

ACEA position paper

Heavy-duty vehicle LCA methodology



INTRODUCTION

This position paper presents the industry's perspective on DG CLIMA assessment on EU 2024/1610 HDV CO₂ regulation Article 15 (l): "the possibility of developing a common Union methodology for the assessment, and the consistent data reporting, of the full lifecycle CO₂ emissions of new heavy-duty vehicles that are placed on the Union market."

ACEA acknowledges the importance of Life Cycle Assessment (LCA) as a tool for understanding the environmental impacts of vehicles and supports the extensions of harmonisation efforts on national and international level to HDVs. However, the application of LCA methodologies to heavy-duty vehicles (HDVs) present significant limitations that hinder its effectiveness as a potential regulatory tool. This position paper outlines ACEA's perspective on why currently LCA is not suitable for regulatory target setting for HDVs. The below mentioned consideration should be taken into account by DG CLIMA in the HDV LCA methodology feasibility assessment, as per the mandate in HDV CO₂ regulation of developing automotive LCA methodology for HDVs.

KEY MESSAGES

1. No HDV regulatory target setting for 2040 based upon LCA methodology

While LCA is useful for internal environmental decision-making, ACEA opposes its use for setting 2040 HDV regulations. It could lead to unintended consequences like market distortions. Instead, the automotive industry promotes direct emission reduction strategies and targeted, non-redundant legislation to avoid high efforts for very limited environmental benefits.

2. Focus on battery LCA decarbonisation covered by the EU Battery Regulation

Introducing a life cycle assessment (LCA) methodology for heavy-duty vehicles (HDVs) would create regulatory overlap and compliance burdens without significant environmental benefit, as existing EU legislation, including the EU Battery Regulationⁱⁱ, already comprehensively addresses emissions and impacts across all life-cycle phases.

3. One-size-fits-all approach is unrealistic

The application of LCA to HDVs is inherently more complex than for light-duty vehicles (LDVs) due to higher variety of vehicle specifications, leading to diverse environmental profiles.

4. Support the UNECE A-LCA guidelines to promote global harmonisation

ACEA advocates for globally harmonised Automotive Life Cycle Assessment standards aligned with UNECE's A-LCA. Currently focused on light-duty vehicles, a similar approach should be considered for heavy-duty vehicles, ensuring fair, robust, and realistic comparisons.

FOCUS ON BATTERY LCA DECARBONISATION COVERED BY THE EU BATTERY REGULATION

Due to the high contribution of use phase emissions during the life cycle climate impact of HDVs, the vast majority of emissions is already covered by EU fleet legislation. The CO₂ emission standards for heavy-duty vehicles already set targets for fleet-wide average CO₂ emissions. For battery-electric HDVs, the decarbonisation potential is significantly tied to battery production and efficiency. The EU Battery Regulationⁱⁱ already addresses the impacts of battery manufacturing, including resource sourcing, carbon footprint, and recycling requirements. Introducing LCA as an additional regulatory layer creates redundancy and complicates compliance without offering substantial environmental benefits.

The European Commission Green Deal developed and enforced multiple regulations and directives that cover all the different life-cycle phases of HDVs. For example, the third version of the Renewable Energy Directive (RED III)ⁱⁱⁱ, Emissions Trading Systems (ETS) I and II^{iv}, End-of Life Vehicles (ELV) Directive^v, Corporate Sustainability Reporting Directive (CSRD)^{vi}, etc. The introduction of HDV LCA methodology would create overlapping regulations with potentially not aligned scopes, boundaries, and calculation methodologies that would only lead to additional burden to manufacturers.

ONE-SIZE-FITS-ALL APPROACH IS UNREALISTIC

The application of LCA to HDVs is inherently more complex than for light-duty vehicles (LDVs). HDVs vary significantly in size, design, operational patterns, and usage intensity, leading to diverse environmental profiles. Standardised LCA metrics struggle to account for these variations, resulting in inconsistent and potentially misleading comparisons. Such complexity undermines LCA's reliability as a basis for regulatory target setting. Multi-stage vehicles¹ even create further challenges due to the responsibility share between OEMs and bodybuilders. This also applies for the impact of trailer design and production in trailer-truck combinations. There is a significant challenge to find a representative heavy-duty vehicle that covers all significant vehicle configurations to reduce LCA development burden, but at the same time allow decent comparability and representativeness. This complexity is further highlighted by the Vehicle Energy Consumption calculation TOol (VECTO)^{vii} development timing and principle, which are completely different to the Worldwide harmonised Light-duty vehicles Test Procedure (WLTP)^{viii} development and should be studied before considering LCA methodology development for HDVs.

¹ Multi-stage vehicles are vehicles that are not completely built by a manufacturer but finalised by a bodybuilder.

GLOBAL HARMONISATION THROUGH UNECE A-LCA GUIDELINES

ACEA supports global harmonisation efforts and advocates for alignment with the United Nations Economic Commission for Europe (UNECE) Automotive Life Cycle Assessment (A-LCA) initiatives. These efforts aim to create a coherent and standardised approach to automotive LCA, focusing at the moment on LDVs. Similar harmonisation should be sought in the future for HDVs. Such a standard needs to ensure fair comparability and provide an realistic method as well as robust results which are close to real impact.

CONCLUSION

While LCA remains a valuable tool for internal environmental management and strategic decision-making, its application as a regulatory instrument for HDVs is loaded with challenges. ACEA strongly opposes the use of LCA methodology as a basis for setting CO₂ regulatory targets for 2040. Premature regulatory application could lead to unintended consequences, such as including market distortions and misaligned incentives. Instead, ACEA recommends focusing on direct emission reduction strategies and supporting technologies that drive measurable environmental improvements.

In this context, legislation targeting specific aspects of the vehicle life cycle should be considered in order to avoid redundancies and high efforts for very limited environmental benefits.

ⁱ Regulation (EU) 2024/1610 of the European Parliament and of the Council of 14 May 2024 amending Regulation (EU) 2019/1242 as regards strengthening the CO₂ emission performance standards for new heavy-duty vehicles and integrating reporting obligations, amending Regulation (EU) 2018/858 and repealing Regulation (EU) 2018/956

ⁱⁱ Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC

ⁱⁱⁱ Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652

^{iv} https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

^v Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles

^{vi} Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting

^{vii} https://climate.ec.europa.eu/eu-action/transport-decarbonisation/road-transport/vehicle-energy-consumption-calculation-tool-vecto_en

^{viii} UN Regulation No. 154 – Worldwide harmonised Light vehicles Test Procedure (WLTP)



ABOUT THE EU AUTOMOBILE INDUSTRY

- 13.2 million Europeans work in the auto industry (directly and indirectly), accounting for 6.8% of all EU jobs
- 10.3% of EU manufacturing jobs – some 3.1 million – are in the automotive sector
- Motor vehicles are responsible for €383.7 billion of tax revenue for governments across key European markets
- The automobile industry generates a trade surplus of €106.7 billion for the European Union
- The turnover generated by the auto industry represents over 7.5% of the EU's GDP
- Investing €72.8 billion in R&D per year, automotive is Europe's largest private contributor to innovation, accounting for 33% of the EU total

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