



CLEPA position on CO₂ standards for Heavy-Duty Vehicles

- Europe should maintain its leading position in reducing CO₂ emissions from heavy-duty vehicles as European trucks are currently amongst the most efficient ones in the world with best-in-class technologies regarding fuel efficiency.
- Reaching EU target levels for Heavy Duty Vehicle emissions will require the implementation of additional technologies and measures, for which incentives for market uptake might be needed.
- Realistic and ambitious standards should be based on robust data, reflect the different transport tasks and the particularities of vehicle classes.
- CLEPA supported the introduction of the VECTO tool model and reconfirms its commitment in participating to the development of further extensions and improvements including alternative powertrains and fuels, advanced auxiliaries and technologies, buses, coaches and M2/N2 vehicles.
- Technology neutrality shall remain a key principle.

European leadership

Conventional (diesel) engines in conjunction with increasing levels of electrification are expected to continue to be fitted to the large majority of new Heavy-Duty Vehicles in Europe at least within a mid-term timeframe. The EU Reference Scenario 2016¹ accounts for just 17% fully electric Light Duty Vehicles in 2050. Other independent studies show an even slower market uptake for Heavy Duty Vehicles. Therefore, technological advances to improve engine efficiency must be maintained and the development of electrified powertrains in various forms intensified (e.g. hybrids or pure electric drives).

The European Commercial Vehicle manufacturers, as well as their suppliers, are in a leading position regarding technological improvements to reduce fuel consumption and CO₂ emissions from Heavy-Duty Vehicles (HDV)

The European Automotive industry should maintain this position in the context of global competitiveness and technological leadership as well as employment in the EU. Therefore, further technological improvements to reduce CO₂ emissions from HDV will need to continue. This is true in various areas in which CLEPA members are investing, including:

- continued development of conventional / diesel engines,
- high efficiency turbocharging,
- efficient systems controlling engine air flow, combustion and emissions, including variable valve actuation and exhaust gas recirculation,
- hybridization / electrification,
- efficient transmissions,

¹ <https://ec.europa.eu/energy/en/news/reference-scenario-energy>

- friction reduction,
- alternative fuels, such as CNG / LNG or eFuels,
- the efficiency of auxiliaries/components, such as air conditioning,
- waste heat recovery,
- intelligent systems linking the powertrain control to navigation data and/or other vehicles,
- light-weighting and
- aerodynamics.

Vehicle diversity

The effectiveness of alternative powertrains in reducing CO₂ emission differs for passenger cars and heavy-duty vehicles, and between different applications of heavy-duty vehicles, and the technology choices depend greatly on vehicle type, operating environment and duty cycle. For example, full electrification is unlikely to be a viable technical solution for long-haul trucks, while hybridization of some form may be a cost-effective selection for many types of heavy-duty vehicle, particularly those with significant stop-start activity such as city buses, local delivery and municipal vehicles.

Future regulations should, therefore, take into account these differing vehicle characteristics to provide technology-neutral legislation that allows market determination of the preferred technologies. Purchasing incentives for high-potential technologies would support increased early market penetration to create economies of scale (e.g. within the frame of demonstration projects) where there is a clear benefit to encourage a technology. Accordingly, vehicle characteristics and innovative solutions that are not well or completely accounted for by the standardised measurement method shall be duly considered and encouraged by the regulation.

Standardised CO₂ emission values for all vehicles and powertrains

Heavy-duty CO₂ emission values at vehicle level are not available today in Europe as they are for passenger cars and light-duty vehicles/vans in the EU and for heavy-duty vehicles in the USA.

An EU-wide standardised CO₂ measurement method will increase the transparency on fuel consumption and CO₂ emissions in the HDV market further stimulate competition for efficient HDVs and provide data that allows for future CO₂ target setting legislation based on a solid baseline.

Therefore, the use of VECTO (Vehicle Energy consumption Calculation Tool developed by the European Commission and the intended monitoring of CO₂ emission data generated with this tool should clearly be supported .

Furthermore, VECTO should be further developed to be more inclusive than the current version allows, for example being capable of representing advanced auxiliaries and technologies such as hybrids, alternative fuels, HVAC systems as well as other advanced technologies and intelligent anticipatory operating strategies. At a minimum, the Commission should publish a timeline by when the integration and simulation of such systems as well as alternative powertrains and fuels will be possible within the VECTO logic.

Similarly, VECTO should cover all relevant market segments such as buses and coaches in a future release, as well as N2 / M2 vehicles. In addition, it is advisable to harmonise future EU

regulations with requirements of other Regions (e.g. US EPA) to promote commonality in the propulsion solutions required for these other regions.

Potential CO₂ emission standards

For high-mileage vehicles, fuel expense is a primary element in the Total Costs of Ownership (TCO) and hence vehicle efficiency is already a key factor in HDV purchase decisions. A thorough and balanced impact assessment of the costs and benefits of potential legislation, incorporating knowledge and analysis of equipment manufacturers, is necessary to determine the extent to which setting CO₂ limits would add value. For lower mileage vehicles, for vehicles where the owner is not necessarily the user (rental fleets) or where the primary role is vocational, legislation is required to provide the motivation for technology adoption to achieve societal benefits, in a similar manner as for the light-duty vehicles.

CLEPA does not support setting limits in the absence of certified CO₂ emission data. Before setting targets, the state of the art should be assessed on the basis of certified emissions data that will be available via the VECTO simulation tool (at least for several vehicle segments).

In order to allow timely investments by equipment manufacturers, an early communication of parameters and methodology for potential CO₂ standards is necessary as well as sufficient lead-time before introducing standards. Such standards should represent realistic and ambitious targets, that incentives faster implementation of cost-effective technologies.

In the case of standards, the reference metrics of the CO₂ emission standards should reflect the transport task (e.g. gCO₂/tkm – grammes per ton-kilometers, gCO₂/pkm grammes per person-kilometers, gCO₂/hour grammes per hour, gCO₂/m³km - grams per volume-kilometers) and should cover the complete vehicle and/or vehicle combination.

While VECTO in its first iteration correctly focuses on a Tank-to-Wheel approach, for future iterations, a Well-to-Wheel emissions calculation methodology for CO₂ standards should be considered and assessed, to ensure adequate consideration of alternative fuels/powertrains.

Technology neutrality and further measures

Technology neutrality is one of the major principles for smart regulation. Such an approach provides a framework that stimulates innovation and pushes companies to compete for best solutions and technologies.

Thus, technology neutrality should remain a key principle in order to ensure that innovation will be widely spread across all promising CO₂ paths, covering conventional engines, alternative powertrains / alternative fuels, efficient transmissions and/or auxiliaries as well as vehicle measures.

In addition, policymakers can and should support the market penetration of innovative efficiency technologies by improving the vehicle TCO, for example through CO₂-based incentives, taxation, preferred road access schemes and/or road tolls and the introduction of other measures such as:

- Infrastructure improvement: e.g. roads suitable for the use of high-efficiency tyres and continued maintenance also on existing roads

- Strengthening of alternative fuels such as CNG or LNG and decarbonization of fuels
- Intelligent Transport Systems, connectivity and automation
- European Modular System
- Eco Innovations

Conclusions

Market competition in the cost driven sector of goods and passenger transport has already led to very efficient engines and powertrains in Europe, which currently makes European trucks amongst the most efficient ones in the world with best-in-class technologies for efficiency. However, this **market competition might not be sufficient to reach the emission reduction** that is required to meet targets of the Paris COP 21 agreement and the EU targets to reduce greenhouse gas emissions. In addition, the regulatory approaches on Heavy-Duty vehicles of other markets, notably the USA and China, may erode the current leadership in the efficiency of the European heavy-duty industry.

Reducing CO₂ emissions faster will require additional technologies and measures to be implemented. CO₂ limits could support the market uptake of these new technologies, but must be based on robust data in order to establish achievable and ambitious targets that will encourage customers to invest in them.

In general, **no CO₂ limits of any kind - should be introduced without sufficient data** to determine the baseline or without experience regarding the methods and tools to prove whether a given limit can be met or not.

Therefore, **CLEPA continues to support the completion and swift implementation of the VECTO** tool (see more below) and the intended monitoring and reporting of respective CO₂ emission data for HDV in order to increase market transparency and build-up of a strong data basis for further considerations.

In addition, policymakers can and should support the market penetration of innovative efficiency technologies by improving the vehicle TCO, for example through CO₂-based taxation and/or road tolls and the introduction of other measures such as infrastructure improvements or intelligent transport systems (connected and/or automated). The scope of these other measures should include all relevant stakeholders in the commercial vehicle and the transport and logistics industry, not only OEMs and suppliers, but also fleet operators and logistics providers.