

CO₂ emission standards for heavy-duty vehicles

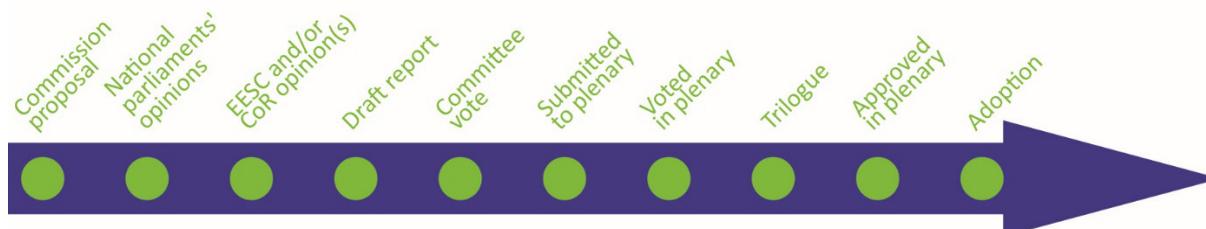
OVERVIEW

In May 2018, the Commission proposed a regulation setting the first-ever CO₂ emission performance standards for new heavy-duty vehicles in the EU, as part of the third mobility package. It would require the average CO₂ emissions from new trucks in 2025 to be 15 % lower than in 2019. For 2030, the proposal sets an indicative reduction target of at least 30 % compared to 2019. Special incentives are provided for zero- and low-emission vehicles. The proposed regulation applies to four categories of large trucks, which together account for 65 %-70 % of CO₂ emissions from heavy-duty vehicles. The Commission proposes to review the legislation in 2022 in order to set a binding target for 2030, and to extend its application to smaller trucks, buses, coaches and trailers.

In the European Parliament, the proposal was referred to the Committee on Environment, Public Health and Food Safety, which adopted its report on 18 October 2018. Parliament voted on the report on 14 November. Trilogue negotiations were concluded on 18 February 2019 with an agreement that sets a legally binding 30 % reduction target for the average fleet emissions of new trucks by 2030. The Parliament adopted it during the April II 2019 plenary session, and the Council on 13 June. The Regulation was published in the Official Journal on 25 July and entered into force on 14 August 2019.

Proposal for a Regulation of the European Parliament and of the Council setting CO₂ emission performance standards for new heavy-duty vehicles

<i>Committee responsible:</i>	Environment, Public Health and Food Safety (ENVI)	COM(2018) 284 17.5.2018
<i>Rapporteur:</i>	Bas Eickhout (Greens/EFA, the Netherlands)	2018/0143(COD)
<i>Shadow rapporteurs:</i>	Christofer Fjellner (EPP, Sweden) Damiano Zoffoli (S&D, Italy) John Procter (ECR, United Kingdom) Nils Torvalds (ALDE, Finland) Stefan Eck (GUE/NGL, Germany) Eleonora Evi (EFDD, Italy) Joëlle Mélin (ENF, France)	Ordinary legislative procedure (COD) (Parliament and Council on equal footing – formerly 'co-decision')
<i>Procedure completed.</i>	Regulation (EU) 2019/1242 OJ L 198, 25.7.2019, pp. 202–240	



Introduction

On 17 May 2018, the European Commission adopted a [proposal](#) for a regulation setting the first-ever CO₂ emission standards for heavy-duty vehicles (trucks) in the EU.

There are around 7 million trucks operating in the EU-28. Annual registrations of new trucks in the EU increased by 45 % from 2010 to 2016, to around 380 000. Around 70 % of EU freight is transported by road. The road freight and passenger transport sector consists of over 600 000 mostly small and medium-sized enterprises (SMEs) and employs almost 3 million people.

The EU truck market is dominated by six manufacturers¹ that together hold an 88 % market share. Around 3.5 million people are employed in truck manufacturing, repair, sales, leasing and insurance. The heavy-duty vehicle sector is characterised by many different vehicle categories, technologies, sizes and weights, as heavy-duty vehicles are typically customised for specific clients and uses. This range of different vehicle combinations makes it difficult to estimate important parameters such as fuel consumption and CO₂ emissions in a reliable and cost-effective manner.

Heavy-duty vehicles are responsible for 27 % of road transport CO₂ emissions and almost 5 % of EU greenhouse gas emissions (2016 data). Since 1990, heavy-duty vehicle emissions have increased by 25 % – mainly as a result of an increase in road freight traffic – and, in the absence of new policies, they are projected to further increase. EU transport is heavily dependent on oil (accounting for nearly 94 % of the energy consumed by transport in 2015, of which 89 % is imported).

The Commission's energy union strategy presented in February 2015 envisages action to further decarbonise road transport, with a view to meeting the 2030 climate and energy goals. The [European strategy for low-emission mobility](#), presented in July 2016, aims to improve transport-system efficiency by using digital technologies and smart road charging; it furthermore promotes multimodality, encourages the use of low-emission alternative energy for transport and outlines measures for moving towards zero-emission vehicles.

The proposal is part of a larger set of measures to reduce GHG emissions in the transport sector and achieve a 30 % emission reduction by 2030 in the sectors covered by the Effort-Sharing Regulation. In order to achieve this target in a cost-effective manner, EU-wide emissions from road transport would need to fall by 25 % by 2030 relative to 2005, according to analysis by the Commission. Under the Commission's baseline scenario, emission reductions would only be around 17 %, and around 21 % with the proposed post-2020 emission standards for cars and vans. The gap of 4 percentage points could be progressively closed by about one percentage point with the implementation of the proposed CO₂ standards for heavy-duty vehicles. The remaining gap would be addressed through other additional policies with an impact on road transport CO₂ emissions. These policies include the minimum share of renewable fuels in transport in the revised Renewable Energy Directive, as well as the proposed Eurovignette, clean vehicles and combined transport directives.

The EU has so far adopted several measures to reduce emissions from road vehicles. Binding emissions targets for new car and van fleets have been in place since 2012 and 2014 respectively.² However, CO₂ emissions and fuel efficiency of heavy-duty vehicles are not yet regulated at EU level, in contrast to countries such as the United States,³ Canada, India, Japan and China, which have already set CO₂ emission standards for heavy-duty vehicles.

In May 2017, the Commission published the first set of proposals of the 'Europe on the Move' mobility package. With respect to heavy-duty vehicles, the package contained a proposal to set up a system for monitoring and reporting CO₂ emissions and fuel consumption (see next section), which was adopted in June 2018. The clean mobility package, presented in November 2017, contains proposals for post-2020 CO₂ limits for cars and vans and for a revision of the Clean Vehicles Directive, which addresses public procurement of clean and energy-efficient buses and trucks. Trilogue agreements have now been reached on these files.

Existing situation

CO₂ emissions from heavy-duty vehicles are currently not regulated at EU or Member State level. The following legal acts are relevant to the CO₂ emissions performance of heavy-duty vehicles and the transport sector.

Monitoring and reporting CO₂ emissions and fuel consumption

In June 2018, Parliament and Council adopted [Regulation \(EU\) 2018/956](#), which sets up a system for monitoring and reporting CO₂ emissions and fuel consumption of heavy-duty vehicles, introduced as part of the first 'Europe on the Move' mobility package. This system ensures the availability of data on which to base the proposed emission performance standards. Member States must monitor and report data about all new heavy-duty vehicles registered in a calendar year, while heavy-duty vehicle manufacturers must monitor and report information related to the CO₂ emissions and fuel consumption of vehicles.

As of January 2019, [Commission Regulation \(EU\) 2017/2400](#) requires manufacturers to calculate this information on the basis of a standardised simulation tool (known as 'VECTO'). The Commission will make the reported data publicly available, in a register managed by the European Environment Agency, with exceptions for sensitive data. A similar monitoring and reporting system is already in place for light-duty vehicles.

Weights and Dimensions Directive

The Weights and Dimensions Directive ([96/53/EC](#)) limits the maximum weight of heavy-goods vehicles to 40 tonnes (44 tonnes in combined transport) and their length to 18.75 metres in international traffic. It was amended by [Directive \(EU\) 2015/719](#), which allows new heavy-duty vehicles with more rounded and aerodynamic cabins starting in 2022. Besides reducing CO₂ emissions, this improves road safety and the visibility and comfort of drivers. On 18 May 2018, the Commission put forward a [proposal](#) for a decision to amend the directive so as to bring the starting date forward by three years – from 2022 to 2019.

Clean Vehicles Directive

The Clean Vehicles Directive ([2009/33/EC](#)) aims to incentivise different procurers (subject to the EU public procurement directives and the Public Service Regulation), to invest in environmentally friendly vehicles. However, the 2015 Commission [evaluation](#) found that the results have been limited, due to the low market share of vehicles purchased in public procurement and to methodological issues.

In November 2017, the Commission presented a [legislative proposal](#) for a revision of the directive, which aims to promote clean mobility solutions in public procurement tenders (purchase, lease, rent or hire-purchase of road transport vehicles, and public service contracts on public passenger transport by road and rail), and thereby raise the demand for and the further deployment of clean vehicles. For heavy-duty vehicles, the proposal uses a definition of clean vehicles based on alternative fuels (electricity, hydrogen, natural gas including biomethane), but includes the possibility to adopt a delegated act to use emission thresholds for heavy-duty vehicles after a future adoption of CO₂ emission standards for heavy-duty vehicles. The proposal sets minimum targets for the procurement of clean vehicles.⁴ A trilogue agreement was reached in February 2019.

Eurovignette Directive

The Eurovignette Directive [1999/62/EC](#) (modified by directives [2006/38/EC](#) and [2011/76/EU](#)) sets common rules on distance-related tolls and time-based user charges (vignettes) for heavy goods vehicles (above 3.5 tonnes) for the use of road infrastructures. A [proposed revision](#) of the Eurovignette Directive aims, among other things, to incentivise decarbonisation and fleet renewal

through charging based on CO₂ standards, with a 75 % reduction in road charges for zero-emission vehicles.

Combined Transport Directive

CO₂ emissions from transport of goods can be reduced by combining road transport with less carbon-intensive transport modes, i.e. rail or water. The Combined Transport Directive [92/106/EEC](#) sets out measures to increase the competitiveness of combined transport against road-only transport. In November 2017, the Commission [proposed](#) to simplify the existing rules and make combined transport more attractive by means of economic incentives.

Parliament's starting position

The European Parliament strongly supports measures reducing the environmental impact of heavy-duty vehicles. In a [resolution of 9 September 2015](#), it called for 'a legislative proposal setting mandatory limits on average CO₂ emissions from newly registered heavy-duty vehicles', complemented by measures and best practices stimulating market uptake of the most efficient heavy-duty vehicles and promoting fuel efficiency.

In a [resolution of 18 May 2017](#) on road transport in the European Union, the Parliament called on the Commission to 'come up with ambitious proposals for CO₂ standards for trucks and buses in order to reduce greenhouse gas emissions from the road sector', and to consider the opportunities for introducing incentives for retrofitting to accelerate the shift towards low-emission transport.

In the negotiations on the Monitoring and Reporting Regulation, the Parliament successfully pushed for new powers for the Commission to impose administrative fines on manufacturers who fail to comply with the regulation, and for the development of on-road verification tests.

Preparation of the proposal

Public consultation

A public online [consultation](#) took place from 20 November 2017 to 29 January 2018, and a stakeholder workshop was held on 16 January 2018. According to the Commission's summary, the majority of stakeholders support CO₂ targets for heavy-duty vehicles at EU level. Heavy-duty vehicle manufacturers advocate less strict targets than NGOs and support a single CO₂ target per manufacturer. Regarding low and zero-emission vehicles, manufacturers favour super-credits, while NGOs prefer a mandate. All stakeholders support cost-effective implementation, with manufacturers in favour of banking and borrowing, and civil society organisations of trading. Most stakeholders support monitoring the certified CO₂ values against real-world emissions.

Impact assessment

The Commission's [impact assessment](#) identified three problems: increasing CO₂ emissions from heavy-duty vehicles, missed opportunities for fuel savings, and the risk of EU manufacturers losing their technological leadership. It consequently set three objectives: contribute to achieving the EU's commitments under the Paris Agreement by reducing CO₂ emissions from heavy-duty vehicles; reduce operating costs for transport operators; and maintain the technological and innovative leadership of EU manufacturers and component suppliers. It identified the need to set CO₂ emission standards and considered various policy options in five groups: CO₂ emission targets; distribution of EU fleet-wide targets across vehicle groups and manufacturers; incentives for low and zero-emission vehicles; cost-effective implementation; and governance.

With respect to the preferred option, the impact assessment concluded that the proposed CO₂ emission standards would have a positive impact on the environment by mitigating climate change and improving air quality. In addition to reducing CO₂ emissions, it would contribute to lower emissions of air pollutants such as nitrogen oxides (NO_x) and fine particulate matter (PM_{2.5}).

Moreover, the proposed standards would reduce costs for transport operators and their clients. While the proposed CO₂ emission standards would entail higher initial costs (like other energy efficiency measures), the resulting fuel savings would greatly offset the additional costs of a new heavy-duty vehicle equipped with CO₂ reduction technologies. According to Commission estimates, the proposed targets would raise the purchase costs of new trucks by some €1 800, while the fuel savings for a truck bought in 2025 would amount to €25 000 over five years. For a vehicle bought in 2030, the net savings during the first five years of use are estimated at around €55 000.

In addition, the proposed standards would encourage investment in research and development of new technologies, helping the EU automotive industry retain its global technological leadership. The proposed standards are expected to positively impact job creation and economic growth. They could lead to up to 25 000 more jobs in 2025 and more than 120 000 additional jobs in 2030.

According to the Commission, many readily available cost-effective technologies⁵ to improve fuel efficiency are not widely used, even though their costs are low and they could bring high net savings. This is attributed to imperfect and asymmetric information in the new vehicle market, as it is difficult for transport operators, most of which are SMEs, to access and make full use of the technical information on such technologies.

The Commission's Regulatory Scrutiny Board initially gave a negative opinion on the first draft of the impact assessment, followed on 19 April 2018 by a [positive opinion](#) on the resubmitted version. EPRS's [initial appraisal](#) of the impact assessment concluded that the impact assessment has examined a sufficient number of options, and presents a sound and well evidenced analysis.

The changes the proposal would bring

The [proposed regulation](#), presented as part of the third mobility package on 17 May 2018, sets the first-ever CO₂ emission performance standards for new heavy-duty vehicles in the EU and incentivises low- and zero-emission vehicles.

The proposal defines a 'zero-emission heavy-duty vehicle' as a vehicle either without an internal combustion engine or with an internal combustion engine that emits less than 1 g CO₂/kWh, or a vehicle that emits less than 1 g CO₂/km. A 'low-emission heavy-duty vehicle' is defined as a vehicle with specific CO₂ emissions of less than 350 g/km (about half the average fleet emissions).

CO₂ reduction targets

The average CO₂ emissions from new heavy-duty vehicles in 2025 would have to be 15 % lower than in 2019. The overall proposed target is translated into binding CO₂ emission targets in grams of CO₂/km for each manufacturer, taking into account the composition of its fleet, including technical and business characteristics. Manufacturers would have full flexibility to balance emissions between the different groups of vehicles within their portfolio.

For 2030, the proposal sets an indicative reduction target of at least 30 % compared to 2019. While the 2025 target could be met by deploying readily available cost-effective technologies, achieving a more ambitious 2030 target would require the implementation of new technologies that are not yet on the market.

The proposed regulation applies to four categories of large trucks, which together account for 65 %- 70 % of the CO₂ emissions from heavy-duty vehicles. It takes account of the specific characteristics of heavy-duty vehicles, which in certain respects differ substantially from cars and vans. Vocational vehicles, such as garbage trucks and construction vehicles, are exempted due to their limited potential for cost-efficient CO₂ reductions.

In order to provide for cost-effective implementation over time, the proposal would also allow the banking and borrowing of CO₂ credits from one year to the next. This would reduce compliance costs for manufacturers by allowing to factor in long development cycles in the industry, while protecting the environmental integrity of the targets. It would also reward early action. However, in

order to maintain the environmental integrity of the CO₂ target, credits can be banked only if the emissions are below a linear emission reduction trajectory. Total debts cannot exceed 5 % of the target, and a surplus of credits cannot be carried over into the next period.

Incentives for zero- and low-emission vehicles: super-credits

The proposal includes incentives for zero- and low-emission vehicles in the form of 'super-credits', where each zero-emission vehicle is counted as two vehicles. Each low-emission vehicle is counted as less than two vehicles, in relation to its CO₂ emissions. To limit the risk of weakening the CO₂ targets, the average emissions of a manufacturer can be lowered, based on the super-credits earned, by no more than 3%.

In order to boost innovation, zero-emission buses, coaches and small trucks can also benefit from super-credits, but in this case the average emissions of a manufacturer cannot be lowered by more than 1.5 %, to avoid distortions in the market. These incentives are intended to help the sector and public authorities in developing an EU market for these vehicles, as they foster innovation and the required investment in clean transport technologies.

Adequate governance of the performance standards would be ensured by the application of financial penalties in case the target is not met; by the collection, publication and monitoring of real-world emission data; and by the introduction of in-service conformity tests coupled with a mechanism to adjust the reported emissions in case of significant deviations from type-approval.

The Commission proposes to review the legislation in 2022, so as to set the binding target for 2030 and to extend its scope to smaller trucks, buses, coaches and trailers. The review should also assess the effectiveness of the modalities for implementation, for instance, the incentive system for zero and low-emission vehicles.

Advisory committees

The European Economic and Social Committee [opinion](#) adopted on 17 October 2018 (rapporteur Stefan Back, Employers – Group I, Sweden) welcomes the Commission proposal for its challenging, but balanced approach; calls for more clarity about CO₂ targets after 2030; highlights the importance of technology-neutral regulation; notes the complexity of the proposal and points out that the definitions of low and zero-emission vehicle in the vehicle-related legislative proposals⁶ are not aligned; underlines the importance of testing the actual CO₂ performance of vehicles in real driving conditions; calls for using the revenue from excess emission premiums to finance the development of sustainable solutions in the automotive sector and the transport sector.

The European Committee of the Regions decided not to issue an opinion on this proposal.

National parliaments

By the subsidiarity deadline on 24 September 2018, 14 [parliamentary assemblies](#) had scrutinised the proposal. The [Czech Senate](#) considers it overly ambitious and recommends lowering the 2025 target to 10 % and the 2030 target to 20 %. The others did not submit comments.

Stakeholders' views⁷

The European Automobile Manufacturers' Association ([ACEA](#)) welcomes the introduction of CO₂ standards for trucks, but considers that a realistic ambition level would be a 7 % CO₂ reduction by 2025 and a 16 % reduction by 2030. ACEA's [position paper](#) on CO₂ standards calls for a technology-neutral regulation and advocates an integrated approach to reducing heavy-duty vehicles' CO₂ emissions, which addresses not only the vehicle but also freight logistics, driver training, maintenance, tyres and alternative fuels.

The [International Council on Clean Transportation](#) (ICCT) applauds the Commission proposal, saying it sets fair, far-sighted and achievable targets that would accelerate the uptake of existing fuel-saving technologies, and give sufficient lead time for the development of emergent technologies.

[Transport and Environment](#) (T&E), an environmental NGO, generally welcomes the proposal, but considers that it makes an insufficient contribution to achieving the EU's climate goals, and falls short of the expectations of hauliers and businesses.

The European Association for Forwarding, Transport, Logistics and Customs Services ([CLECAT](#)) considers the proposal an important step towards improving the emissions performance and efficiency of the logistics system, which will increase the competitiveness of European transport and logistics by reducing fuel costs and maintaining technological leadership.

More than 30 companies, including Carrefour, Nestlé, Ikea, Heineken und Unilever, addressed an [open letter](#) to the Commission, calling for a 24 % reduction in the fuel consumption of tractor units and an ambitious mandatory sales target for zero-emission trucks.

[Eurelectric](#), representing the European electricity industry, considers electrification of heavy-duty vehicles the long-term solution for decarbonising the road freight sector, supported by the decarbonisation of the European electricity sector, which is committed to achieving carbon neutrality by 2050.

Legislative process

In the European Parliament, the proposal was referred to the Committee on Environment, Public Health and Food Safety (ENVI), which appointed Bas Eickhout (Greens/EFA, the Netherlands) as rapporteur. He published his [draft report](#) on 16 July 2018, and the ENVI committee adopted its [report](#) on 18 October 2018.

Parliament adopted its [position](#) on 14 November 2018 and gave the ENVI committee a mandate for trilogue negotiations. It would increase the emissions reduction target for new heavy-duty vehicles in 2025 to 20 %, and the indicative target for 2030 to 35 %. It would establish a benchmark⁸ for the share of low and zero-emission vehicles in each manufacturer's fleet (5 % from 2025 and 20 % from 2030), instead of super-credits. It defines 'low-emission heavy-duty vehicle' as a vehicle with CO₂ emissions at least 50 % below the reference CO₂ emissions for each relevant sub-group of vehicles. Connected manufacturers would be allowed to form a pool for the purposes of meeting their obligations with respect to emission-reduction targets and benchmarks. Excess emissions premiums paid by manufacturers would have to be used for promoting the development of skills or the reallocation of workers in the automotive sector.

In addition, Parliament's position modifies the Directive on [Weights and Dimensions](#) (Directive 96/53/EC, amended by Directive (EU) 2015/719) to increase the maximum authorised weight of heavy duty vehicles to account for the extra weight of alternative fuel technology by a maximum of one tonne, and of zero-emission technologies by a maximum of two tonnes.

Finally, under Parliament's position, the Commission would have to:

- establish an annual testing scheme for a representative sample from each manufacturer of vehicle components, technical units and systems, as of 2019;
- introduce an on-road, in-service conformity test by 31 December 2019 to ensure that real-world CO₂ emissions and fuel consumption of heavy-duty vehicles do not exceed the monitoring data by more than 10 %;
- develop a methodology for computing average fleet emissions taking into account the effect of use of advanced and renewable gaseous transport fuels for compressed and liquefied natural gas (CNG/LNG) applications, by 31 December 2020;
- evaluate possibilities of assessing the full life-cycle CO₂ emissions of all heavy-duty vehicles, for its report on the effectiveness of the regulation due on 31 December 2022.

In the Council, the Working Party on the Environment started discussing the proposal on 8 June 2018. The Environment Council held a first [policy debate](#) on the proposal on 9 October 2018.

The Environment Council adopted the [general approach](#) on the proposal on 20 December 2018. The Council position sets a binding CO₂ reduction target of 30 % by 2030, unless decided otherwise in a review of the regulation in 2022. It introduces mandatory reporting of information related to the real-world CO₂ emissions and energy consumption of heavy-duty vehicles.

Trilogue negotiations started in January 2019 and concluded with an informal agreement on 18 February 2019. The [agreed text](#) sets a legally binding 30 % reduction target for the average fleet emissions of new trucks by 2030. It defines a 'low-emission heavy-duty vehicle' as a vehicle, which is not a zero-emission vehicle, with specific CO₂ emissions of less than half of the reference CO₂ emissions of all vehicles in its sub-group. In order to encourage the sale of more zero- and low-emission heavy-duty vehicles, a manufacturer that meets a benchmark of 2 % of total sales from 2025 onwards will be rewarded with less strict CO₂ targets.

The agreed text sets a new reference period: 1 July 2019 to 30 June 2020 (half a year later than the Commission proposal) and twelve-month reporting periods starting on 1 July (instead of 1 January in the Commission proposal). The excess emission premium for the period 2025 to 2029 is set at €4 250/g CO₂/tkm), instead of €6 800 in the Commission proposal. From 2030, the excess emission premium is set at €6 800.

The Commission must establish a methodology for assessing the conditions under which the reference CO₂ emissions have been established, and criteria to determine whether they have been unduly increased. If this is the case, corrected reference CO₂ emissions must be published no later than 30 April 2022.

The Commission must regularly collect data on the real-world CO₂ emissions and energy consumption of heavy-duty vehicles using on-board fuel- or energy-consumption-monitoring devices, including vehicle identification number, fuel or electric energy consumed, distance travelled and payload. The Commission must monitor the gap between reported and real-world fuel consumption and CO₂ emissions, report annually and, in 2027, assess the feasibility of adjusting manufacturers' average CO₂ emissions as of 2030. The agreed text introduces new provisions for verifying the CO₂ emissions of vehicles in-service and the presence of any strategies that artificially improve the vehicle's performance in the tests or calculations for certifying the CO₂ emissions and fuel consumption.

The Commission will be required to thoroughly review the effectiveness of the regulation by 31 December 2022 and to submit a report, and potentially a proposal for amending the regulation, to the Parliament and the Council. As part of this review the Commission must assess the introduction of CO₂ reduction targets for other types of heavy-duty vehicles including trailers, buses and coaches, vocational vehicles and of binding emission reduction targets for 2035 and 2040 onwards for heavy-duty vehicles. It must evaluate the potential contribution of synthetic and advanced alternative liquid and gaseous renewable fuels, as well as the possibility of taking the life-cycle emissions from vehicles into account for future CO₂ regulations. The Commission must consider the possibility of allocating revenue from the excess emission premiums to a dedicated fund or relevant programmes aimed at ensuring a just transition towards a climate-neutral economy and submit a legislative proposal to that effect by 2027, if appropriate. The funds would be used to support training and reallocation of workers in the automotive sector, especially in the most affected regions.

Coreper approved the agreed text on 22 February 2019 and the ENVI committee did so on 27 February 2019. The Parliament adopted the regulation during the April II 2019 plenary session, and the Council on 13 June 2019. The final act was signed on 20 June and published in the [Official Journal](#) on 25 July. It entered into force on 14 August 2019.

EP SUPPORTING ANALYSIS

Erbach, G., [Effort sharing regulation, 2021-2030, Limiting Member States' carbon emissions](#), European Parliament, EPRS, July 2018.

Pape, M., [Towards low-emission EU mobility](#), European Parliament, EPRS, March 2017.

Erbach, G., [Monitoring and reporting of CO2 emissions and fuel consumption of heavy-duty vehicles](#), European Parliament, EPRS, June 2018.

Vettorazzi, S., [Setting CO2 emission performance standards for new heavy-duty vehicles: Initial Appraisal of a European Commission Impact Assessment](#), European Parliament, EPRS, September 2018.

OTHER SOURCES

[New heavy-duty vehicles: CO2 emission performance standards](#), Legislative Observatory (OEIL), European Parliament.

European Environment Agency, [Carbon dioxide emissions from Europe's heavy-duty vehicles](#), April 2018.

International Energy Agency, [The Future of Trucks: Implications for Energy and the Environment](#), July 2017.

Dan Meszler et al., [EU HDVs: Cost-effectiveness of fuel-efficiency technologies for long-haul tractor-trailers in the 2025-2030 timeframe](#), International Council on Clean Transportation, January 2018.

Rachel Muncrief and Ben Sharpe, [Overview of the heavy-duty vehicle market and CO2 emissions in the European Union](#), International Council on Clean Transportation, December 2015.

[The European Commission's proposed CO2 standards for heavy-duty vehicles](#), International Council on Clean Transportation, June 2018.

Tim Breemersch, [New integrated approach to reducing CO2 emissions from heavy-duty vehicles](#), Transport & Mobility Leuven, April 2017.

ENDNOTES

- ¹ Daimler Trucks, MAN Truck and Bus, Volvo Trucks, Scania, DAF (Paccar Group) and Iveco.
- ² CO₂ emission standards for cars were introduced by [Regulation \(EC\) No 443/2009](#) and strengthened by [Regulation \(EU\) No 333/2014](#), which sets a CO₂ emissions standard at 95 g/km as of 2020. A similar CO₂ standard for vans was established by [Regulation \(EU\) No 510/2011](#) and reinforced by [Regulation \(EU\) No 253/2014](#), which sets a CO₂ standard of 147 g/km as of 2020. In December 2018, Parliament and Council reached a trilogue agreement on a Commission [proposal](#) setting CO₂ emission standards for new cars and light commercial vehicles (vans). Average fleet-wide CO₂ emissions from new passenger cars and vans registered in the EU will have to be 15 % lower in 2025, compared to their respective limits in 2021. The reduction targets for 2030 are 37.5 % for passenger cars and 31 % for vans. The agreed text also includes a dedicated incentive mechanism (super-credits) for zero- and low-emission cars, in order to accelerate their market uptake.
- ³ The US Environmental Protection Agency [announced](#) in April 2018 its plans to loosen [CO₂ emission standards for trucks](#), which would affect vehicles for model years 2022-2025.
- ⁴ The targets are set for each category of vehicle and each Member State. For buses, Member States must reach a share of clean vehicles ranging from 29 % to 50 % in 2025 and from 43 % to 75 % in 2030, and for trucks – from 6 % to 10 % (2025) and from 7 % to 15 % (2030).
- ⁵ The impact assessment identifies the following cost-effective technologies: improved lubricants, improved selective catalytic reduction (SCR) and optimised SCR heating methods, aerodynamic mud flaps, tyre-pressure monitoring systems, closable front grille, cooling fan, friction reduction and improved water and oil pumps, air compressor, reduced losses (lubricants, design), predictive cruise control, downspeeding with optimised map, improved turbocharging and exhaust gas recirculation, side and underbody panels on truck chassis, and low rolling resistance tyres on trucks/tractors.
- ⁶ [Clean Vehicles Directive](#) (2017/0291(COD)), [CO₂ emission standards for new cars and vans](#) (17/0293(COD)), [CO₂ emission standards for heavy-duty vehicles](#) (2018/0143(COD)).
- ⁷ This section aims to provide a flavour of the debate and is not intended to be an exhaustive account of all different views on the proposal. Additional information can be found in related publications listed under 'EP supporting analysis'.
- ⁸ Manufacturers that exceed the benchmark would be rewarded with less strict emission limits, while those that do not reach the benchmark would have a stricter target.

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