

## Workshop 1: Development of a methodology for the assessment and the consistent data reporting of the full life-cycle CO<sub>2</sub> emissions of passenger cars and light commercial vehicles

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**Date:** Wednesday 11<sup>th</sup> December 2024

**Venue:** Centre de Conférences, Albert Borschette (Rue Froissart 36, 1040 Etterbeek, Brussels) and online

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### Overview

Article 7a of Regulation (EU) 2019/631 obliges the Commission to publish a report and to adopt a delegated act laying down a common Union methodology by 31 December 2025. Vehicle manufacturers may voluntarily use this methodology to report life-cycle CO<sub>2</sub> emissions for their new cars and vans to the Commission as of 1 June 2026.

In addition, Regulation (EU) 2019/1242 requires the Commission to evaluate the possibility of developing a similar methodology for the life-cycle CO<sub>2</sub> emissions of heavy-duty vehicles by 31 December 2027.

DG CLIMA has commissioned consultants from Ricardo Nederland B.V., Oeko-Institut, TU Graz and IVL Swedish Environmental Research Institute to support them with the above mentioned tasks. The study will run from July 2024 to March 2026.

A first task as part of the study is to support the development of the life-cycle CO<sub>2</sub> emissions methodology for cars and vans, including guiding principles, calculation rules, reporting and verification rules. A subsequent task will be to consider the life-cycle CO<sub>2</sub> emissions methodology for heavy-duty vehicles, through the review and adaptation of methodology developed for cars and vans. The work will build on thorough stakeholder consultations.

To evaluate various LCA (life-cycle analysis) methodological elements and options, an assessment framework has been defined. Each LCA high-level element and its relevant methodological options are being evaluated in particular using the following key criteria:

1. Practicality and feasibility of implementation
2. Accuracy and representativeness of outcomes
3. Coherence with EU policies and alignment with other vehicle LCA frameworks (i.e. UNECE ALCA-IWG)
4. Social and economic impact on affected operators

### Workshop

In this context, this workshop, which will focus on the cars and vans methodology, has been organised to provide key stakeholders with:

- an introduction to the objectives and scope of the resulting methodology;
- an overview of the research and study findings to date; and
- an opportunity to respond and provide inputs to key questions contributing to the development of the methodology.

Please see below the updated Agenda for the workshop:

9:00 – 9:30	<b>Arrival and registration</b> <i>PLEASE NOTE: We encourage you to arrive in advance to the site as the registration process can take some time</i>
9.30 – 10:00	<b>Welcome and introduction – DG CLIMA</b> Followed by Q&A
10:00-11:15	<b>Presentation of study findings to date - Ricardo</b> Followed by Q&A
11:15 – 11:30	Refreshment break
11:30 – 12:45	<b>Discussion Session 1: Data collection - Ricardo</b>
12:45 – 14:00	<b>Lunch</b> <i>Whilst lunch is not provided, there are many local establishment where you can dine at your convenience</i>
14:00 – 15:15	<b>Discussion Session 2: End of life - Ricardo</b>
15:15 – 15:30	Refreshment break
15:30 – 16:45	<b>Discussion Session 3: Interpretation – Sensitivity analysis - Ricardo</b>
16:45 – 17:00	<b>Feedback, next steps and close – DG CLIMA and Ricardo</b>

## Introductory presentations

The workshop will be introduced by DG CLIMA, followed by a study team presentation on its work to date and key findings established so far. These will cover high-level elements and considerations, such as in relation to the Functional Unit, cut-off criteria, life-cycle inventory data sources, electricity and fuel mix modelling, method and characterisation factors, amongst others.

Participants will be given the opportunity to react and engage in Q&As.

## Discussion sessions

Following initial presentations, there will be a series of discussion sessions where you will be invited to share your inputs on three topic areas. To assist with preparation for these sessions, please see below the three topics that will be discussed, including initial context and key questions for the workshop:

### Discussion Session 1: Data collection

#### Background and context:

- Product Environmental Footprint (EU PEF) Recommendations
  - The EU-specific and preferred methodology<sup>1</sup>, PEF, mandates the use of primary data<sup>2</sup>, where feasible, especially for high-impact processes
  - As a minimum, primary data shall be used for processes that are under the manufacturer's operational control

<sup>1</sup> PEF is also the choice of LCA guidance within the Carbon Footprint Methodology for Batteries under development within the EU Batteries Regulation

<sup>2</sup> Primary data (synonymous to company-specific data in PEF) consists of direct measurements and consumption data at plant-level processes and secondary data is 'generic' data sourced from third-party life cycle inventories and published industry data.

## DG CLIMA

- Current Emphasis
  - This discussion focuses on primary data requirements for 'vehicle production' stage only, as affected economic operators have operational control over processes within this stage and potential access to relevant primary data
  - Data requirements covering other life cycle stages to be addressed as a part of future work
- Challenges identified in sourcing and utilising primary data include
  - Feasibility of collecting primary data and managing data from suppliers
  - Identifying key environmental processes to target
  - Determining how far upstream primary data collection should extend, while balancing practicality and accuracy

### Discussion Session 1: Primary Data Collection - Questions

**Q1: What processes or framework do you employ to retrieve primary data for your vehicle LCAs? What practical challenges do you face in the process?**

**Q2: How should 'mandatory primary data requirements' for a vehicle LCA, with respect to production stage, be established?**

- Should primary data be requested in the methodology for a common list of foreground/background processes<sup>3</sup>, vehicle parts or specific components?
- In some cases, should users determine the use of primary data based on inventory-level hotspot analysis (e.g., components or materials contributing a minimum of X% of GWP require 'company-specific' (primary) data)? What common criteria should be set, including for reporting on this hotspot analysis?

**Q3: Considering primary data, how far upstream in the supply chain should this be required?**

- Consider the balance between accuracy and practicality
- What processes/methods do organisations currently use?
- What are the challenges faced?

### Discussion session 2: End of life (EoL) modelling

#### Background and context:

- EoL modelling entails making decisions on system boundary, and how to formally separate product cycles
- System boundary has implications on which product system benefits from secondary materials, i.e. the one that makes them available for recycling at its EoL vs. the one that then uses them in manufacturing (the same recycling process cannot fully benefit both systems)
- In **Europe**, the "**Circular Footprint Formula**" (**CFF**) has been developed within the **Product Environmental Footprint (PEF)** framework, and it has now also been agreed as a basis to be used at the **UNECE level**
- Unlike other alternatives, i.e. "**Cut-off**" and "**Avoided burden**", **CFF** is a **more sophisticated approach** that attempts to strike a **balance** to highlight the benefit of secondary materials at both ends of a product's life cycle (respectively, manufacturing and EoL)
- It does so by using:
  - allocation factors to **partly** include EoL recycling and emission credits within the system boundary, while at the same time **partly** accounting for the benefit of using secondary (recycled) materials in manufacturing
  - "quality" factors to account for differences in technical quality between primary (virgin) and secondary (recycled) materials, which affect the assumed emission credits at EoL

<sup>3</sup> Foreground process are processes where direct access to information is available (producers sites or contractors). Background process – processes where direct access to information is **not** available.

**Discussion Session 2: End of life (EoL) Modelling - Questions**

**Q1: How can we ensure that the EoL modelling methodology can incentivise manufacturers, both to incorporate recycled contents on the input (manufacturing) side, and to design vehicles so as to maximise recyclability/reusability at their EoL?**

**Q2: In this context, how could the general CFF approach be adapted to the specific case of vehicles, to ensure the best balance between simplicity and accuracy?**

- What are the essential core elements that must be included, and which elements are less important? What could be simplified?
- Is there a need for further bespoke guidance for vehicle LCAs?
- What is still missing in terms of its implementation in LCI databases, to ensure full consistency across the LCA model?
- Should we aim to define default ‘allocation’ (A and B parameters) and ‘quality’ (Q) factors? For which relevant automotive material streams? At which level of aggregation/detail?

**Discussion session 3: Interpretation – Sensitivity analysis**

**Background and context:**

- The CO<sub>2</sub> LCA as prescribed in the Regulation aims to report to the Commission the full lifecycle emission value of the vehicle
- LCA is complex, relying on a mix of primary and secondary data and assumptions to calculate the overall impacts of a product or service. The results can be influenced, sometimes very significantly, by key decisions or data which all have an uncertainty attached
- It is therefore common in LCA to conduct an assessment to understand how the main result may be affected by key parameters, to reflect the uncertainty or dependence on the outcome on these through sensitivity, scenario or uncertainty analysis.
- The following summary definitions are based on those agreed in TranSensus LCA (with additional illustrative examples):

<b>Sensitivity analysis</b>	The sensitivity analysis focuses on the influence each parameter has on the result (e.g., One-at-a-time (OAT) on location of the electricity mix). The most commonly used approach is local sensitivity analysis (LSA) which evaluates the variation caused by one input around its reference point. Examples: (i) vehicle energy consumption is X% higher in the use stage in real-world applications, (ii) lifetime km activity is higher or lower than average
<b>Uncertainty analysis</b>	The uncertainty analysis focuses on how well we know the absolute value of the result (e.g., Monte Carlo analysis) – i.e. to investigate the accuracy and reliability.
<b>Scenario analysis</b>	A scenario represents a storyline that determines a variation of key parameters/assumptions (applies well where parameters are correlated) of the model. Examples: (i) impact of substituting virgin steel with recycled steel in vehicle production, (ii) powering an electric vehicle using 100% renewable electricity in the use stage.

### Discussion Session 3: Interpretation - Sensitivity analysis - Questions

**Q1: Alongside the main LCA result, is it necessary/relevant to include any such sensitivity analyses?**

- What would be the added value?
- How does this compare to the additional complexity?

**Q2: If yes, should the methodology approach such analyses as:**

- Mandatory? If so, which ones and should common rules set out (e.g. to specifically define the basis of the analyses)?
- Optional?
- Optional but some recommended, and if so with common rules set out (e.g. to specifically define the basis of the analyses)?

**Q3: For which elements / parameters of the methodology would such analyses be relevant?**

- For the production stage?
- For the usage stage?
- For the end-of-life stage?

### How you can contribute:

There are a number of ways that you can contribute to this study, which are outlined below.

#### Attendance of workshop 1 (11<sup>th</sup> December 2024)

- Discussion topic questions have been circulated in advance of the workshop (see above)
- There will be time during the workshop for you to provide your inputs in relation to the key questions:
  - We will initially take responses in-person during the workshop
  - Dedicated time during the sessions to take responses from those joining online
- Follow up:
  - A short online survey will be circulated to all workshop participants (and invitees) after the workshop, providing a further opportunity to reflect on responses to the key questions and any other comments you would like to submit for consideration

#### Further consultation opportunities:

- Targeted interviews with selected stakeholders (January – March 2025)
- Workshop 2 (Summer 2025)

If there are any inputs you would like to share with the study team, please send them to:

[Charlotte.Brannigan@Ricardo.com](mailto:Charlotte.Brannigan@Ricardo.com)