Methodology of quantifying the carbon footprint of products with ISO 14067

What is a carbon footprint, and how is it used?

Products, whether goods or services, have an environmental impact in a world facing resource depletion, pollution, and climate change. To create a sustainable future, it is crucial to reduce these impacts, particularly by measuring and mitigating carbon intensity.

Greenhouse gas (GHG) emissions, which contribute to climate change, can come from various processes. A product's carbon footprint quantifies the amount of greenhouse gas emissions generated or consumed throughout its life cycle. This footprint can be expressed annually or per usage, such as per kilometer traveled for a car or per typical shower for a personal care product. It's important to note that footprint studies are estimations based on available data at a specific time and are not perfect measures.

What is the methodology of quantification of carbon footprint of product based on ISO 14067?

ISO 14067 provides a standardized methodology for calculating the CFP, ensuring consistency and comparability between products and organizations. The assessment of GHG emissions from products should be carried out using life cycle analysis techniques.

The assessment of GHG emissions from products should be carried out using life cycle analysis techniques. These techniques are specified in ISO 14040 and ISO 14044. One of the critical aspects is that organizations using ISO 14067 for the calculation of the CFP is to ensure that the life cycle analysis of their products is complete, and that all relevant product information has been considered.

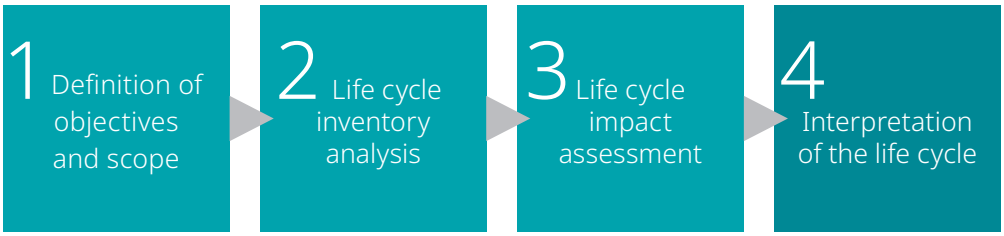
Two complementary approaches are:

- Iterative approach: Providing consistency in the results obtained, and refining these results until the best possible results are obtained.
- Scientific approach: Using, where possible and available, physical, chemical, biological, etc., information and data for product life cycle analysis.

Organizations need to demonstrate that the results are consistent, accurate and if the outcome of this analysis is communicated externally, there must be transparency in relation to the data considered so that interested third parties can have confidence in these results.

Quantification methodoloy

The four phases of product life cycle analysis



01 Definition of objectives and scope

The specification defines the need to:

- Identify the life cycle objectives of the product, including the intended purpose of the product and the reasons for its realisation.
- Define the scope of the product life cycle study - that should include:
  - the definition of the functional unit
  - the system boundaries (the stages of the product life cycle that are included in the calculation of the carbon footprint, for examples, “cradle to grave”, “cradle to gate”, even “gate to gate”)
  - the period considered
  - the data quality requirements (the use of primary or secondary data must be properly specified and justified to provided adequate confidence and consistency in the results to be obtained)
  - the assumptions made
  - the limitations of the study.

02 Life cycle inventory analysis

The necessary data will be collected from all stages of the life cycle under consideration. The steps to be completed during the inventory analysis process are as follows:

- data collection
- data validation
- relate the data to the processing units and to the functional unit
- refine the system boundaries (remember here the iterative approach, which allows us to refine and improve the footprint calculation).

ISO 14067 requires the availability of clear and justified allocation procedures. These procedures must also consider the criteria to be applied when the life cycle includes reuse and recycling of the product.

It is important to confirm that the product life cycle includes the entire life of the product, including the stages of use and final disposal of the product. In addition, the product life cycle inventory shall consider other applicable aspects such as:

- change of land use
- changes in soil carbon
- carbon storage in the product
- non-CO emissions and removals from livestock, manure, etc
- emissions from aircraft.

03 Life cycle impact assessment

Once the inventory has been completed, a life cycle impact assessment should be completed. For this purpose, the potential climate change impact of emissions and removals must be considered, and the calculation must be completed considering a 100-year period for these emissions and removals. ISO 14067 includes Global Warming Potentials (GWP) for these calculations.

04 Interpretation of the life cycle

Finally, the interpretation of the results obtained shall include the significant factors identified, the considerations made during the calculation and relevant recommendations. The quantification results should also include:

- The uncertainty (quantitative and/or qualitative) of the calculation.
- The allocation methods used.
- The limitations of the carbon footprint study.

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