristics, is on assessing the ability of the sector to pass higher carbon costs on to customers. If firms in the affected sector have a relatively strong degree of bargaining power, such that demand is not too sensitive to changes in prices, they are more likely to be able to pass on cost increases. In such cases, the risk of carbon leakage is lower.

The third criterion focuses on profit margins as a potential driver of long-run investment or relocation decisions. If profit margins are positive, high and sustained in the domestic market, that increases the incentive to invest in the domestic market and reduces the incentive to relocate. In contrast, if profit margins are continually low or negative, the cost of complying with the ETS is a sizeable share of profit margins, and/or profit margins are higher in third countries outside of the ETS, the incentive to invest in the domestic market is low and the incentive to relocate, to serve the overseas market and/or export back to the EU, is high.

Detailed analytical framework for each criterion

A set of questions is provided to operationalise the three criteria and therefore to facilitate and harmonise the applications:

- ***Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption***
 - What is the current level of emissions and electricity consumption intensity in the sector?
 - What emissions and electricity consumption intensity is possible using the best available technologies?
 - What is/are the production process(es) used?
 - How is your current level of emissions and electricity consumption comparable to the most efficient techniques levels?
 - What further savings are possible?
 - Will be any breakthrough technology possible and by when?

Abatement potential will be determined by assessing the implications of the following on the scope to reduce emissions and/or electricity consumption:

- Direct emissions intensity
- Electricity consumption intensity
- Indirect emissions intensity
- Current fuel mix
- Penetration of best available technologies
- Impact of full adoption of best available technologies on emissions
- Impact of investment on profit margins
- Opportunity cost of foregone investment in existing technologies
- Penetration of alternative fuels

- Impact of full adoption of alternative fuels on emissions
- Impact of investment in alternative fuels on profit margins
- Opportunity cost of foregone investment in fossil fuel technologies

See Table 17, with details of the assessment criteria for abatement potential pillar and information on the default indicators and data sources to be used.

- ***Market characteristics: assessing the extent to which producers can pass cost increases on to customers***
 - How do trends in output prices compare to input/production costs, including carbon costs, and is there any pattern/correlation?
 - What do industry and market characteristics imply about the ability of producers to pass on cost increases? How do trends look like?

The influence of market characteristics will be determined by assessing the implications of the following on the scope to pass cost increases on to customers:

- Output prices (and the extent to which they follow production costs)
- Common reference price set globally
- Bargaining position - Industrial structure
- Bargaining position - Pricing power
- Bargaining position - Availability of/competition from substitute products
- Bargaining position - Dependence of sector on downstream customers; dependence of downstream customers on sector
- Domestic demand - levels and trends
- Import penetration - levels and trends
- Import prices - levels and trends

See Table 18, with details of the assessment criteria for market characteristics and cost pass through and information on the default indicators and data sources to be used.

- ***Profit margins (as indicators of investment or relocation decisions): ascertaining the size of profit margins associated with EU production/market to assess the relative attractiveness of the ETS area as a place for long-term investment***
 - Are current and expected future profit margins high enough and stable enough to incentivise long-term investment?
 - If relocation is attractive, are transport costs low enough and how easy/costly is it to transport the product in question (e.g. value to weight ratio)?
 - Do current trade patterns imply it would be feasible?
 - Do recent investment trends provide any insight on recent decisions on where to locate?
 - Do recent trends in business demography (start-ups and closures) provide any insight on the attractiveness of the EU as a location to invest?

The influence of profit margins will be determined by assessing the implications of the following on the incentive to relocate or invest abroad:

- Profit margins
- Are profit margins consistent with the stage of the business cycle
- Projections for future demand in the EU ETS area
- Projections for future costs/prices/profit margins
- Substitute products with carbon leakage exposure
- Value to weight ratio
- Current trade patterns
- Investment in the sector in the EU ETS area
- Net trade balance
- Import penetration
- Business demography

See Table 19, with details of the assessment criteria for profit margin pillar and information on the default indicators and data sources to be used.

The assessment will then combine the individual criterion assessments to make an overall assessment and conclusion on the risk of carbon leakage.

3. Data sources

To ensure the assessments are robust, the data and methods used need to be of a high quality.

With regard to data, **official sources** (e.g. Eurostat) score highly in terms of the standard of data quality (in terms of coverage of sectors, consistency over time and coherence with national accounts aggregates and credibility among stakeholders) and should be used where possible.

Alternative sources include industry associations, commercial databases or firms but care must be taken to ensure the robustness and completeness of data from these sources.

The quality and coverage of data in commercial databases is difficult to assure: data can sometimes be inconsistent with the most relevant indicator from national accounts. The key challenge with firm level data is that no single firm is representative of the whole (sub) sector and considerable time and effort is required, through the collection, processing and summing of data from all firms in the sector, to generate an estimate for the whole (sub) sector. Where industry associations use data from their own collation activities, the data need to meet the quality criteria described below as best as possible.

To the extent possible, applications should use official statistics, i.e. Eurostat or EUTL data. Where necessary, reliable secondary sources and the information provided by industry can be used and should be supported with clear reasoning.

Tables 19-21 provide details of the assessment criteria/questions for each pillar and information on the indicators and data sources that can be used to answer the questions. Table 20 expands on this and provides a more detailed list of default indicators and data sources that shall be used to provide estimates for the assessment criteria under each pillar.

4. Quality criteria

The overarching objective is that the data used should have as complete and comprehensive coverage of the sector as possible and provide an accurate representation of the sector.

Quality criteria for application

To that end, the quality criteria for the application include:

- Representativeness of data
 - The data used should cover the whole of the 4-digit NACE sector being assessed, and only that sector.
 - If coverage of the whole sector is not possible, the part of the sector that is included should, as a minimum, account for 85% of turnover in the EU ETS area.
 - The geographic scope of the data and calculations should be the European Economic Area (EU28 plus Iceland, Liechtenstein, Norway), which covers the same 31 countries participating in the EU ETS
 - If coverage of the whole EEA is not possible, those countries that are included should, as a minimum, account for 85% of sector turnover in the EU ETS area and trade (exports+imports) with non-EU ETS countries.
 - All installations that are covered by the EU ETS, and their direct emissions, should be included.
 - If coverage of all installations is not possible, those installations that are included should, as a minimum, account for 85% of direct emissions from the sector.

If the minimum thresholds described above cannot be met, the representativeness of the data risks to be undermined and so too the robustness of conclusions from the Qualitative Assessment. In case the thresholds are not met, the application needs to demonstrate the representativeness of data.

To note that, where the assessments are based on data covering a sample of the sector (rather than the whole sector), this introduces a sampling error: where the assessment for the sample is different from the assessment for the whole sector (which is unknown). The larger the sampling error the greater the risk that those left out are (more) different to those covered. In turn, this increases the chance that the assessment for the sample covered does not apply to those not covered, and the whole population. This reduces the strength of any conclusion or decision made about whether a sector qualifies for the carbon leakage list.

To minimise the sampling error and the risk of an incorrect assessment, where the sector cannot be covered in full a high coverage (85%) is requested so that the assessment for the sample of the sector is valid and representative for the whole sector.

- Robustness of data
 - Data should come from reliable and trustworthy sources, preferably official sources. Where this is not the case, the source and/or derivation of the data

should be clear, transparent and easy to follow. Alternative data and methods should be verified and audited.

- Consistency of the data
 - The data should measure the concept/indicator they purport to measure, be consistent with both standard economic definitions and methods, and the other supporting data.
 - Where multiple sources are combined, their geographic, sector, and installation coverage should be consistent.
- Time period
 - Data provided in support of an application should be for the years 2014, 2015 and 2016 (where relevant the data period may be complemented by more recent data) which is the time period to be covered in the Qualitative Assessments.
- Traceability of calculations
 - Where alternative methods have been used to calculate the data values for an indicator, a clear description of the method must be provided. The method must be transparent, easy to follow and replicate, and the data used must be readily accessible.

5. Research questions, assessment measures and data sources for each assessment pillar

Table 17. Assessment Criteria and data sources for abatement potential pillar

<i>Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption</i>				
<i>Question</i>	<i>Assessed by:</i>	<i>Measure/ Formula</i>	<i>Data sources</i>	<i>Comment</i>
What is the current level of emissions/ electricity consumption intensity in the sector?	Direct Emissions per unit of production	kg CO ₂ / t of product	Emissions: - EUTL (installation) - Quantitative assessment (4-digit sector) Production: - Eurostat Europroms database	
	Electricity consumption per unit of production	Kwh / t of product	Electricity consumption: - Producers (installation) - EC & Member States (4-digit sector) Production: - Eurostat Europroms database	
	Indirect emissions per unit of production	kg CO ₂ / euro	Electricity consumption: - Producers (installation) - EC & Member States (4-digit sector)	

Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption

Question	Assessed by:	Measure/ Formula	Data sources	Comment
			Emissions factor - EC (DG CLIMATE) Production: - Eurostat Europroms database	
What is the current fuel mix?	Proportion of fossil fuels in fuel inputs (e.g. oil, gas, coal) Proportion of alternative fuels in fuel inputs Total amount of energy generated on-site Proportion of energy generated on-site from fossil/alternative fuels.	% of fuel inputs (purchases) that are fossil fuels % of fuel inputs (purchases) that are alternative fuels % of energy from fossil/alternative fuels	Fuel purchases broken down by fuel type: - Producers - Sector organisations Volume of fossil fuels burned and associated CO ₂ emissions: - Producers - Sector organisations Volume of alternative fuels burned and associated CO ₂ emissions: - Producers - Sector organisations	
What is the lowest, emissions/ electricity consumption intensity possible using the best available technologies?	Emissions per unit of production	kg CO ₂ / euro	Identify installation with lowest current emissions intensity EU IPPC BAT Reference documents	
	Electricity consumption per unit of production	Kwh / t of product	Identify installation with lowest current electricity intensity EU IPPC BAT Reference documents	
	Indirect emissions per unit of production	kg CO ₂ / euro	Identify installation with lowest current emissions intensity Emissions factor	

Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
			<ul style="list-style-type: none"> - EC (DG CLIMA) Production: <ul style="list-style-type: none"> - Eurostat Europroms database 	
What is the penetration of these technologies in the sector?	Penetration/ prevalence of most efficient techniques	Share of installations using most efficient techniques Share of production from most efficient techniques	List of installations: <ul style="list-style-type: none"> - EUTL Those using most efficient techniques: <ul style="list-style-type: none"> - Producers - Sector organisation Production from installations/that part of the sector using most efficient techniques: <ul style="list-style-type: none"> - Producers - Sector organisation 	To note that the IED requires MS to report best available technologies and Information is available in the European pollution release and transfer register (http://prtr.ec.europa.eu).
Average emissions/ electricity consumption intensity for: <ul style="list-style-type: none"> - installations/ part of the sector not using most efficient techniques - production from installations/that part of the sector not using most efficient techniques 	Direct Emissions per unit of production	kg CO ₂ / euro	Emissions: <ul style="list-style-type: none"> - EUTL (installation) - Quantitative assessment (4-digit sector) Level of compliance with best available technologies. Production not based on most efficient techniques: <ul style="list-style-type: none"> - Residual from total production <i>minus</i> production using best available technologies 	
	Electricity consumption per unit of production	Kwh / t of product	Electricity consumption: <ul style="list-style-type: none"> - Producers (installation) - EC & Member States (4-digit sector) Production not based on best available technologies: <ul style="list-style-type: none"> - Residual from total production <i>minus</i> production using best available technologies 	
	Indirect emissions per unit of production	kg CO ₂ / euro	Electricity consumption: <ul style="list-style-type: none"> - Producers (installation) - EC & Member States (4- 	

Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
			digit sector) Emissions factor - EC (DG CLIMATE) Production not based on best available technologies: - Residual from total production <i>minus</i> production using best available technologies	
What impact would adoption of best technologies have on emissions/ electricity consumption?	Total emissions/ electricity consumption if all production from best available technologies	kg CO ₂ kwh and % reduction	Emissions/ electricity consumption intensity for best available techniques: - from above calculations Production not based on best available technologies: - from above calculations	Use measures calculated above to apply emissions/ electricity consumption intensity for best available techniques to that part of production not based on best available techniques
<u>What impact would adoption of best available technologies have on profit margins?</u>				
Total cost of investment required to move all production to best available technologies	Identify average cost of investment in best available technologies for a given level of production. Scale this up to the level of production not based on best available technologies.	millions of euros	Average cost of investment in best available technologies for a given level of production: - EU IPPC BAT Reference documents - Producers - Sector organisation Production not based on best available technologies: - from calculations above	
Impact on profit margins	Identify average lifespan of best available technologies and derive annual cost of investment. Subtract annual cost of investment from average profit over 2014-16 (as guide to future profits), to	%	Lifespan of best available technologies: - EU IPPC BAT Reference documents - Producers - Sector organisation Profit margins: - See calculation below under 'Profit margins' pillar	

Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
	estimate impact on profit margins			
Opportunity cost of closing installations early (investment foregone)	Identify cost of current installation, average lifespan and years in operation. Estimate opportunity cost as total investment costs scaled by proportion of lifespan installation will not be in operation	euros	Investment cost, expected lifespan, years in operation: - Producers - Sector organisation - EU IPPC BAT Reference documents	
What impact would the use of alternative fuels or raw materials have on emissions?	Estimate amount of energy produced using fossil fuels, and associated CO ₂ emissions. Estimate amount of alternative fuels required to generate same amount of energy, and CO ₂ emissions associated with using these fuels. Estimate impact on emissions by subtracting latter from former.	kg CO ₂	Energy produced using fossil fuels: - Producers - Sector organisations Volume of alternative fuels required to produce same amount of energy and associated CO ₂ emissions: - Producers - Sector organisations - Sector studies - EU IPPC BAT Reference documents	
What impact would the use of alternative fuels or raw materials have on profit margins?				
Total cost of investment required to move to all alternative fuels	Identify average cost of investment to convert to alternative fuels for a given level of production/energy generation. Scale this up to the level of production/energy generation not based on alternative fuels.	millions of euros	Average cost of investment to switch to alternative fuels for a given level of production/energy generation: - EU IPPC BAT Reference documents - Producers - Sector organisation Production/energy generation not based on	

Abatement potential: ascertaining the extent to which it is possible for individual installations in the sector to reduce emissions or electricity consumption				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
			alternative fuels: - from calculations above	
Impact of investment in alternative fuel technologies on profit margins	Identify average lifespan of alternative fuel technologies and derive annual cost of investment. Subtract annual cost of investment from average profit over 2014-16 (as guide to future profits), to estimate impact on profit margins	%	Lifespan of alternative fuel technologies: - EU IPPC BAT Reference documents - Producers - Sector organisation Profit margins: - See calculation below under 'Profit margins' pillar	
Opportunity cost of closing fossil fuel technologies early (investment foregone)	Identify cost of current installation, average lifespan and years in operation. Estimate opportunity cost as total investment costs scaled by proportion of lifespan installation will not be in operation	euros	Investment cost, expected lifespan, years in operation: - Producers - Sector organisation - EU IPPC BAT Reference documents	

Table 18. Assessment Criteria and data sources for market characteristics and cost pass-through pillar

Market characteristics: assessing the extent to which producers can pass cost increases on to customers				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
<u>Costs and prices</u>				
How do trends in output prices compare to input/production costs, including carbon costs?	Comparing: - sector output prices with - sector production costs - sector carbon costs	Output prices: - Output price index - Value of sold production / volume of sold production Production costs: - Total	Output price index: - Eurostat Short-term Business Statistics Production values/volumes: - Eurostat Europroms database Production costs and Turnover: - Eurostat Structural Business Statistics	

Market characteristics: assessing the extent to which producers can pass cost increases on to customers				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
		purchases of goods and services - Labour costs - Turnover (to obtain unit production cost (per unit of turnover))		
How do trends in EU output prices compare to trends in output prices in other countries outside the EU?	Comparing: - sector output prices in the EU With - sector output prices in other countries (less relevant for commoditised goods/ industries)	EU sector output prices: - see above Sector output prices in other countries: - Price index (where relevant)	EU sector output prices: - see above Sector output prices in other countries: - National Statistics Offices - Sector organisations	
Is there a common reference price that is set globally (which limits scope for cost pass through)?	Confirm if price is set globally. If so, identify reference series and compare to production costs.	EU sector output prices: - see above EU sector production costs: - see above Reference series for global price: - price per unit or weight	EU sector output prices: - see above EU sector production costs: - see above Reference series for global price: - owner/publisher of price series	
<u>What do industry and market characteristics imply about the ability of producers to pass on cost increases?</u>				
What is the structure of the sub-sector by firm size:	Profile share of the sector accounted for by small, medium and large firms			
What share of the sector (by output) does each firm size-band account for?	Profile value added by firm size band	- Value added in the sector by firm (employment) size band	Value added: - Eurostat Structural Business Statistics (SME database)	Limited to 3-digit NACE detail
How concentrated is	Number of large		Number of enterprises and	Limited to 3-digit

Market characteristics: assessing the extent to which producers can pass cost increases on to customers

Question	Assessed by:	Measure/ Formula	Data sources	Comment
the sector?	producers and share of value added (or turnover) accounted for large firms	- Number of enterprises in the sector by firm (employment) size band - Value added in the sector by firm (employment) size band	value added: - Eurostat Structural Business Statistics (SME database)	NACE detail
How does the structure/ concentration of the sector compare to the structure/ concentration of downstream customers?				
How dependent are downstream customers on the sector and its output?	Identify key downstream customer sectors and identify their dependence on the sector (as share of inputs accounted for by the sector). Identify sector's dependence on downstream sectors (as share of output that goes to each downstream sector)	- Downstream customer sector purchases from sector as a share of: - the sector's output - the downstream sector's total purchases of inputs	Inter-dependence between sector and downstream customer sectors: - Eurostat Input-Output tables	Limited because available only to 2-digit NACE detail.
Does the sector have some bargaining/ monopoly power over downstream customers?	Does the sector's output have a high value-added content (high power) or a low value-added content (low power)? Compare structure of sector with structure of downstream sectors (concentration, value added by firm size)	- Value added as a % of turnover - Value added in the sector by firm (employment) size band	Value added and turnover: - Eurostat Structural Business Statistics Value added by firm size: - Eurostat Structural Business Statistics (SME database)	

Market characteristics: assessing the extent to which producers can pass cost increases on to customers				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
What is the profile of ownership of EU installations?	Proportion of the sector that is foreign controlled	Value of: - enterprises - value added - turnover that is foreign controlled compare to total EU - enterprises - value added - turnover to obtain share of EU sector that is foreign controlled.	Sector value added, turnover, enterprises that are foreign controlled: - Eurostat Structural Business Statistics (Foreign controlled EU enterprises database) Total EU sector value added, turnover, enterprises: - Eurostat Structural Business Statistics	Limited because data only available at 2-digit level.
How large is the market currently? What is the historical trend – has it been growing or shrinking? And what are the expectations for the future? What role/share do imports have in meeting demand and setting prices Has the role/share of imports been increasing/ decreasing	Look at levels/trends in EU domestic demand, import penetration and import prices	Domestic demand = Production + Imports - Exports Import penetration = Imports / Domestic demand Import prices: - Import price index - Value of imports / volume of imports	Domestic demand (calculated as Production <i>plus</i> Imports <i>minus</i> Exports): - Eurostat Europroms database Imports (by value, by volume): - Eurostat Europroms database Import price index: - Eurostat Short-term business statistics	

Table 19. Assessment Criteria and data sources for profit margin pillar

<i>Profit margins (as indicators of investment or relocation decisions): ascertaining the size of profit margins associated with EU production/market to assess the relative attractiveness of the ETS area as a place for further long-term investment</i>				
Question	Assessed by:	Measure/ Formula	Data sources	Comment
<u><i>Are profit margins high enough and stable enough to incentivise long-term investment?</i></u>				
What is the size of recent profit margins?	Gross operating rate	(Gross value added – Labour costs) / Turnover	Gross value added, turnover and labour costs: - Eurostat Structural Business Statistics for countries in EU ETS - National Statistics Offices for other countries outside EU ETS	
What stage of the business cycle is the sector at in the time period being analysed	Comparison of annual GVA growth over 2014-16 and longer historical period to long-term average	Annual growth in real sector GVA (Gross value added)	Nominal GVA (Gross value added): - Eurostat Structural Business Statistics Price index (to deflate nominal GVA): - Eurostat Short-term business statistics	
	Comparison of annual export & import growth over 2014-16 and longer historical period to long-term average	Annual growth in sector exports Annual growth in sector imports	Exports & imports: - Eurostat Europroms database Price index (to deflate nominal trade values): - Eurostat Short-term business statistics	
<u><i>What are the expectations for future profit margins?</i></u>				
<i>Is demand expected to remain strong/grow fast enough to make further investment worthwhile?</i>	<i>Is demand in the EU / EU ETS area expected to grow slower/faster or at much the same rate?</i> <i>How does this compare with the growth of demand in other markets?</i>		<i>Outlook for demand:</i> - Sector reports by independent forecaster - sector associations - Company reports	
<i>What do the projections for future costs and prices look like? Do they suggest profit margins will increase/be</i>	<i>Are input costs expected to grow slower/faster or at much the same rate?</i>		<i>Outlook for profits:</i> - Sector reports by independent forecaster - sector associations - Company reports	

Profit margins (as indicators of investment or relocation decisions): ascertaining the size of profit margins associated with EU production/market to assess the relative attractiveness of the ETS area as a place for further long-term investment

Question	Assessed by:	Measure/ Formula	Data sources	Comment
<i>maintained/decrease?</i>				
Are there possible substitute products treated differently in terms of carbon leakage and their inclusion (or not) on the carbon leakage list?	Identify substitute products and their treatment under the EU ETS.		Substitute products: - Producers - Literature/reports on the sector - Market reports by competition authorities	
Is relocation feasible?	Value to weight ratio	euro per kg	Production (by value, by volume): - Eurostat Europroms database Imports (by value, by volume): - Eurostat Europroms database	
	Current trade patterns	Annual growth in sector exports and imports	Exports & imports: - Eurostat Europroms database Price index (to deflate nominal trade values): - Eurostat Short-term business statistics	
Do recent investment trends provide any insight on recent decisions on where to locate?	Sector investment in the EU or EEA	Gross investment in tangible goods Net investment in tangible goods	Investment in tangible goods: - Eurostat Structural Business Statistics	
	Sector investment in countries outside the EU or EEA	Various, but most likely: - Gross fixed capital formation	Investment measure: - National Statistics Office	
	Trade balance	Exports - Imports	Exports & imports: - Eurostat Europroms database	
	Import penetration	Imports / Domestic demand	Imports: - Eurostat Europroms database	

Profit margins (as indicators of investment or relocation decisions): ascertaining the size of profit margins associated with EU production/market to assess the relative attractiveness of the ETS area as a place for further long-term investment

Question	Assessed by:	Measure/ Formula	Data sources	Comment
			Domestic demand (calculated as Production <i>plus</i> Imports <i>minus</i> Exports): - Eurostat Europroms database	
Do recent trends in business demography provide any insight on the attractiveness of the EU as a location to invest?	Business birth rate	Birth rate (number of enterprise births in the reference period (t) divided by the number of enterprises active in t)	Birth rate: - Eurostat Structural Business Statistics (Business Demography database)	Limited because data only available at 2- or 3-digit level.
	Business death rate	Death rate (number of enterprise deaths in the reference period (t) divided by the number of enterprises active in t)	Death rate: - Eurostat Structural Business Statistics (Business Demography database)	Limited because data only available at 2- or 3-digit level.
	Business churn	Birth rate + death rate	Churn rate: - Eurostat Structural Business Statistics (Business Demography database)	Limited because data only available at 2- or 3-digit level.
	Survival rate	Survival rate x: number of enterprises in the reference period (x) newly born in t-x having survived to t divided by the number of enterprise births in t-x	Survival rate: - Eurostat Structural Business Statistics (Business Demography database)	Limited because data only available at 2- or 3-digit level.

6. Data sources

Table 20. Indicators and data sources for qualitative assessments

Indicator	Units	Official source	Measure	Sector detail	Time period	Comment
<u>Abatement potential</u>						
Installations involved in production of the 4-digit NACE sector	number	EUTL (EU ETS registry)	Records each installation covered by EU ETS	NACE 4-digit (Rev.2)	2013-16 (Phase III (part)) 2008-12 (Phase II) 2005-07 (Phase I)	Provides details on those installations covered by the EU ETS
Direct emissions from each installation	kg CO ₂	EUTL (EU ETS registry)	CO ₂ emissions per installation	NACE 4-digit (Rev.2)	2013-16 (Phase III (part)) 2008-12 (Phase II) 2005-07 (Phase I)	Provides details on verified emissions for each installation covered by the EU ETS
Electricity consumption	Kwh	Member States (e.g. NSO, environment/energy ministry, or other competent authority), sectors.	NET electricity consumption (including auto-production)	Should be NACE 4-digit (Rev.2)		
Emissions factor	tCO ₂ /MWh	EC and contractor				Once calculated, this will not change.
Fuel mix (average emission factor)						
Best available technologies		BREFs (where available)				

<u>Market characteristics</u>						
Output prices	index	Eurostat Short-term business statistics	Producer prices - domestic market - non-domestic market Import prices	NACE 4-digit (Rev. 2)	2000-17 Pre-2000 data are patchy	
Input prices	Index	Eurostat Short-term business statistics	Producer prices - domestic market - non-domestic market Import prices Total purchases of goods and services	NACE 4-digit (Rev. 2)	2000-17 Pre-2000 data are patchy	
	euros	Eurostat structural business statistics (SBS)	Purchases of inputs	NACE 4-digit (Rev. 2)	2008 – most recent year (2016 ?)	
	euros	Supply and Use tables		NACE 2-digit	Data pre-2008 on NACE Annual	Potentially use to weight Eurostat Short-term business statistics to derive input price index
Turnover	euros	Eurostat Europroms database	Sold production	8-digit Prodcom	1995-2016	First four digits of Prodcom code provide the corresponding NACE sector Eurostat SBS used to help fill

GVA		Eurostat Structural Business Statistics (SBS)	Turnover	NACE 4-digit (Rev.2)	2008 – most recent year (2016 ?)	gaps.
	euros	Eurostat Structural Business Statistics (SBS)	Value added at factor cost	NACE 4-digit (Rev.2)	Data pre-2008 on NACE Rev. 1.1 2008 – most recent year (2016 ?)	
					Data pre-2008 on NACE Rev. 1.1	
	euros	Eurostat Europroms database	Imports by value or volume	- Combined Nomenclature 8-digit - CPA (2008) 4-digit (corresponds to NACE Rev.2)	1988-2016	
Turnover/GVA by firm size	euros	Eurostat Structural Business Statistics - SMEs	Turnover, by firm size band Value added at factor cost, by firm size band	NACE 2-digit and 3-digit (Rev.2)	2006-15	
Employment by firm size	number	Eurostat Structural Business Statistics - SMEs	Persons employed, by firm size band	NACE 2-digit and 3-digit (Rev.2)	2006-15	
Supply chain	euros	Eurostat Symmetric Input-Output tables	Purchases of intermediate inputs from other sectors; Sales of output to other sectors	NACE 2-digit	Annual, 2008-16	

Domestic demand	euros	Eurostat Europroms database	Apparent domestic demand	Presented at NACE 4-digit	1995-2016	Calculated as: Production + Imports - Exports, using data from Eurostat Europroms database
Foreign ownership	euros, number	Eurostat Structural Business Statistics - Foreign controlled EU enterprises (EU FATS) database	- # enterprises - Turnover - Value added - Persons employed - Various others	NACE 2-digit (Rev. 2)	2008-15	
<u>Profit margins</u>						
Profit margin	%	Eurostat Structural Business Statistics (SBS)	Gross operating rate	NACE 4-digit (Rev.2)	2008 – most recent year (2016?) Data pre-2008 on NACE Rev. 1.1	Derived from data on turnover, GVA and labour costs.
Turnover	euros	Eurostat Europroms database	Sold production	8-digit Prodcom	1995-2016	First four digits of Prodcom code provide the corresponding NACE sector
		Eurostat Structural Business Statistics (SBS)	Turnover	NACE 4-digit (Rev.2)	2008 – most recent year (2016?) Data pre-2008 on NACE Rev. 1.1	Eurostat SBS used to help fill gaps.
GVA	euros	Eurostat Structural Business Statistics (SBS)	Value added at factor cost	NACE 4-digit (Rev.2)	2008 – most recent year (2016?) Data pre-2008 on NACE Rev. 1.1	

Labour costs	euros	Eurostat Structural Business Statistics (SBS)	Personnel costs	NACE 4-digit (Rev.2)	2008 – most recent year (2016?) Data pre-2008 on NACE Rev. 1.1	
Investment	euros	Eurostat Structural Business Statistics (SBS)	Gross investment in tangible goods Net investment in tangible goods	NACE 4-digit (Rev.2)	2008 – most recent year (2016?) Data pre-2008 on NACE Rev. 1.1	Gross investment is also available for the sub-categories that make up ‘tangible goods’, these are: land; existing buildings/structures; construction and alteration of buildings; machinery and equipment
Value to weight ratio	euro per kg/unit	Eurostat Europroms database	Sold production - by value - by weight/ volume Exports/ imports - by value - by weight/ volume	Prodcom 8-digit - Combined Nomenclature 8-digit - CPA (2008) 4-digit (corresponds to NACE Rev.2)	1995-2016 1988-2016	Where data permit, use value and weight measures to derive value to weight ratio.
Domestic demand	euros	Eurostat Europroms database	Apparent domestic demand	Presented at NACE 4-digit	1995-2016	Calculated as: Production + Imports -Exports, using data from Eurostat Prodcom and Comext database

Links to key sources

- Eurostat Europroms: <http://epp.eurostat.ec.europa.eu/newxtweb/>
- Eurostat Structural Business Statistics: <http://ec.europa.eu/eurostat/web/structural-business-statistics/overview>
- Eurostat Short-term Business Statistics: <http://ec.europa.eu/eurostat/web/short-term-business-statistics/overview>
- Eurostat Input-Output tables and Supply and Use tables: <http://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/overview>
- EUTL (ETS): <http://ec.europa.eu/environment/ets/welcome.do>

7. Assessment by the Commission

Task 1: The initial assessment of applications will include checks of eligibility, completeness of the files, verification requirements and data sources used.

The Commission will check:

- if the Carbon Leakage indicator for the 4-digit NACE sector lies between 0.15 and 0.2;
- if the Emissions Intensity indicator for the 4-digit NACE sector is >1.5; or,
- if the 4-digit NACE sector uses refinery-related product benchmarks.

If any of these conditions holds, then the sector is eligible to apply for a Qualitative Assessment.

The Commission will carry out the initial assessment within two weeks of receiving the application. In case an application is deemed incomplete, the applying sector will be informed accordingly and invited to provide the missing information within two weeks.

Task 2: Assuming the sector is entitled to apply for a Qualitative Assessment, the next task for the Commission, once the application and detailed supporting evidence has been received, is to assess the validity and completeness of the application.

This involves:

- Assessing the validity of the application and completeness of the data/evidence put forward
 - The Commission reviews the data provided and checks that the data are complete, i.e. that the sector has:
 - Provided data for 2014, 2015 and 2016
 - Data have been provided for all the variables required to assess each pillar and its impact on the risk of carbon leakage; and that these are in the correct units
 - Used the default data and methods and, if not, has provided detailed description and justification for the alternative data and methods used
 - Assess if the supporting data meets the quality criteria described in Section 4 of this annex with respect to representativeness, robustness and consistency of the data, and the traceability of all calculations.
 - The Commission will review the data provided and check that the data and methods have been independently audited and verified as required.
 - This may require asking the sector to provide documentary evidence (e.g. in the form of a letter or report from the auditor/verifier) that the data it is presenting have been reviewed and approved/verified by an independent third party.
- Checking the accuracy of the data provided to support the application.
 - Using the data sources and methods outlined, the Commission:
 - checks that the input data are correct (correct source, dataset, sector code, indicator, unit, year etc.) and are valid if they come from a non-default source
 - checks that any manipulations/calculations have been applied correctly
 - assuming the data and calculations are correct and consistent, verify that the data values provided in the data template are correct and accurate

- If additional methods or data sources have been used to complement the default method and data, the Commission will review the data and workings (which should have been provided with the original application). The Commission will check if the data and methods have been used correctly and the calculated values are consistent with these. Any additional data and methods used by the sector should be independently verified. The sector must confirm this in the form of a letter or report from the verifier.
- If there are errors or inconsistencies, the Commission will work with the sector to understand these and come to a resolution based on the default method and data sources.

The Commission will then proceed to assess the risk of carbon leakage for the sector using the analytical framework and the data provided by the sector for the indicators under each pillar. The Commission assesses each pillar individually and then comes to a conclusion (on the risk of carbon leakage) by making a combined assessment across the pillars.

Each pillar will be assessed against the criteria in the tables below, using the evidence provided by the sector for the key questions/indicators of interest under each pillar (Table 21, Table 22 and Table 23).

*The Commission will produce an **assessment report** based on Tasks 1 and 2. This will detail the Commission's findings and assessment of the application. It will confirm or not, if the sector is eligible to apply for a Qualitative Assessment. It will also confirm if all inputs have been received and are complete and correct; use the default data sources/methods; data meet the quality criteria; and any alternative data/methods have been audited/verified and described in detail.*

If the Commission is satisfied that:

- *the application is valid and complete; and,*
- *the correct (default) data and methods have been used correctly and any additional methods have been verified/audited, the application will be assessed on the risk of carbon leakage using the evidence provided by the sector for the key questions/indicators of interest under each pillar and by making a combined assessment across the pillars.*

Table 21. Criteria for assessing abatement potential

	Scope to reduce emissions and electricity consumption		
		<i>Scope to reduce emissions and/or electricity consumption further</i>	<i>No scope to reduce emissions and/or electricity consumption further</i>
1	Direct emissions intensity	High/above average for manufacturing Not falling High compared to best available technologies	Low/below average for manufacturing Falling for some time Low compared to (or in line with) best available technologies
2	Electricity consumption intensity	High/above average for manufacturing Not falling High compared to best available technologies	Low/below average for manufacturing Falling for some time Low compared to (or in line with) best available technologies
3	Indirect emissions intensity	High/above average for manufacturing Not falling High compared to best available technologies	Low/below average for manufacturing Falling for some time Low compared to (or in line with) best available technologies
4	Current fuel mix	High % of fossil fuels	Low % of fossil fuels
5	Penetration of best available technologies	Low	Already high
6	Impact of full adoption of most efficient techniques on emissions	Marked fall in emissions	Small fall in emissions
7	Impact of investment on profit margins	Weak/ little change	Strong/ large reduction
8	Opportunity cost of foregone investment in existing technologies	Low	High
9	Penetration of alternative fuels	Low	Already high
10	Impact of full adoption of alternative fuels on emissions	Marked fall in emissions	Small fall in emissions

11	Impact of investment in alternative fuels on profit margins	Weak/ little change	Strong/ large reduction
12	Opportunity cost of foregone investment in fossil fuel technologies	Low	High

Table 22. Criteria for assessing scope for passing on costs

Scope for cost pass through			
		<i>Costs can be passed on easily</i>	<i>Difficult to pass costs on</i>
1	Output prices	Follow production costs	Do not move with production costs
2	Common reference price set globally	No	Yes
3	Bargaining position - Industrial structure	More concentrated than or large firms account for larger share, compared to downstream sectors	Less concentrated than or small firms account for larger share, compared to downstream sectors
4	Bargaining position – pricing power	Sector output has high value-added content	Sector output has a low value-added content
5	Bargaining position - Availability of/competition from substitute products	Low	High
6	Bargaining position - dependence	Downstream sector heavily reliant on sector (high % of inputs come from the sector) and/or Sales to downstream sector are a small % of total sales	Downstream sector not reliant on sector (low % of inputs come from the sector) and/or Sales to the downstream sector are a high % of total sales
7	Domestic demand	Strong/growing fast	Weak/slow or negative growth
8	Import penetration	Low/falling	High/growing
9	Import prices	Higher/rising	Lower/falling

Table 23. Criteria for assessing profit margin pillar

Profit margins			
		<i>No incentive to relocate/invest abroad</i>	<i>Incentive to relocate/invest abroad</i>
1	Profit margins	High	Low

2	Business cycle: are profit margins consistent with the stage of the business cycle	High profit margins when sector/market growing (fast); low profit margins when sector/market growing slowly or contracting	Low profit margins when market growing (fast); negative margins at any stage
3	Projections for future demand in the EU ETS area	Strong/accelerating growth In line with or faster than in other countries outside the EU ETS	Slowing/contracting Not as fast as in other countries outside EU ETS
4	Projections for future costs/prices/profit margins	Margins to hold or widen Margins in line with or wider than in other countries outside the EU ETS	Margins to narrow Margins smaller than in other countries outside the EU ETS
5	Substitute products with preferential CCL treatment	No	Yes
6	Value to weight ratio	Low	High
7	Current trade patterns	No or little trade in good (routes and infrastructure not already set up; indicator that trading from new location may be difficult)	Good already heavily traded (routes and infrastructure already set up; indicator that relocation is feasible)
8	Investment in the sector in the EU ETS area	High/growing In line with or faster than in other countries outside EU ETS	Low/falling Slower than in other countries outside EU ETS
9	Net trade balance	High/widening	Low or negative/narrowing (indicative of relocation in action)
10	Import penetration	Low/flat or falling	High/growing
11	Business demography	Sector characterised by high birth rate, low death rate, high survival rate	Sector characterised by low birth rate, high death rate, low survival rate

From this, the Commission will have a clear assessment for each pillar. On a basis of a combined assessment, the Commission will make a conclusion on the risk of carbon leakage, based on the

extent to which the argument (no abatement potential; no/little scope for passing on costs; low/negative profit margins) is supported:

- Weak evidence to support the argument;
- Strong evidence to support the argument.

The conclusion is straightforward where the findings for each pillar suggest a strong risk of carbon leakage, or where the findings for each pillar suggest no risk of carbon leakage.

In cases where strong evidence is provided for all three criteria, the Commission will assess the arguments in view of the likely magnitude of carbon leakage exposure risk. When this assessment concludes that the sector is to be considered less exposed to carbon leakage risks, the sector should not be included on the Carbon Leakage List.

The challenge will lie in making a conclusion where the evidence across the pillars is mixed, e.g. where the evidence to support the argument is strong for one pillar, while for the other two pillars it is weak or there is none.

In these cases, the Commission will:

- Review the role of the sector in the wider supply chain/economy and its contribution to GVA, employment, trade, emissions and electricity consumption.
- Assess the findings for each pillar against the findings for the others to deepen the analysis and check the assessment, e.g. does the assessment for profit margins make sense given the market/industry characteristics?
- Assess if pillars should be given different weightings in the assessment, for example because there is one pillar weak the sector cannot do anything about.
- If required, identify additional indicators for a pillar and reassess the conclusion for the pillar.
- Where available, review projections for future industry/market performance and implications for EU industry and emissions, e.g. is there a possibility to modernise in the sector, are projections in line with resource efficiency/ circular economy?

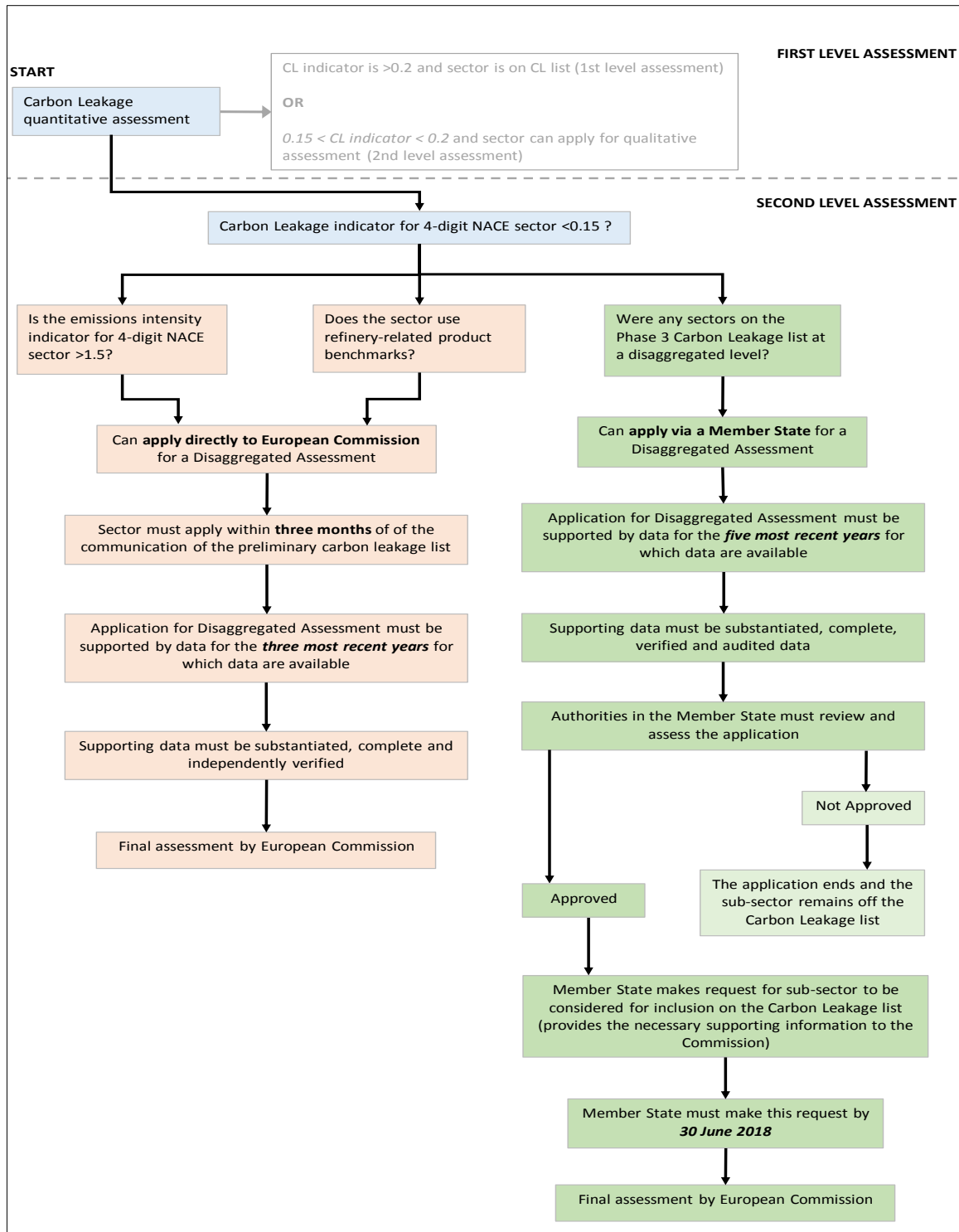
Having reviewed the above, the Commission will make the overall assessment and conclusion on the risk of carbon leakage.

ANNEX VII: QUANTITATIVE ASSESSMENT (FLEXIBLE) FRAMEWORK AT DISAGGREGATED LEVEL

1. Process

There are two application routes under which the eligible sectors may apply. An overview of common application elements and the specific aspects of each route is presented in Figure 8.

Figure 8. Eligibility route for a Disaggregated Assessment



Applications

The (sub) sector application needs to comply with the proposed framework. The entity who submits an application on behalf of the industry (sub) sector should ensure the application completeness and representativeness in terms of geographical distribution and number of installations (refer to criteria in section 4). The applicant entity may take the form of one industry (sub) sector association, a joint application by multiple industry (sub) sector associations, a joint application by multiple companies, or a combination of the above, in all cases a single point of contact must be clearly identified. For reasons of efficiency and effectiveness, together with increased application quality, only one application by eligible (sub) sector is advised.

Where a (sub) sector applies for a disaggregated assessment, it must:

- Confirm it's NACE 4-digit code and the activities it covers
- Confirm the Prodcom codes that are covered by the NACE 4-digit code
- Confirm the subset of Prodcom codes that are presumed to have a CL indicator >0.2
- Confirm the route through which the (sub)sector is applying for the assessment (route B, C or D in Table 1)
- Provide a list of the installations in the sector that are covered by the EU ETS

Having done this, the sector must put forward its Carbon leakage indicator calculation:

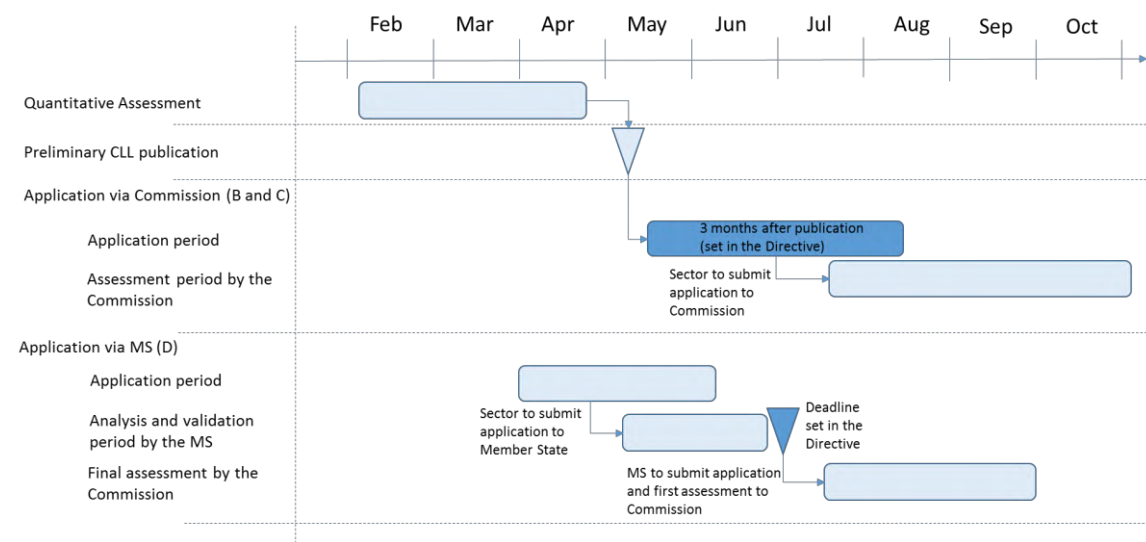
- Provide a Carbon Leakage indicator calculation for each Prodcom-defined sub-sector, including the methodology (where relevant), the underlying data and data sources

The sector must also provide supporting evidence that justifies why the sector should be placed on the CL list.

- Where the calculation has relied on non-default methods and data sources, the sector must provide a detailed description and justification of the data sources and methodology used.
- In support of its application, the sector shall submit duly substantiated, complete and independently verified (and audited for the MS route) data to enable the Commission (and the MS for route D) to carry out the assessment.
- Furthermore, complete documentation on data sets, data sources, calculations, estimates and any complementary methodologies applied must be provided.
- The period to be covered in the disaggregated assessments is three most recent years for route B and C, and five most recent years for route D.

A publishable summary has to be part of the application file.

Figure 9.. Indicative timeline of disaggregated carbon leakage assessment



Applicable to criteria B and C

After publication of the preliminary Carbon Leakage List, sectors eligible for a quantitative assessment can apply to the Commission for inclusion on the Carbon Leakage List within three months after the publication of the preliminary Carbon Leakage List.

Verification

The applications' data have to be assessed by a competent and independent verifier. The independent third party should review and assess the information or evidence (supplied by the sector/firm) and, using its own expert knowledge, judgement and standard analytical techniques, verify if that information/evidence is true or correct. The verification covers data used, assumptions applied, calculations of indicators and the link between indicators and the disaggregated assessment as specified in section 3 of this paper. The information to be assessed can extend beyond financial information. It may relate to non-financial technical information, e.g. engineering, scientific, production process. The review itself is likely to be carried out by technical testing firms or specialist consultancy (e.g. engineering, environmental) firms, which have the appropriate qualification or accreditation to perform the verification.

A verification report containing the verification conclusions and the main findings is to be provided, together with evidence on the competence and independence of the verifier.

The independence of the verifier should be confirmed by demonstrating that, outside the work to verify the application, the verifier is not connected to, governed by or reliant on the applicant, i.e. that it is not owned, in part or full, by the applicant; that the applicant is not involved in the decision-making or running of the verifier; that there is no existing or intended contractual relationship that might constitute a conflict of interest.

The competence and independence of the verifier can be demonstrated by:

- Accreditation by National Accreditation Body
- Certified accreditation with representative industry organisations

- Certified quality standards (e.g. ISO) accreditation
- The track record of the verifier in providing similar services for other clients, including
 - past project/contract experience
 - letters of satisfactory completion

Only submissions including a positive opinion from the verifier can be considered by the Commission.

Assessment by the Commission

Applications will be assessed by the Commission, using inter-alia the quality criteria explained in section 4 of this annex. On that basis, the Commission will decide on the sector's status of carbon leakage risk exposure.

Applicable to criteria D

Sectors eligible for a disaggregated assessment based on EU ETS phase 3 CLL (Annex to Commission Decision 2014/746/EU)) at a 6-digit or 8-digit level (Prodcom) classification can apply to a Member State (MS) for inclusion on the Carbon Leakage List. Considering the need to submit the application to the European Commission by 30 June 2018, eligible sectors are advised to contact the relevant Member State(s) in advance in order to confirm the Member State analytical capacity and to allow for efficient planning. Unless agreed otherwise it is recommended that (sub)sector application(s) are submitted for Member State analysis by no later than 08 June 2018 in order to allow for a sufficient analysis time.. After MS assessment, the (sub) sector application should be sent to the Commission together with the MS assessment report for final assessment to be done by the Commission.

In making its application to the Member State, the sector must include substantiated, complete, verified and audited data for the five most recent years for which data are available.

Requests from Member States will only be considered where, on the basis of the data provided, the Member State can establish that the application of the derogation is justified. In these cases, the application is forwarded to the Commission for a final assessment.

Verification

The applications' data have to be assessed by a competent verifier and audited. The independent third party should review and assess the information or evidence (supplied by the sector/firm) and, using its own expert knowledge, judgement and standard analytical techniques, verify if that information/evidence is true or correct. The verification covers data used, assumptions applied, calculations of indicators and the link between indicators and the disaggregated assessment as specified in section 3 of this paper. The information to be verified may relate to non-financial technical information, e.g. engineering, scientific, production process. The review itself is likely to be carried out by technical testing firms or specialist consultancy (e.g. engineering, environmental) firms, which have the appropriate qualification or accreditation to perform the verification. For financial information, data should be fully audited as required under the revised Directive provisions.

A verification report containing the verification conclusions and the main findings is to be provided, together with evidence on the competence and independence of the verifier and auditor where relevant.

The independence of the verifier/auditor should be confirmed by demonstrating that, outside the work to verify the application, the verifier/auditor is not connected to, governed by or reliant on the applicant, i.e. that it is not owned, in part or full, by the applicant; that the applicant is not involved in the decision-making or running of the verifier/auditor; that there is no existing or intended contractual relationship that might constitute a conflict of interest.

The competence of the verifier/auditor can be demonstrated by:

- Accreditation by National Accreditation Body
- Certified accreditation with representative industry organisations
- Certified quality standards (e.g. ISO) accreditation
- The track record of the verifier/auditor in providing similar services for other clients, including
 - past project/contract experience
 - letters of satisfactory completion

Only submissions including a positive opinion from the verifier can be considered by the Member State and subsequently by the Commission.

Assessment by the Member State:

Applications will be assessed by the relevant Member State, using inter alia the quality criteria explained in section 4 of this annex. On that basis, the Member State will decide on the sector's application completeness and quality and submit the sector application together with an assessment report to the Commission for final decision.

Assessment by the Commission

Application and Member State assessment report will be assessed by the Commission who will decide on the sector's inclusion on the CL List.

2. Analytical framework for the disaggregated assessments

Overview

A (sub)sector may be included in the Carbon Leakage List at a disaggregated level following Criteria B, C and D, where, at Prodcom level (8-digit), the trade intensity (TI) multiplied by emission intensity (EI) exceeds 0.2 (Figure 10). The revised Directive also defines the provisions regarding the required data quality in order to ensure equal treatment of sectors in the whole process:

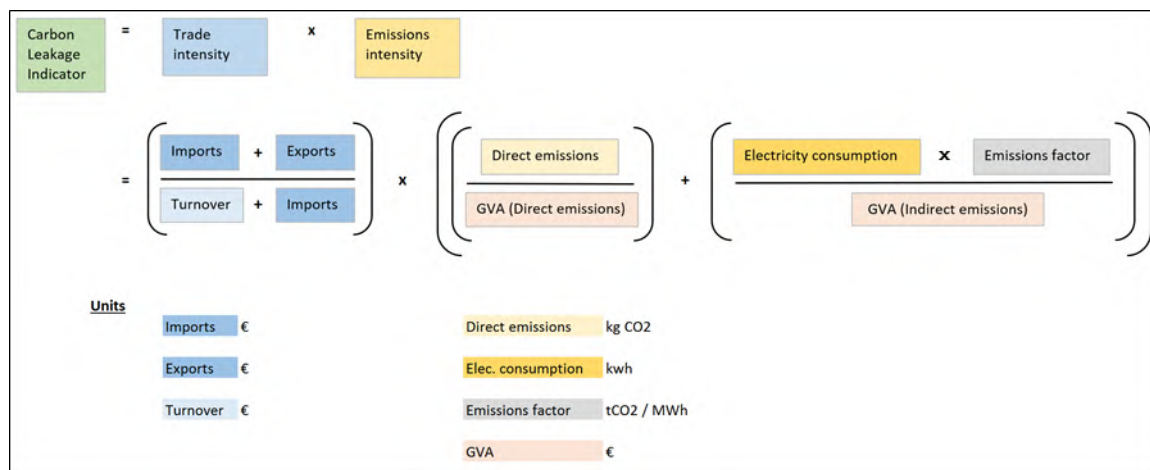
- a) duly substantiated, complete and independently verified data – route B and C
- b) duly substantiated, complete, verified and audited data for the five most recent years – route D (“MS route”)

Having confirmed the Prodcom codes for which a Disaggregated Assessment is requested, the sector must (for each proposed Prodcom code) provide its own estimates for the Carbon

Leakage indicator for that code (sub-sector), using the **default data sources and method** described below (formula detailed in Figure 10 and the data sources identified in Table 24).

If there is deviation from the default method and data, the application must include both the default methodology calculation and the calculation from the complementary approach, with the confirmed methodology, the underlying data and the relevant data sources, and a justification of why this approach is required and improves the estimate for the carbon leakage indicator.

Figure 10. Formula for calculating the Carbon Leakage indicator



Notes: Variables can be cross-referenced to data sources in Table 24 using their colour.

The variables for which data are required are listed in Table 24, along with the default data sources. The sector should check to ensure the data are provided in the correct units. For applications made under routes B and C, all data should cover the same three-year period. For applications made under the route D (MS route), all data should cover the same five-year period.

Calculating indicators

Trade intensity indicator

The trade intensity indicator is calculated using three variables: Imports, Exports and Turnover.

$$\text{Trade Intensity (TI)} = \frac{(\text{Imports} + \text{Exports})}{(\text{Imports} + \text{Turnover})}$$

All the data are accessed from the same database: *Eurostat Europroms*.

By using this default data source, the sector should not need to make any own calculations or manipulations. It just needs to locate the data for each variable of interest and copy it into the data template. All the data are in euros, as required.

How to deal with the data gaps

In a few cases, there may be gaps in the turnover data (Sold production). Where this happens, the sector should access the *Eurostat Structural Business Statistics* database and use turnover data for the 4-digit NACE sector to estimate a value to fill the gap(s) in the *Europroms* series.

Emission intensity indicator

The emissions intensity indicator is calculated using the following variables: direct emissions; electricity consumption; emissions factor; GVA (for direct emissions); and, GVA (for indirect emissions).

$$\textbf{Emission Intensity (EI)} = \frac{(\textit{Direct Emissions} + \textit{Indirect Emissions})}{(\textit{GVA})}$$

The data are obtained from different data sources (see Table 2 for more details). The approach set out below should be used when providing data inputs for the emissions intensity indicator:

- **Direct emissions:**
 - Identify all plant/installations involved in the NACE 4-digit sector that includes the 8-digit Prodcom good. A list of installations with EUTL identifier should be submitted.
 - For each installation, identify total EUTL verified emissions
 - Sum emissions across all installations to calculate an aggregate for the sub-sector.
 - This provides a measure of total EUTL verified emissions across all installations (that produce the 8-digit Prodcom good)
 - For each installation, establish the share of that good's production in the value of total production (where plant/installation produces several goods; if a plant produces only one good then the share is 100%), i.e. split production by Prodcom code. If this cannot be done using production values, possible alternatives may be to use production volume (assuming the same units are used for different products) or turnover/sales.
 - Aggregate for the sub-sector as a whole by:
 - summing up production of the good across all installations;
 - summing up total production across all installations;
 - and then,
 - Divide *production of the good across all installations* by *total production across all installations*.
 - This provides a measure of the good's share of total production share across all installations
 - Apply this share (of total production) to total EUTL verified emissions for all installations involved in production of the 8-digit Prodcom good.
 - This will provide an estimate of direct emissions associated with the production of the 8-digit Prodcom good. This data can be entered in the data template for Direct Emissions. The data should be in the correct units (kg CO₂)
- **Electricity consumption**
 - Electricity consumption by sector data should be requested at Member State level
 - Once that has been obtained, the sector should collect electricity consumption data by NACE 4-digit level across each Member State

- Care should be taken not to double count the electricity generated by installations belonging to industrial sectors (self-production) and electricity sold to third parties (within or outside the same sector)
 - Identify all the Prodcom codes that fall under the 4-digit NACE code. Sum the value of production across all these codes to obtain a measure of the total value of production for the corresponding 4-digit NACE sector.
 - Identify the value of production for the 8-digit Prodcom good in question.
 - Divide *production for the 8-digit Prodcom good* by *total value of production* (for the corresponding 4-digit NACE sector)
 - This provides a measure of the 8-digit Prodcom good's share of total production
 - Apply this production share to the measure of electricity consumption for the NACE sector
 - This will provide a measure of electricity consumption associated with the production of the 8-digit Prodcom good. This data can be entered in the data template for Electricity Consumption. Ensure it is in the correct units (kWh).
- **Emission factor**
 - The updated value for the emission factor is 376g CO₂/kWh and should be entered into the data template.
- **GVA (direct emissions):**
 - GVA data does not exist at 8-digit Prodcom level. The approach set out below should be used to provide a measure of GVA at the 8-digit Prodcom level:
 - Using official data identified in Table 2:
 - estimate the production share by Prodcom product (across all Prodcom categories covered by the NACE 4-digit sector)
 - Identify all the Prodcom codes that fall under the 4-digit NACE code. Sum the value of production across all these codes to obtain a measure of the total value of production for the corresponding 4-digit NACE sector.
 - Identify the value of production for the 8-digit Prodcom good in question.
 - Divide *production for the 8-digit Prodcom good* by *total value of production* (for the corresponding 4-digit NACE sector)
 - This provides a measure of the 8-digit Prodcom good's share of total production
 - apply the Prodcom production shares to NACE 4-digit GVA data
 - this will allocate the NACE 4-digit sector GVA across the Prodcom categories that make up the NACE 4-digit sector.
 - This provides a measure of GVA by Prodcom category and can be entered into the data template for GVA (direct emission). Note, this measure will be in millions of euros and will need to be converted into euros (by multiplying by 1,000,000) before entering into the data template.

- **GVA (indirect emissions):**
 - Using official data identified in Table 24:
 - Identify the 3-digit NACE sector: *35.1 Electric power generation, transmission and distribution*
 - For NACE 35.1, select and obtain data for the GVA indicator: *Value added at factor cost*
 - This provides a measure of GVA for the electricity industry and can be entered into the data template for GVA (indirect emissions). Note, this measure will be in millions of euros and will need to be converted into euros (by multiplying by 1,000,000) before entering into the data template.

The methods (and data sources) set out above are the default approach and should be applied, as described, where possible. If other methodologies are proposed to generate the variables used to calculate the emission intensity (e.g. split the GVA by Prodcom) or trade intensity indicators (e.g. filling data gaps), this should be clearly described and justified. Furthermore, any such method should complement the default methodology and not be in place of the default methodology.

3. Data sources

The EU ETS revised Directive sets the data quality parameters and the assessment should remain robust and comparable with the main quantitative assessment (first level assessment). Therefore, to the extent possible, applications have to rely on official statistics, i.e. Eurostat and EUTL data, as is the case for the first level assessments at NACE 4 level. Where necessary, reliable secondary sources and the information provided by industry can be used and should be supported with a clear reasoning.

Table 24. Indicators and data sources for disaggregated assessments

Indicator	Units	Official source	Link to source	Measure	Sector detail	Time period	Comment
Imports & Exports	euros	Eurostat Europroms database	http://epp.eurostat.ec.europa.eu/newxtweb/	Imports by value (or volume)	8-digit Prodcom	1995-2016	See under <i>Available datasets > Statistics on industrial production and international trade (prom) > Annual detailed data by PRODCOM list (according to Nace Rev.2) (prodcom_n2)</i>
Turnover	euros	Eurostat Europroms database	http://epp.eurostat.ec.europa.eu/newxtweb/	Sold production	8-digit Prodcom	1995-2016	See under <i>Available datasets > Statistics on industrial production and international trade (prom) > Annual detailed data by PRODCOM list (according to Nace Rev.2) (prodcom_n2)</i> First four digits of Prodcom code provide the corresponding NACE sector
	euros	Eurostat Structural Business Statistics (SBS)	http://ec.europa.eu/eurostat/web/structural-business-statistics/overview	Turnover	NACE 4-digit (Rev.2)	2008 – most recent year (2016 ?) Data pre-2008 on NACE Rev. 1.1	Use SBS as fall back to help fill gaps in Prodcom data.
Installations involved in production of the 4-digit NACE sector	number	EUTL (EU ETS registry)	http://ec.europa.eu/environment/ets/welcome.do	Records each installation covered by EU ETS	NACE 4-digit (Rev.2)	2013-16 (Phase 3 (part)) 2008-12 (Phase 2) 2005-07 (Phase 1)	Provides details on those installations covered by the EU ETS

Direct emissions from each installation	kg CO ₂	EUTL (EU ETS registry)	http://ec.europa.eu/environment/ets/welcome.do	CO ₂ emissions per installation	NACE 4-digit (Rev.2)	2013-16 (Phase 3 (part)) 2008-12 (Phase 2) 2005-07 (Phase 1)	Provides details on verified emissions for each installation covered by the EU ETS
Electricity consumption	Kwh	Member States (e.g. NSO, environment/energy ministry, or other competent authority), sectors.		NET electricity consumption (including auto-production)	Should be NACE 4-digit (Rev.2)		
Emissions factor	tCO ₂ /MWh	EC			n/a		The same value will be used for all assessments.
GVA (Direct and Indirect)	euros	Eurostat Structural Business Statistics (SBS)	http://ec.europa.eu/eurostat/web/structural-business-statistics/overview	Value added at factor cost	NACE 4-digit (Rev.2)	2008 – most recent year (2016 ?) Data pre-2008 on NACE Rev. 1.1	Official source is available at NACE 4-digit level. This will need to be scaled using (more detailed) Prodcom data.
Correspondence tables		Eurostat RAMON (Reference And Management Of Nomenclatures) database – Correspondence tables	http://ec.europa.eu/eurostat/ramon/relations/index.cfm?TargetUrl=LST_REL&StrLanguageCode=EN&InterCurrentPage=1	Correspondence between Prodcom and Comext codes			See pages 2-4 for correspondence tables from Combined Nomenclature to Prodcom. See pages 12-13 for correspondence tables from Prodcom to Combined Nomenclature

4. Quality criteria

Quality criteria for application

To ensure the assessments are robust, the data and methods used need to be of a high quality.

With regard to data, **official sources** (e.g. Eurostat) score highly in terms of the standard of data quality (in terms of coverage of sectors, consistency over time and coherence with national accounts aggregates) and credibility among stakeholders, and should be used where possible.

Alternative sources include industry associations, commercial databases or firms but care must be taken to ensure the robustness and completeness of data from these sources.

The quality and coverage of data in commercial databases is difficult to assure: data can sometimes be inconsistent with the most relevant indicator from national accounts. The key challenges with firm level data is that no single firm is representative of the whole (sub)sector and considerable time and effort is required, through the collection, processing and summing of data from all firms in the sector, to generate an estimate for the whole (sub)sector. Where industry associations use data from their own activities, the data needs to meet the quality criteria described below as well as possible.

The overarching objective is that the data used should have as complete and comprehensive coverage of the sector as possible and provide an accurate representation of the sector.

To that end, the quality criteria for the application include:

- Representativeness of data
 - The data used should cover the whole of the 8-digit Prodcom sector being assessed, and only that sector.
 - If coverage of the whole sector is not possible, the part of the sector that is included should, as a minimum, account for 85% of turnover in the EU ETS area.
 - Furthermore, where possible, the geographical and installation profiles should be consistent with the geographical and installation profiles for the whole sector. The geographic scope of the data and calculations should be the European Economic Area (EU28 plus Iceland, Liechtenstein, Norway), which covers the same 31 countries participating in the EU ETS.
 - If coverage of the whole EEA is not possible, those countries that are included should, as a minimum, account for 85% of sector turnover in the EU ETS area and trade (exports+imports) with non-EU ETS countries.
 - Furthermore, where possible, the turnover/trade and installation profiles should be consistent with the turnover/trade and installation profiles for the whole sector.
 - All installations that are covered by the EU ETS, and their direct emissions, should be included.
 - If coverage of all installations is not possible, those installations that are included should, as a minimum, account for 85% of direct emissions from the sector.
 - Furthermore, where possible, the geographical and turnover profiles should be consistent with the geographical and turnover profiles for the whole sector.
 - For indirect emissions (calculated as electricity consumption multiplied by an emission factor), the data on electricity consumption by NACE-4 sector and Member State is not readily available and has to be obtained through a data

collection exercise by the Member States. Given the short time frame to gather the data, it is uncertain if all Member States will be able to collect and gather data on electricity consumption by NACE-4 sector.

- If not all Member States are able to provide data, then ideally those that do provide data would account for a similarly high share of total electricity consumption (by NACE sections B and C at the EU level), 85%
- However, in light of the difficulties obtaining the data, a lower threshold would be for those Member States that do provide data to account for at least 70% of total electricity consumption.
- Those countries that have provided data should be a fair representation of, and spread out across, the whole EU

If the minimum thresholds described above cannot be met, the representativeness of the data risks to be undermined and so too the robustness of the estimated Carbon Leakage indicator. In case the thresholds are not met, the application needs to demonstrate the representativeness of data.

To note that, where the assessments are based on data covering a sample of the sector (rather than the whole sector), this introduces a sampling error: where the assessment for the sample is different from the assessment for the whole sector (which is unknown). The larger the sampling error the greater the risk that those left out are (more) different to those covered. In turn, this increases the chance that the assessment for the sample covered does not apply to those not covered, and the whole population. This reduces the strength of any conclusion or decision made about whether a sector qualifies for the carbon leakage list.

To minimise the sampling error and the risk of an incorrect assessment, where the sector cannot be covered in full, a high coverage (85%) is requested so that the assessment for the sample of the sector is valid and representative for the whole sector.

- Robustness of data
 - Data should come from reliable and trustworthy sources, preferably official sources. Where this is not the case, the source and/or derivation of the data should be clear, transparent and easy to follow. Alternative data and methods should be verified and audited.
- Consistency of the data
 - The data should measure the concept/indicator they purport to measure, be consistent with both standard economic definitions and methods, and the other supporting data.
 - Where multiple sources are combined, ensure their geographic, sector, and installation coverage is consistent.
- Time period
 - In making its application the sector must include data for the three most recent years when applying directly to the Commission, and the five most recent years when applying to the Member State (Route D).

- Traceability of calculations
 - Where alternative methods have been used to calculate the data values for an indicator, a clear description of the method must be provided. The method must be transparent, easy to follow and replicate, and the data used must be readily accessible.

Trade intensity

The data inputs to calculate the trade intensity indicator (for turnover, exports, imports) are all official statistics from the Europroms database and should, therefore, be seen as robust and reliable. Furthermore, these data are published in the level of detail required. With the exception of when there are missing data, no manipulation or estimation is required.

If no estimations are required to fill missing data gaps, then there should be no need to audit or verify the data, unless the sector contests Prodcom data values. In which case, the Prodcom data should be validated by an independent auditor.

If estimations are required to fill data gaps (for turnover at 8-digit Prodcom level), the estimated values should be validated by an independent auditor.

Emissions intensity

The emissions factor for the Phase 4 Carbon Leakage List will be updated by the Commission and will apply to the entire assessment exercise.

GVA (Indirect emissions) comes from an official source, Eurostat Structural Business Statistics, and should, therefore, be seen as robust and reliable. Furthermore, the data are published in the level of detail required. No estimation is required.

There should be no need to verify or audit the data for the emissions factor or GVA (indirect emission).

Direct emissions, GVA (Direct emissions) and electricity consumption are estimated by applying Prodcom production share (for the 8-digit Prodcom good of interest) to total direct emissions, total GVA and total electricity consumption for the 4-digit NACE sector.

The Prodcom production share is a fundamental element in these calculations. This, and GVA (Direct emissions), should be validated by an independent auditor.

The estimations for direct emissions and electricity consumption should be validated by an independent verifier.

Assessment

The initial assessment of an application will include checks of eligibility, completeness of the files, verification requirements and data sources used.

In case of satisfactory initial assessment results, for each Prodcop, the Member State (under route D) or the Commission (under routes B and C), will assess the Carbon Leakage Indicator methodology, and draw a conclusion on the extent to which the applied data and methodology is duly:

- Substantiated
- Complete
- Independently verified
- Audited (relevant for Criteria D)

Once the above elements are confirmed a decision can be taken on the calculated carbon leakage indicator confirming that it is indeed above the 0.2 value. Where an application is deemed incomplete the Member State (for route D) or the Commission (for route B and C) should communicate, within 2 weeks from the date of application submission, the missing elements of the application and allow 2 weeks for resubmission.

Audited:

An audit is an official examination of the accounts of a business, typically the financial accounts. Where accounts, or other information, have been audited, this means they have been reviewed and assessed to ensure they are complete, accurate and a fair representation of the financial position and performance of the business at the time. The audit is carried out by an independent third party, typically a qualified accountant/auditor that could be a (officially registered) sole practitioner or a large-scale multinational. The audit is carried out in line with International Standards on Auditing, and provides an impartial and objective opinion on whether the accounts are free from material misstatement and comply with the relevant reporting requirements.

Independently verified:

Where an independent third party reviews and assesses information or evidence (supplied by the sector/firm) and, using its own expert knowledge, judgement and standard analytical techniques, verifies if that information/evidence is true or correct. The information to be assessed can extend beyond financial information. It may relate to non-financial technical information, e.g. engineering, scientific, production process. The review itself is likely to be carried out by technical testing firms or specialist consultancy (e.g. engineering, environmental) firms, which have the appropriate qualification or accreditation to perform the verification. An example of independently verified data is the verified emissions published in the EU Transaction Log⁶⁰. In this case, the verification has been carried out on behalf of national governments or the European Commission, and the results published, to support policy making.

⁶⁰ See <http://ec.europa.eu/environment/ets/welcome.do?languageCode=en> or <https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1>

Table 25. Overview of disaggregated assessment application for route B and C

	What	By Whom	To whom	By when
1	(sub)Sector application, should include: - NACE 4-digit code and the activities covered - List of relevant Prodcom codes - Confirm the route through which the subsector is applying for the assessment (route B, C or D) - List of all installations in the sector that are covered by the EU ETS - Carbon leakage indicator calculation and all supporting evidence (data, methodology, verification report, etc.)	Industry (sub)sector to apply as a single entity (e.g. Industry association)	Commission	Latest within 3 months after publication of preliminary CLL
2	Provide acknowledgement of receipt and initial feedback on data completeness	Commission	Industry (sub)sector	Within 2 weeks of application submission
3	Reply to Commission on data completeness enquiry and provide any relevant details	Industry (sub)sector	Commission	Within 2 weeks of EC response
4	Final Decision on Industry (sub)sector inclusion in phase 4 CLL	Commission	Industry (sub)sector	4 th quarter 2018

Table 26. Overview of disaggregated assessment application for route D

What	By Whom	To whom	By when
1 (sub)Sector application, should include: - NACE 4-digit code and the activities covered - List of relevant Prodcom codes - Confirm the route through which the subsector is applying for the assessment (route B, C or D) - List of all installations in the sector that are covered by the EU ETS - Carbon leakage indicator calculation and all supporting evidence (data, methodology, verification report, etc.)	Industry (sub)sector to apply as a single entity (e.g. Industry association)	Member State	Latest by deadline to be established by Member State
2 Provide acknowledgement of receipt and initial feedback on data completeness	Member State	Industry (sub)sector	Within 2 weeks of application submission
3 Reply to Member State on data completeness enquiry and provide any relevant details	Industry (sub)sector	Member State	Within 2 weeks MS response
4 Submit (sub) sector application and Member State assessment report	Member State	Commission and Industry (sub)sector (in copy)	Latest by 30 June 2018
5 Provide acknowledgement of receipt and initial feedback on application and assessment report	Commission	Industry (sub)sector and Member State	Within 2 weeks of application submission
6 Reply to Commission on application and assessment report enquiry and provide any relevant details	Industry (sub)sector	Commission	Within 2 weeks of EC response
7 Final Decision on Industry (sub)sector inclusion in phase 4 CLL	Commission	Industry (sub)sector	4 th quarter 2018

ANNEX VIII: GLOSSARY

Auctioning: The default method of allocating allowances within the EU emissions trading system (ETS). Regulated entities have to buy an increasing proportion of allowances through auctions. Auctioning is the most transparent allocation method and puts into practice the principle that the polluter should pay.

Auctioning Factor: it represents the share of allowances the sectors eligible for free allocation would need to purchase if not on the carbon leakage list in order to cover their emissions stemming from activities eligible for free allocation. In a formula, the auctioning factor (AF) may be expressed as: allowances to purchase/direct emissions = $1 - \text{basic allocation/direct emissions}$.

Auction share: the part of the total amount of allowances determined by the cap that is allocated through auctioning.

Allocation: the total quantity of allowances allocated by the national competent authority to the operator of each installation.

Allowance (European Union Allowance (EUA): the tradable unit under the EU ETS, giving the holder the right to emit one tonne of carbon dioxide (CO₂), or the equivalent amount of two more powerful greenhouse gases, nitrous oxide (N₂O) and perfluorocarbons (PFCs).

Benchmark: a value used to calculate free allocation per installation. A benchmark does not represent an emission limit or even an emission reduction target. The benchmarks have been developed per product, to the extent feasible and do not differentiate according to the technology or fuel used, nor the size of an installation or its geographical location.

Carbon leakage: term used to describe the situation that may occur if, for reasons of costs related to climate policies, businesses transferred production to other countries which have laxer constraints on greenhouse gas emissions. This could lead to an increase in their total emissions. The risk of carbon leakage may be higher in certain energy-intensive industries

Carbon leakage indicator: defined in the EU ETS directive Article 10(b) as the product of the sector intensity of trade with third countries by the sector's emission intensity

Carbon leakage list: official list featuring sectors and sub-sectors which are deemed to be exposed to a significant risk of carbon leakage. These sectors receive a higher share of free allocation than other sectors. The list is established for five years, on the basis of clearly defined criteria and after extensive consultation with stakeholders.

Cost pass-through: describes what happens when a business changes the price of the products it sells to recuperate at least part of the costs incurred to ensure compliance with the EU ETS.

Cross-sectoral correction factor (CSCF): a backstop provision in the ETS Directive which caps the total amount of allowances that can be handed out for free to industry sectors in phase 3 (2013-

2020). Because the aggregate amount of preliminary free allocation calculated by Member States in the NIMs exceeds the maximum amount of allocation available to industry, the allocation for all installations is reduced by the same proportion through the application of the cross-sectoral correction factor.

Disaggregated-level assessment: assessment carried out at Prodcom level based on the quantitative carbon leakage indicator. These can be carried out in exceptional cases according to eligibility criteria set in the revised Directive (Article 10(b) paragraphs 2 and 3).

Emission factor for electricity production: expressed in grams of carbon dioxide per Kwh and is used to convert electricity consumption expressed in KWh into indirect emissions. It represents the carbon intensity and the market functioning of electricity production.

Emission intensity: measures the ratio of CO₂ emissions (Direct and Indirect emissions) produced to Gross Value Added at factor cost.

EU Allowances: EU Allowances are emission credits used in the EU Emissions Trading System. Each allowances equals one tonne of CO₂ emitted.

EU emissions trading system (EU ETS): the cornerstone of the European Union's policy to tackle climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively.

“First level assessment”: Main quantitative assessment as set in the revised EU ETS Directive, done at NACE4 level and using the carbon leakage indicator.

Free allocation: To address industry competitiveness issues or specific needs related to the transition to a low carbon economy, allowances can be allocated for free to industrial sectors falling under the scope of the EU ETS. The amount of free allowances for an installation is in principle calculated by multiplying a benchmark value with the historic production data of the installation. Besides, production from sectors and sub-sectors deemed to be exposed to a significant risk of carbon leakage will receive a higher share of free allowances

Greenhouse gas (GHG): A greenhouse gas is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. By increasing the heat in the atmosphere, greenhouse gases are responsible for the greenhouse effect, which ultimately leads to climate change. Greenhouse gases regulated under the EU ETS are listed in Annex II of Directive 2003/87/EC.

Gross free allocation: The amount of free allocation determined by applying the benchmark values to the production data, before the application of any further relevant factors, such as, for example, the carbon leakage factor.

Gross value added (GVA): a measure in economics of the value of goods and services produced in an area, industry or sector of an economy. It is calculated as the output at market prices

minus intermediate consumption at purchaser prices. For the carbon leakage list, gross value added at factor costs is used which can be calculated by subtracting other taxes on production from GVA at basic prices and adding other subsidies on production.

Indirect carbon costs: costs incurred not because of own direct GHG emissions, but because of higher electricity prices due to the impact of the carbon price from the EU ETS passed-through in electricity prices.

Installation: according to the ETS Directive (Directive 2003/87/EC), an installation is a stationary technical unit where one or more activities under the scope of the ETS and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution.

Internalisation of external costs: economic activities give rise to greenhouse gas emissions contributing to climate change. In contrast to the benefits, the costs of these effects are generally not borne by those causing the emissions. The internalisation of external costs means making such emissions part of the decision-making process of those carrying out relevant activities.

NACE: is the nomenclature of economic activities in the EU. The term NACE is derived from the French *Nomenclature statistique des activités économiques dans la Communauté européenne*. NACE is a four-digit classification providing the framework for collecting and presenting a large range of statistical data according to economic activity in the fields of economic statistics. For the compilation of the 2021-30 list, NACE rev.2 in force since 2008 is the relevant classification to be used.

Phases 1, 2 and 3 of the ETS: The first trading period or phase 1 lasted from the launching of the ETS in 2005 until the end of 2007. The second trading period began in 2008 and ended in 2012. In phase 1 and phase 2, the amount of allowances to be allocated for free to industry was decided on national level. The main differences between phases 1 and 2 and the phase 3 (2013-2020) is that auctioning has become the principle method for allocation and a greater harmonisation at the EU level. There is no free allocation for electricity production (with some exceptions for electricity modernisation in the new Member States) and the transitional free allocation to industry is based on EU harmonised rules outlined in the Benchmarking Decision.

PRODCOM: statistics on the production of manufactured goods. The term comes from the French "PRODuction COMmunautaire". The PRODCOM headings are coded using an eight-digit numerical code, the first four digits of which are identical to the respective NACE code.

Product benchmarks: a product benchmark is based on a value reflecting the average greenhouse gas emission performance of the 10% best performing installations in the EU producing that product and used to calculate free allocation.

Quantitative assessment: an assessment carried out according to the quantitative criteria laid down in Article 10(b) paragraph 1 of the revised Directive. A (sub) sector has to have a carbon leakage indicator above 0.2.

Qualitative assessment: an assessment carried out when a sector eligible under the revised EU ETS Directive Carbon Leakage criteria Article 10(b) paragraphs 2 and 3 submits an application. A sector has to meet the following qualitative criteria to be deemed exposed to significant risk of carbon leakage:

- the extent to which it is possible for individual installations in the sector or sub-sectors concerned to reduce emission levels or electricity consumption;
- current and projected market characteristics, including any common reference price where relevant;
- profit margins as a potential indicator of long-run investment or relocation decisions, taking into account changes in costs of production relating to emission reductions.

“Second level assessment”: Carbon Leakage assessment for a limited number of (sub)sectors that do not meet the main Quantitative criteria at NACE 4 level but are eligible under Article 10(b) paragraphs 2 and 3 to apply for further assessment at Qualitative or Disaggregated level.

Trade intensity: measures the importance of imports and exports in relation to the domestic market.

Turnover: the domestic production in value comprising the totals invoiced by the observation unit during the reference period, and this corresponds to market sales of goods or services supplied to third parties (Eurostat SBS).

Union registry: online database that holds accounts for stationary installations as well as accounts for aircraft operators, which have been included in the EU ETS since January 2012. The registry records the NIMs, accounts of companies or physical persons holding those allowances, transfers of allowances ("transactions") performed by the account holders, annual verified CO₂ emissions from installations and the annual reconciliation of allowances and verified emissions ("surrender").

Windfall profits: unexpected profits that come to an economic actor and which by nature are not directly foreseen. Under the ETS, such profits can occur if companies pass-through the costs of allowances which they have obtained for free.