



Hydrogen
Europe

Hydrogen Europe Position Paper

CO₂ Emission Standards for Heavy-Duty Vehicles

February 2023

Supporting the scale-up of hydrogen trucks

POSITION PAPER

Hydrogen Europe welcomes the intention to revise existing CO₂ emissions standard limits for heavy-duty vehicles as the road transport sector is rapidly moving towards cleaner and zero-emission propulsion systems. As the Call for Evidence for an Impact Assessment states, “[...] current standards will not be a sufficient incentive for the investment in zero-emission vehicles that are necessary to reduce emissions in this sector”.¹ In the context of the proposed revision, **high ambition should go together with a technology-neutral approach.**

Ahead of the publication of the new proposal, Hydrogen Europe would like to stress the following:

- Maintain a definition that **allows all eligible hydrogen-powered solutions to contribute to clean mobility.**
- Include all vehicle types in the scope and set dedicated targets for trailers and semi-trailers.
- **Work on enabling conditions:** a dense, pan-European hydrogen refuelling network, robust supporting schemes, and favourable road tolls are just a part of what is needed to make hydrogen-powered heavy-duty vehicles more affordable and attractive to end users and fleet operators.

Scope

Hydrogen Europe fully supports the ambition set by the European Green Deal and actively backs the climate neutrality objective in 2050. We support the inclusion of new vehicle categories and classes since we are convinced that all segments should contribute to achieving carbon neutrality. Leaving some of them out of the Regulation jeopardises the efforts that both the industry and consumers are bearing. In this context, **Hydrogen Europe supports all hydrogen-powered solutions compliant with the current definition of “zero-emission heavy-duty vehicle”².** This way, consistency will be ensured, and a level playing field will be granted.

Targets

The current trend, which sees road transport industry emissions growing, must be inverted quickly. Therefore, the new Regulation should consider a revision of post-2025 interim targets, as this would help the market move quickly towards clean operations. However, any change needs to carefully consider the costs, benefits, and overall implications for the whole transport sector.

Buses and regional delivery lorries are by far the segment in which decarbonisation has advanced the most and will soon be given a new emission monitoring system, which will further help the diffusion

¹ European Commission, [Reducing Carbon Emissions - Review of Emission Standards for Heavy Duty Vehicles](#), 2021

² European Commission, [Regulation \(EU\) 2019/1242, Art. 3, par. 1.11](#): “‘zero-emission heavy-duty vehicle’ means a heavy-duty vehicle without an internal combustion engine, or with an internal combustion engine that emits less than 1 g CO₂/kWh as determined in accordance with Regulation (EC) No 595/2009 and its implementing measures, or which emits less than 1 g CO₂/km as determined in accordance with Regulation (EC) No 715/2007 of the European Parliament and of the Council and its implementing measures.”

of clean vehicles. On the other hand, hydrogen trucks are expected to scale up fast and contribute to the decarbonisation effort starting from the second half of this decade; their contribution will be instrumental in achieving climate neutrality by 2050. To do so, they will benefit from the planned deployment of hydrogen refuelling infrastructure in Article 6 of the Alternative Fuels Infrastructure Regulation.³ **Hydrogen Europe expects at the very least 50,000 hydrogen-powered heavy-duty vehicles in operation in the European Union in 2030⁴**; other forecasts indicate that the fleet of hydrogen medium- and heavy-duty trucks could reach up to 850,000 units by 2035.⁵

Targets should also be designed for trailers and semitrailers, as roughly 310 thousand diesel-powered refrigerated units are registered in Europe. Even though their use makes up only a fraction of the overall transport-generated emissions, a dedicated trajectory should be set to promote to encourage fleet renewal, switch to hydrogen- and electric-powered refrigerated trailers and further reduce CO₂ emissions.

Well-to-Wheel and the contribution of renewable fuels

Hydrogen Europe believes that technology neutrality should be preserved and any hydrogen-based solution that can potentially take fossil-fuelled vehicles off EU roads should be investigated; to do so, regulations considering well-to-tank emissions like the Renewable Energy Directive (RED) and the Emission Trading Scheme (ETS) must be stronger aligned with fleet regulations considering tank-to-wheel emissions. This ensures that overall well-to-wheel emissions can be reduced most effectively. A strong sub-target for RFNBOs in RED guarantees hydrogen supply under sustainability criteria. An effective ETS, including commercial road transport, ensures the lowering CO₂ impact of the energy and fuels used by the European commercial fleet.

In the long term, a systemic change **from tailpipe emission measuring to Well-to-Wheel (WtW)** or Life Cycle Assessment (LCA) to fully consider the emissions produced at all stages, from production to end-of-life, could be a further step: it would be a more balanced way to assess actual CO₂ emissions output and cater for a more technology-neutral approach giving all competing technologies a fair chance. In this sense, the commitment made by the European Commission⁶ to evaluate the possibility of the LCA approach in 2023 is a good starting point. A patchwork of inconsistent rules could only result in creating more obstacles for the whole hydrogen value chain.

Within this framework, **renewable e-fuels might play a role in certain heavy-duty applications in the decades to come, especially in bringing down the CO₂ emissions of the European commercial fleet.** As their market is still to be developed, their contribution to decarbonisation should be more in the longer term.

Incentives and consistency with flanking legislation

The existing bonus system with benchmark should be maintained as long as those new alternative powertrains remain more expensive than fossil-fuelled equivalents to preserve meaningful support for the rollout of hydrogen-powered heavy-duty vehicles. In any case, the benchmark should be consistent with the higher ambition of the new Regulation, and long-haul heavy-duty vehicles should

³ European Commission, [Proposal for a Regulation of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU of the European Parliament and of the Council](#), July 2021

⁴ Hydrogen Europe, ACEA, [Joint letter on AFIR](#), December 2022

⁵ McKinsey, [Unlocking Hydrogen's Power for Long-Haul Freight Transport](#), August 2022

⁶ European Commission, [Reducing CO₂ Emissions from Heavy-Duty Vehicles](#)

be granted higher rewards due to their operational capabilities and the higher potential to reduce overall CO₂ fleet emissions; non-fossil fuelled trailers and semitrailers should also receive support. **It is crucial that in the short to medium term when hydrogen trucks remain more expensive, incentives and subsidies are in place to help consumers switch away from fossil fuels.** More ambition must be met with appropriate financial support at the EU and national levels. For instance, the support granted by Germany⁷, which covers 80% of the cost difference between a zero-emission truck and a diesel truck, is a remarkable initiative, and we strongly advocate for other Member States to follow this lead. Eventually, those mechanisms will be phased out as soon as hydrogen trucks are rolled out at scale and their TCO becomes lower than that of fossil-fuelled counterparts.

Even though economic differences will reduce over time, commercial hydrogen transport remains an emerging segment in the short term and, therefore, needs adequate support not just under the revised CO₂ Emission Standards rules but also through other EU and national legislative and financial mechanisms, as the overarching goal is to encourage demand by making heavy-duty hydrogen vehicles more affordable as fast as possible. For instance, the revised Eurovignette Directive⁸ sets the framework for a CO₂-based road toll, the effects of which will become visible as of 2024 and make hydrogen vehicles considerably cheaper to run as soon as the shift to the “polluter pays” principle is kickstarted. Since Member States can rely on long lead times of up to ten years, it is key that they start implementing a CO₂-based toll system for heavy-duty vehicles very soon. Furthermore, additional work could be done on lowering the price of hydrogen, another major variable in TCO calculations. In this sense, the joint effect of initiatives such as the new Hydrogen Bank⁹, the transport target currently under discussion in the revision of the Renewable Energy Directive and REPowerEU could play a primary role in bringing the price down, thus sending a powerful signal to producers and transport companies. Lastly, hydrogen-powered commercial fleets can only exist with a dense and fully functioning hydrogen refuelling infrastructure in place by the end of 2027¹⁰. End users must be certain they can refuel anywhere along the main road network and in urban nodes across the European Union. **Member States should embrace the transition to clean commercial transport by setting ambitious targets for HRS in AFIR, both on the TEN-T core and comprehensive network and for urban nodes, aligning with the ambition level of the CO₂ fleet targets.**

The combined effect of all legislation and initiatives will benefit the whole European economy by increasing production levels of clean hydrogen and lowering its costs for use in the transport sector.

⁷ NOW GmbH, [EU approves new funding guideline for commercial vehicles with alternative drive systems – funding guideline and funding call published](#), 2021

⁸ European Commission, [Directive \(EU\) 2022/362 of the European Parliament and of the Council of 24 February 2022 amending Directives 1999/62/EC, 1999/37/EC and \(EU\) 2019/520, as regards the charging of vehicles for the use of certain infrastructures](#), February 2022

⁹ PwC estimates that a price around 4,65Eur/kg would make fuel cell trucks competitive with diesel trucks. See: PwC, [The Dawn of Electrified Trucking](#), 2022

¹⁰ Hydrogen Europe, [Alternative fuels infrastructure as the key to unlock the potential of hydrogen-fuelled mobility - Position Paper on AFIR](#), November 2021

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