

Towards a European-wide harmonised transport-specific LCA Approach

TranSensus LCA

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EXECUTIVE SUMMARY
<p>This report outlines both, the measures to be taken to promote the TranSensus LCA approach and further research to be undertaken. The promotion of the TranSensus LAC approach includes specific dissemination activities as well as the intention to continuously monitor and update the guidelines. In addition, further research needs have been identified which should be considered in calls on European and national level.</p>

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Glossary

ADP	Abiotic Resource Depletion
BEPA	Batteries European Partnership Association
CE	Circular Economy
CFF	Carbo Footprint Formula
CLEPA	European Association of Automotive Suppliers
DOI	Digital Object Identifier
EARPA	European Automotive Research Partners Association
EC	European Commission
EDP	Environmental Dissipation Potential
EoL	End of Life
ERTRAC	European Road Transport Research Advisory Council
IEA EV	International Energy Agency – Electric Vehicles
LCA	Life Cycle Assessment
LCM	Life Cycle Management (conference)
RTR	Road Transport Research (conference)
TRA	Transport Research Arena (conference)
UNECE IG	United Nation Economic Committee for Europe – Interest Group
V2G	Vehicle to Grid
V2X	Vehicle to X
ZEV	Zero emission vehicle

I. Introduction

The TranSensus LCA approach was developed as a living document with the intention to update it regularly. After reaching a first consensus, a roadmap for implementation has been elaborated based on the findings in WP 2 and WP 3 as well as based on the discussions with the Advisory Board and the Liaison Group. This roadmap is aimed as recommendation for consecutive measures by the TranSensus LCA consortium, the EC and national authorities as well as by industry and academia.

The roadmap is structured into three parts:

1. Addressing continuous dissemination activities.
2. Continuous update of the guidelines.
3. Defining the needs for further research.

An indication of the timing is given in Chapter V.

II. Continuous Dissemination

In order to promote the TranSensus LCA approach the consortium agreed on continuous dissemination activities beyond the project duration. Among others, the following activities have been planned:

- Publications and presentations on conferences
 - LCM 2025: 5 papers have been accepted referring to TranSensus LCA
 - EARPA Autumn event: Distribution of Guidelines
 - RTR 2026: either booth or presentation (request addressed to the organizer)
 - TRA 2026: 1 paper is under preparation (abstract accepted)
- Standard presentation and training material on guidelines and TS-LCA approach
 - A standard presentation has been prepared which can be used for training and awareness raising; training can be offered on request.
 - Webinars to stakeholders are offered, up to now the following webinars took place or are planned:
 - EARPA Members Webinar (18.07.2025),
 - CLEPA Plaza Webinar (08.10.2025),
 - BEPA Webinar (date to be defined).

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- **Promotional video and electronic brochure**
A promotional video in three different versions (long, long with sub-title, teaser) has been prepared which will be uploaded to the project's website and to YouTube (teaser only). Besides the guidelines are available as electronic brochure with an DOI which can easily distributed by e-mail or downloaded from the project's website.
- **Participation in networks**
Members on the TranSensus LCA consortium will further participate in networks relevant for LCA promoting the TranSensus LCA approach. Among others, participation in the UNECE IWG A-LCA, Catena-X CO₂ Use Case, EA EV Task 52 and ERTRAC WG "Circularity and Competitiveness" is taking place or foreseen.
- It is also suggested that the TranSensus LCA approach (TS LCA) becomes mandatory in subsequent projects / initiatives of Horizon Europe and FP 10.

III. Continuous Update of the Guidelines

It was agreed by the consortium that the TranSensus LCA guidelines will be revised on a yearly basis. The revision will take place in the framework of ERTRAC's Working Group "Circularity and Competitiveness (C & C)" (already approved by the ERTRAC Plenary from June 30, 2025). The revision will take place in an one day online workshop. Prior to the workshop the TranSensus stakeholder community and members of the ERTRAC WG C & C will be asked to review the guidelines and to provide suggestions for updates.

The need for updating has been identified by the TranSensus LCA based on the findings of WP 2 and WP 3 as well as from the feedback of the Advisory Boards and Liaison Group on the following aspects, so far:

- **General**
 - Consideration of new regulations,
 - Updating all default values/tables when necessary,
 - Updating the method with improvements.
- **Goal & Scope**
 - *Life time in years:* The values are a conservative assumption and shall be updated in the future, based on the most recent evidence and for alignment with forthcoming regulations and international guidance.
 - *Life time kilometres:* A review of the assumptions for lifetime km, particularly for light-duty vehicles, based on the most recent evidence and for alignment with forthcoming regulations and international guidance.

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- *Definition of a representative vehicle:* A methodology could be provided for how a ‘representative vehicle’ should be defined for fleet LCA.
- Impact Assessment
 - Continuous review of the advancements in the impact indicators (updates of characterization factors, new methods that replace existing ones, inclusion of biodiversity and circularity when robust indicators are available, ...).
- Chain of Custody
 - The concept of chain of custody should be addressed to increase transparency and reliability of allocation of product characteristics.
- Public Report
 - Review or update of list of result displayed to the public.

The ERTRAC WG C & C can also serve to provide support for the TS-LCA method implementation and to ensure the dissemination of the updates.

IV. Further Research Needs

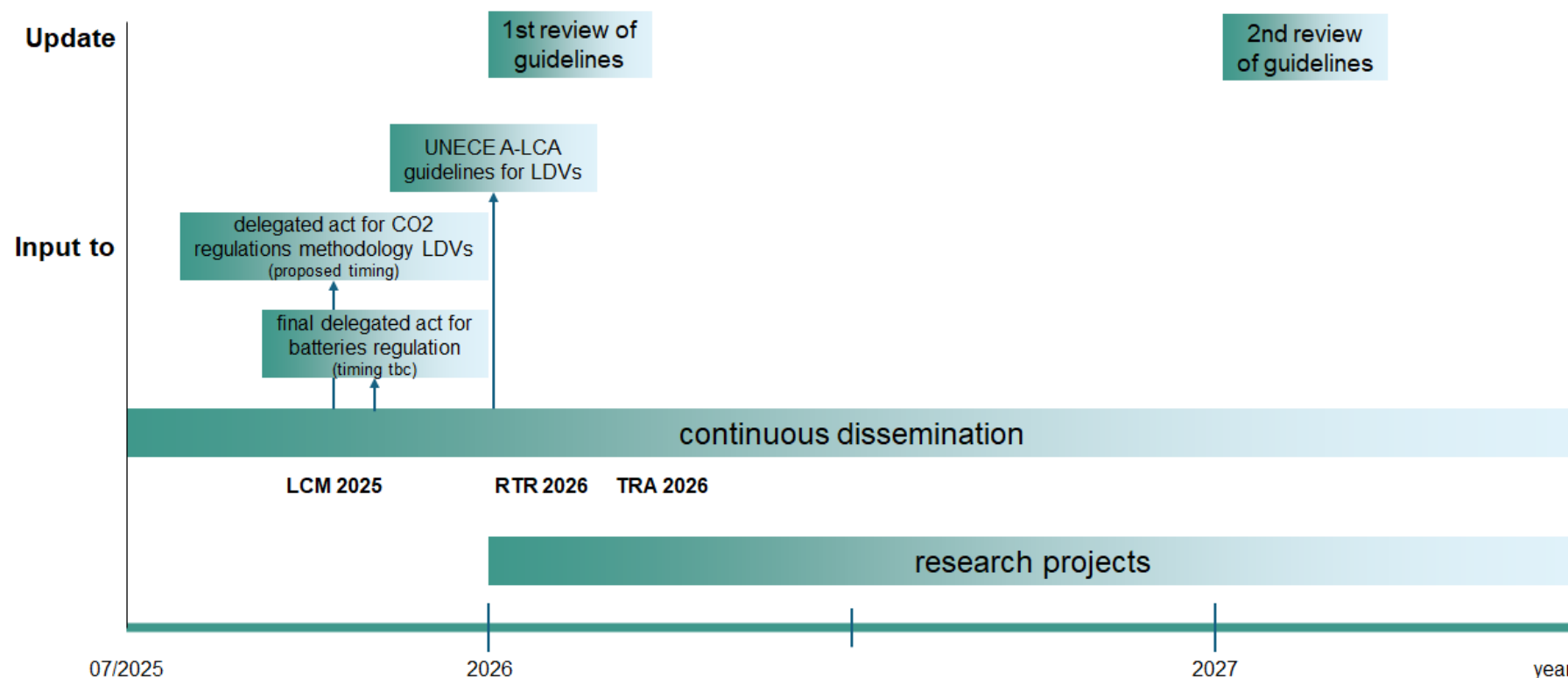
Research needs have been provided by WP 2 and 3. It is recommended that these identified needs are being considered in future calls (on European and national level) and that they monitored by the ERTRAC WG C & C. Following needs have been identified:

- Goal & Scope
 - *Life time kilometers:* Definition of vehicle ‘segment’ has to be standardized.
- Life-Cycle Inventory
 - Estimating the particulate matter emissions of tyres and brakes require more research in general.
 - Research enabling better traceability of electricity and modelling and use of residual grid mixes.
- Multifunctionality
 - Circular Footprint Formula (CFF) must be explored after the expected modification in the next version of PEF.
 - Research on how to handle multifunctionality in V2X cases.

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- Impact Assessment
 - Identification of individual limitations in the proposed methods (e.g.: ADP and EDP require a well mapped inventory of emissions, not always available).
- Social LCA
 - System Boundary need to be updated in the future also based on social significance.
 - Product specific/Sector specific Reference Scales need to be developed for ZEV.
 - Site specific Social data need to be collected.
 - Process specific social database is needed in the future.
 - Activity Variables need to be developed such that it represents to each Impact sub-category.
 - Impact Pathway approach need to be matured.
- Prospective LCA
 - Research enabling standardized methods for new battery management in prospective LCA such as battery swapping case.
- Road testing
 - V2G: allocation of environmental credits for energy fed back into the grid.
 - CE & LCA: no unified indicator that comprehensively captures the concept of “resource savings.”

V. Timing of Activities



Notes: Already planned activities at conferences:

LCM 2025: 12th Int. Conf. on Life Cycle Management, September 9 – 12, 2025, Palermo;

RTR 2026: Conf. on Results from Road Transport Research, February 10 -12, 2026; Brussels

TRA 2026: Transport Research Arena, May 18 – 21, 2026, Budapest