ACT

Position paper

Assessing low-Carbon Transition

Avoided emissions

April 2021

IN SUMMARY

- No internationally recognized standard exists to measure avoided emissions.
- Avoided emissions shall not be subtracted to calculate a company's emissions reductions achievement. Reducing emissions related to a company's activities remains the priority
- ACT performance score acknowledges 'enabling activities' since the early stage of the initiative.
- The measuring and reporting quality of avoided emissions is assessed within the ACT narrative score.
- The ACT position is available on pages 7-8.

Introduction

Starting in early 2021, the ACT assessment methodologies are covering new sectors: Aluminium, Chemicals, Glass, Pulp & Paper. During the first Technical Working Group meetings[1] dedicated to the Chemicals and Glass sectors, "**avoided GHG emissions**"[2] from sold products were mentioned by members wanting to know if this concept will be taken into account. For example, insulating solutions leading to a decrease of energy for heating/cooling buildings and consequently to a decrease of GHG emissions related to the energy demand.

Up until now, avoided emissions[3] **were not considered** to minimize the companies' emissions and trajectories within the ACT methodologies, as explained online in the ACT FAQ section:[4]

#5 What about avoided emissions due to the use of sold products?

Avoided emissions may happened due to the use of company's sold products or solutions. According to ISO TR 14069 (under revision) informative annex, an avoided emission is a GHG emission that has not occurred. It is defined by the difference between the level of GHG emissions

[1] See ACT Framework and Guidelines available online : https://actinitiative.org/resources-2/

[2] *Other terms used to describe avoided emissions include climate positive, net-positive accounting, and scope 4.* (4)

[3] In order to simplify the text of this document, 'emissions' is used to refer to greenhouse gas (GHG) emissions

[4] https://actinitiative.org/faq/

induced by the reporting organization's activity outside its organizational boundaries and the level of GHG emissions of a reference, counterfactual scenario that would have happened otherwise. In general, avoided emissions due to sold products are generated thanks to the involvement of several actors other than the reporting organization that sells the products (e.g : energy saving equipment, insulation products, recycled materials…). The amount of avoided emissions due to the use of such products is not considered by ACT methodologies to reduce the amount of the reporting company's GHG absolute emissions or intensity. Nevertheless, such products are considered in the ACT's sold product performance module but also in the business model module as levers of the reporting company to support its low carbon transition. Such products and solutions are also considered in the Narrative score of the ACT rating.

However, companies from both the Chemicals[5] and Glass sectors are amongst the ones that claim avoided emissions the most when reporting climate-related results externally. One of the main reasons, if not the first, for such an interest, is that "companies are increasingly seeing avoided emissions as a competitive advantage for their offerings". (1)

There is no international standards nor consensus that defines the quantification and reporting rules. The life-cycle assessment (LCA) approach is not considering the avoided emissions related to a product. Neither the ISO 14044 standard *Environmental management — Life cycle assessment — Requirements and guidelines*, nor the Product Environmental Footprint (PEF) and Organisation Environmental Footprint (OEF) methods are taking this topic into account.

Still, various organisations provide recommendations on how to report (or not) avoided emissions:

- *Addressing the Avoided Emissions Challenge* (2013) from the World Business Council for Sustainable Development (WBCSD)
- *Recommendations of the Task Force on Climate related Financial Disclosures* (2017)
- *Avoided emissions: Companies assess their climate solutions* (2018) from the Entreprises pour l'Environnement (EPE)
- *Estimating and reporting the comparative emissions impacts of products* (2019) from the World Resources Institute (WRI)
- *Les émissions évitées, de quoi parle t-on ?* (2020) from ADEME (French Agency for Ecological Transition)

This context brings the ACT team to clarify the 'avoided emissions' topic to update and reinforce its position.

1. Avoided emissions: what are we talking about?

Below are listed the definitions that are available in recent dedicated literature.

ISO 14069 standard defines avoided emissions this way:

GHG emission that has not occurred. It is defined by the difference between the level of GHG emissions induced by the reporting organization's activity outside its organizational boundaries and the level of GHG emissions of a reference counterfactual scenario that would have happened otherwise. (2)

ADEME published in 2020 a technical note ('Les émissions évitées, de quoi parle t-on ?', in French) dealing with avoided emissions and proposed the following definition:

The "avoided emissions" of an organisation refer to the emission reductions achieved by its activities, products and/or services, when these reductions are achieved outside its scope of activity (Producing / offering low carbon solutions / services, financing third parties' low-carbon projects outside its scope of activity). These

[5] WBCSD and ICCA published guidelines dedicated to the sector in 2013: *Addressing the avoided emissions challenge*

reductions are assessed against a baseline scenario. (3)

The **WRI** sets the scene this way:

The greenhouse gas (GHG) emissions impact of a product (good or service), relative to the situation where that product does not exist. The differences may be either negative or positive. Positive differences are frequently called "avoided emissions"… (4)

The **ILCA** proposed the following definition of "contribution of avoided emissions":

Quantified amount of contribution of the target product to reduced greenhouse gas emissions through the whole life cycle of final product(s) which achieve the reduction effects on environmental loads, in comparison to a baseline amount. (5)

Dedicated to the chemical sector, a report from both **ICCA** (International Council of Chemical Associations) and **WBCSD Chemicals** explains:

As part of low-carbon technology value chains various chemical industry products aid the reduction of greenhouse gas (GHG) emissions compared to conventional products or compared to the market average. Under the terminology of the Greenhouse Gas Protocol international accounting tool, emission reductions of this kind are termed "avoided emissions". (6)

Even if these definitions slightly differ, there is a consensus about the fact that avoided emissions:

- Are **fictitious** emissions (i.e. these emissions did not happen).
- Are linked to a product (good or service) during its **use-phase,**
- Represent the positive impact on emissions thanks to a product **compared to a baseline scenario** in which this product does not exist.
- Fall outside of the scope of the company being considered.

2. Calculation guidelines – Literature review

Firstly, it should be noted that due to the complexity of the topic, **no internationally recognized standard has been adopted** regarding the avoided emissions calculation so far. A few guidelines or sectoral documents are available and applicable but none of them has been identified as the unique solution to be used.

This section is a **landscape of current recommendations** regarding avoided emissions. **It is not a guidance** from ACT methodology.

2.1. ISO 14069 standard: Greenhouse gases — Quantification and reporting of GHG emissions for organizations — Guidance for the application of ISO 14064-1 – Annex E (2020)

The steps for calculating avoided emissions are typically:

1/ Define the boundaries of the GHG emissions to be taken into account;

2/ Define a duration of analysis (typically for solutions impacting emissions over several years);

3/ Choose the reference scenario;

4/ Calculate the baseline GHG emissions (using relevant activity data and emission factors);

5/ Calculate the GHG emissions expected from the solution;

6/ Calculate the difference between step 4 and step 5.

2.2. ADEME technical note: Les émissions évitées, de quoi parle t-on ? (2020)

Every communication about avoided emissions arising from a low-carbon solution, service or project shall follow the communication requirements of the standards:

ISO 14025: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14067: Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification

ISO 14064-1: Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

2.3. World Resources Institute: Estimating and reporting the comparative emissions impacts of products (2019)

- **Attributional approach**

Attributional life-cycle accounting (attributional LCA) is the basis for estimating comparative impacts using an attributional approach. Life-cycle analyses are built on the concept of the "functional unit," which establishes the basic reference point against which all inputs and outputs of the product system can be identified and related.

$$Comparative\ GHG\ Impact = LCE_{RP} - LCE_{AP}$$

Where:

LCE_{RP} = Life-Cycle Emissions of Reference Product

LCE_{AP} = Life-Cycle Emissions of Assessed Product

- **Consequential approach**

Consequential LCA estimates the total, system-wide change in emissions and removals. The emissions and removals occur as the result of a change in output of the functional unit, in response to, for example, changes in production technology, public policy, or consumer behaviour. In this approach, processes are included in the life-cycle boundary to the extent that they are expected to change because of a change in output.

$$Comparative\ GHG\ Impact\ (Policy\ \&\ Action\ Std.) = E_{BS} - E_{PS}$$

Where:

E_{BS} = Emissions in baseline scenario

E_{PS} = Emissions in policy scenario

Attention must be paid to the fact that the targeted product might be the final product to be assessed, a component of the final product to be assessed, or it can be a component of multiple final products to be assessed.

2.4. Institute of Life Cycle Assessment: Guidelines for Assessing the Contribution of Products to Avoided Greenhouse Gas Emissions (2015)

The contribution to avoided emissions can be calculated by multiplying three quantities listed below:

1) The net reduction amount of greenhouse gas emissions per functional unit of final product(s) which achieve the reduction effects relative to a baseline based on life cycle assessment
2) The amount of final product(s) in use (sold) that is are expected to achieve the reduction effects
3) The contribution ratio of the target to the reduction

Note that the avoided greenhouse gas emissions per functional unit shall be calculated in compliance with standards:

- ISO14040: Environmental management — Life cycle assessment — Principles and framework
- ISO14044: Environmental management — Life cycle assessment — Requirements and guidelines

3. Limitations of the avoided emissions concept

As presented above, the few guidelines and standards dedicated to avoided emissions calculation are not exactly disclosing the same rules and points of attention to be aware of. It clearly highlights the complexity of the topic.

In this section are listed the main variables that can influence the quantification of avoided emissions, which consequently represent major limitations[2]:

1. Choice between consequential and attributional approaches

2. Setting the baseline

3. Estimated volumes of assessed product

4. Allocation of stakeholders' respective share

5. Calculation of contribution ratio in assessed product

6. System boundaries

7. "Cherry-picking", or how to forget products with GHG negative impact

3.1. Choice between consequential and attributional approaches

As explained by the WRI (4):

- *Consequential methods estimate the total, system-wide change in emissions and removals that results from a given decision or intervention, such as the decision to produce one extra unit of the assessed product or the introduction of a new government policy.*
- *Attributional approaches generate inventories of absolute emissions and removals that are attributed to a given entity, such as a product, company, city, or nation. Attributional life-cycle accounting (attributional LCA) is the basis for estimating comparative impacts using an attributional approach.*

The **main drawback of the attributional approach** is that it does not take into account market-mediated effects (such as changes in market prices, rebounds effects…). For instance, the energetic mix for electricity production can be impacted at a national level, because of a policy that strongly favoured the development and usage of electric vehicles. Such effects are typically not considered in an attributional approach.

Oppositely, a consequential approach, more complete, will take into account these market-mediated effects. The WRI recommends the consequential approach against the attributional one, mainly because the former *measure(s) total, system-wide changes in emissions* (4). It is however emphasized that more data is required and that the work is more '**labor-intensive**'.

3.2. Setting the baseline

Avoided emissions related to a product are estimated using **a comparison to a baseline** (or reference scenario). **There is currently no standard** on how to set such a baseline. As listed by various guidelines, the following options are available: (1) (3) (4) (5)

- Average of the existing market stock
- Average of products sold on the market in one year
- Best available technologies
- "Conventional" products
- Product(s) with the highest market share
- Product(s) that is/are publicly acknowledged as the average of the product category
- Previous version of the product(s) of the reporting company
- Product(s) that can be fitted for standard values that are determined based on legislations or regulations
- Product(s) before new technologies are developed
- Regulatory requirements
- And so on.

Having so many choices hinders fair comparison of various companies' results, since the methodology used to set the baseline is likely to differ from one reporting case to another.

3.3. Estimated volumes of assessed product

Two cases are to be differentiated:

- Already sold products

*The reduction of greenhouse gas emissions can be achieved only **after final product(s) is/are actually in use**. Therefore, the amount of final product(s) in use during a specified time period intended for the assessment needs to be identified. If it is difficult to acquire data on the sales volume, the production volume or the shipping volume may be substituted. The countries or regions in which the final product(s) which achieve the reduction effects is used should be identified to clearly define the calculation method*. (5)

- Predictions about future products

When calculating the expected avoided emissions in future by newly developed products, an anticipated volume of sales in future scenarios may be substituted. In that case, the details of such defined scenarios for future sales shall be explained. Note however, that actual sales records shall be used for the calculation of avoided emissions of final product(s) sold in the past. (5)

Avoided emissions can only be linked to products during their use phase. Uncertainties arise from the fact that a sold product is not necessarily used (and this information surely is not available for the reporting company),

and/or from predictions about volumes of products to be sold in the future.

3.4. Allocation of stakeholders' respective share

As highlighted by the ILCA:

*Avoided emissions throughout the life cycle of final product(s) are the results of efforts by **various stakeholders related to the value chain**. Avoided emissions of a final product that achieves the reduction effects need to be attributed to individual target product(s) based on their contribution ratio determined. In that sense, **those stakeholders deserving of sharing avoided emissions should be identified depending on their contribution to avoided emissions**.* (5)

But it is an extremely difficult (if not impossible) exercise to quantify the share of all stakeholders along the considered value chain. ICCA and WBCSD, despite a clear willingness to make progress for avoided emissions to be reported and valuated, highlighted the limits of sharing avoided emissions between various stakeholders:

*Life cycle avoided emissions almost always arise from efforts by **multiple partners along the value chain**. This is particularly the case for a study at end-use level. Avoided emissions are the sum of changes by all partners along the value chain, including raw material suppliers, material manufacturers such as chemical companies, material processors, part -assemblers and users of the technology, so avoided emissions cannot be attributed to one partner. Therefore, **avoided emissions calculated at the end-use level shall always be attributed to the complete value chain (and not at the company level)**.* (6)

ADEME clearly states that the contribution ratio per stakeholder shall not be calculated because avoided emissions only make sense on the whole value chain, so calculating individual contribution is not relevant. The company shall only talk about their "contribution to" the avoided emissions (3).

No common standard exists to define the respective share of stakeholders along a value chain. Companies reporting avoided emissions shall recognize common efforts resulting from stakeholders collaboration, without trying to calculate/quantify the shares.

3.5. Calculation of contribution ratio in assessed product

*In the case where the target product is used **as a component of multiple final products** which achieve the reduction effects, the calculations should be performed for each of the final products which achieve the reduction effects. However, if it is difficult to calculate the avoided emissions for all of the multiple final products, representative product(s) may be chosen for the assessment. In that case the reason for that choice shall be clearly justified.* (5)

The manufacturer may not know the exact range and distribution of end uses, which may also vary geographically. Or it may not have information on how the final product has been redesigned to incorporate the intermediate product. (4)

The reporting company does not have control over uncertainties related to the impact of an assessed product if this product is integrated to a final product.

3.6. System boundaries

The ILCA clearly summarizes the importance of correctly summarizing the boundaries that are considered to estimate avoided emissions. *To assess the contribution of avoided greenhouse gas emissions, the calculated results through the entire life cycle should be compared between the cases of final product(s) which achieve the reduction effects and the baseline. The names and number of life cycle stages may be defined corresponding to the characteristics of final product(s) which achieve the reduction effects. A life cycle flow diagram indicating the main processes in the product system should be created in order to understand differences of the life cycles between final product(s) which achieve the reduction effects and the baseline.* (5)

As explained by the WRI, many “extraboundary effects” can play a role on the amount of avoided emissions achievable thanks to a product. If not taken into account, calculated avoided emissions might be under or overestimated. *These extraboundary effects are typically harder to predict in either likelihood of occurrence or in potential magnitude, but they may be relevant when considering the large-scale adoption of the assessed product. One common type of* extraboundary effect is rebound effect, where savings from energy efficiency are offset by increases in other carbon-intensive behaviour (e.g., positive impact from the increased energy efficiency of an appliance are offset by the increased use of that appliance). (4)

System boundaries can have a big impact on the quantification of avoided emissions and exact predictions on all effects that can potentially modify such estimation is impossible.

3.7. Reporting avoided emissions related to chosen products

The WRI bring to light the “cherry-picking” effect, which *refers to a company who, intentionally or otherwise, selects products (or product applications) that have positive impacts, while* ***overlooking other products in its product portfolio that have negative impacts***. (4)

Reported avoided emissions that are associated to the best performing products of a company shall be counterbalanced by the impact of the rest of the portfolio (calculated following the same calculation rules). Complete GHG inventory compliant with standards such as ISO 14064-1 enables companies to report “scope 3 emissions of sold product”, making possible to get the balance of positive and negative impacts arising from all products of the portfolio.

There is no reason to communicate only about products that bring GHG positive impact (i.e. allowing avoided emissions), without taking into account products that bring GHG negative impact as well.

4. ACT position: assessing emission reductions first and acknowledging enabling activities

As it has been showed in the previous sections:

- Calculating avoided emissions is a tricky exercise relying on many parameters and external factors
- Perfect prediction of the impact(s) of these parameters and factors is barely impossible
- **There is no internationally recognized and standardized accounting methodology** companies can refer to up-to-date.

However, many companies have independently developed their own methodologies. For example, avoided emissions claims were made by at least 500 companies responding to the CDP’s 2014 climate change questionnaire, almost entirely on the basis of company-specific methodologies. (4)

This situation leads to communications dedicated to avoided emissions that are not comparable between each other.

Avoided emissions do not constitute a major topic to be addressed within ACT assessment methodologies through a quantified performance perspective. The priority of ACT initiative is to support companies with delivering low carbon transition strategies and actions aligned with the Paris Agreement mitigation goal. Reducing companies’ emissions within their relevant scopes of activity is and remains the first objective.

4.1. Reducing companies’ GHG emissions is the priority

Avoided emissions cannot be subtracted to calculate a company's emissions reductions achievement. Reducing emissions related to a company's activities remains the priority. A comparison of these emissions (sometimes referred as ‘induced’) and avoided emissions has

been proposed in other methodologies, but is not considered as relevant by the ACT initiative.[6]

Companies are expected to prioritize a **clear and complete reporting of their Scope 1+2+3 emissions**, before starting to report about their avoided emissions. Including avoided emissions in the estimation of a company's emissions reductions progress would obscure the performance monitoring of the company's strategy.

4.2. Integration of avoided emissions topic within ACT assessment

As shown in section 3, many parameters influence the calculated avoided emissions related to the use-phase of a product. Without strict rules to be followed and applied, a single case can lead to highly different results. Under such circumstances, it appears barely **impossible to quantitatively assess avoided emissions in a relevant and standardised way**.

This paper consequently confirms that **avoided emissions are not directly addressed quantitatively within the ACT performance score.** Nevertheless, when relevant, a performance indicator related to **enabling activities**[7] is integrated within the 'Business model' module. This way, proposing products that are participating to the low-carbon transition of other actors/sectors is acknowledged and rewarded.

Besides, it has to be noted that ACT is already addressing various aspects related to low-carbon products (goods and services) in both quantitative and qualitative ways. Such aspects are closely related to the concept of avoided emissions, the difference being that these reduced emissions are falling into the scope of the company being assessed (which is not the case of avoided emissions). These aspects are addressed through:

- The module 'Sold product performance' focuses on the future projected emissions intensity of products in-use.
- Proposing low-carbon products to clients (final customer and/or companies from the downstream part of the value chain) contribute to the reduction of their own GHG emissions. This aspects is covered within the module 'Clients engagement' in which strategy and activities are looked at.
- The 'Business model' module is focusing on the development of future low-carbon compatible activities. It is a way of assessing, amongst other objectives (like lowering the energy demand, encouraging the circular economy, etc.) that a company is willing to contribute to decarbonize the overall economy with its goods and services portfolio.

Even though inclusion of avoided emissions is not considered appropriate for ACT assessment of quantitative performance indicators, it is nevertheless possible to **appreciate company estimations and communications on avoided emissions within the ACT narrative score**. The latter is based on a holistic approach, in which 4 criteria are taken into account: business model and strategy, consistency and credibility, reputation, and risk. The purpose and motivation behind any communication related to avoided emissions from a company can be judged, partially thanks to this position paper. Diving into the robustness of the calculation and the way of presenting the avoided emissions enables assessors to estimate if companies are praising such results only as a marketing advantage (greenwashing) or as a real information support to honestly guide clients and investors. A maturity matrix has been designed to ease such estimations and will be tested with pilot-companies of relevant sectors such as glass and chemicals.

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[6] In 2015, Carbone 4, Mirova, and Natixis Asset Management subsidiary co-published a methodology called Carbon Impact Analysis which deals, amongst others, with avoided emissions. A carbon impact ratio was proposed, dividing the avoided emissions claimed by a company by its reported induced emissions. This kind of indicator is not recognized as relevant by the ACT methodology.

[7] Definition of **enabling activities** from the EU taxonomy: "Economic activities that, by provision of their products or services, enable a substantial contribution to be made in other activities. For example, an economic activity that manufactures a component that improves the environmental performance of another activity."

Sources

1. **EPE.** *Avoided emissions, Companies assess their climate solutions.* 2018.
2. **ISO.** *ISO 14069: Greenhouse gases — Quantification and reporting of GHG emissions for organizations — Guidance for the application of ISO 14064-1.* 2020.
3. **ADEME.** *Les émissions évitées, de quoi parle-t-on ?* s.l. : Fiche Technique, 2020.
4. **WRI.** *Estimating and reporting the comparative emissions impacts of products.* 2019.
5. **ILCA.** *Guidelines for assessing the contribution of products to avoided greenhouse gas emissions.* 2015.
6. **ICCA, WBCSD.** *Addressing the Avoided Emissions Challenge.* 2013.