

April 2017

Emission performance standards for new passenger cars and light commercial vehicles

[Regulation 443/2009](#) setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles; and [Regulation 510/2011](#) setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO₂ emissions from light-duty vehicles

This briefing is one in a series of 'Implementation Appraisals', produced by the European Parliament Research Service (EPRS), on the operation of existing EU legislation in practice. Each such briefing focuses on a specific EU law which is, or will shortly be, subject to an amending proposal from the European Commission, intended to update the current text. 'Implementation Appraisals' aim to provide a succinct overview of material publicly available on the implementation, application and effectiveness of an EU law to date – drawing on available input from, inter alia, the EU institutions and advisory committees, national parliaments, and relevant consultation and outreach exercises. They are provided to assist parliamentary committees in their consideration of the new Commission proposal, once tabled.

EP committees responsible at time of adoption of the EU legislation: Committee on Environment, Public Health and Food Safety (ENVI) and Committee on Industry, Research and Energy (ITRE) as associated committees.

Date of adoption of original legislation in plenary: [17 December 2008](#) for cars, and [15 February 2011](#) for vans.

Implementation deadline: manufacturers have to comply with the new CO₂ emissions targets as of 1 January 2012 for cars, and as of 1 January 2014 for vans.

Planned date for review of legislation: for cars, according to [Regulation \(EU\) No 333/2014 of 11 March 2014](#), which amends [Regulation 443/2009](#), the European Commission will establish new CO₂ emissions targets for the period beyond 2020, and the modalities, including whether a utility parameter is needed and whether mass or footprint could be the more sustainable utility parameter, by 31 December 2015.

For vans, according to [Regulation \(EU\) No 253/2014 of 26 February 2014](#), which amends [Regulation 510/2011](#), the Commission will establish new CO₂ emissions targets for the period beyond 2020 by 31 December 2015. In neither case did the European Commission submit amending proposals before the expiry of the planned deadline for review.

Timeline for new amending legislation: proposals amending the legislation related to these two regulations are expected in the second quarter of 2017 (see [Commission's 2017 work programme](#)¹ and its [Annex](#)²).

1. Background

There is a broad consensus among the scientific community that human emissions of greenhouse gases (GHG), particularly carbon dioxide (CO₂) are causing and contributing to climate change. Under the 1992 [United Nations Framework Convention on Climate Change](#) (UNFCCC), there was a general agreement to limit the increase in global warming to below 2 degrees Celsius compared with the average temperature in pre-industrial times, in order to prevent the worst impacts of climate change.

¹ COM(2016) 710

² COM(2016) 710

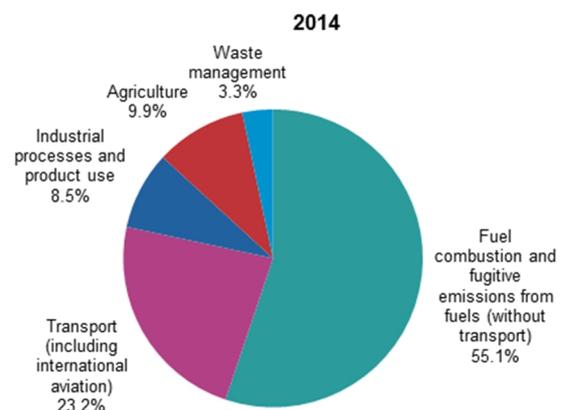
The European Union (EU) has long been committed to international efforts to tackle climate change. Indeed, the EU played a key role in the entry into force of the world's first legally binding treaty to reduce GHG emissions, the [Kyoto Protocol](#), and has led the way on the implementation of measures to reduce GHG emissions within its territory. The EU can also be considered to have achieved success with the conclusion of the [Paris Agreement](#) in December 2015, having been a major party in the 'high ambition coalition' calling for significant mitigation commitments.³

In addition to its major international involvement, the EU has built its reputation as a pioneer in climate policy, by leading by example. The EU has taken many initiatives since 1992, when the European Commission issued its first [strategy to limit CO₂ emissions and improve energy efficiency](#). However, it was clear that additional action by both Member States and the EU was needed to succeed in cutting EU GHG emissions to 8 % below 1990 levels by 2008-2012, as required by the Kyoto Protocol. In March 2007, two years before the Copenhagen climate summit,⁴ the European Council endorsed⁵ the European Commission's [integrated energy and climate policy package](#),⁶ whose major commitment was a unilateral 20 % reduction in GHG by 2020, compared with 1990 levels. Following the same logic, the Heads of State or Government decided in October 2014 to set ambitious goals, including a reduction of GHG emissions by 40 % by 2030,⁷ compared with 1990 levels, even before the signing of the Paris agreement. These European Council [conclusions](#) set out the EU reduction in GHG emissions as follows:

- In sectors covered by the EU emissions trading system (ETS), the target is a 43 % reduction by 2030 compared with 2005. The ETS includes many sectors, ranging from large-scale facilities in the power and industry sectors to aviation, and accounts for around 45 % of the EU's GHG emissions. In practice, it sets a cap on the quantity of certain GHGs that can be emitted, that cap being reduced over time. Within that cap, companies receive or buy emission allowances that they can trade as needed.
- In sectors not covered by the EU ETS (non-ETS sectors) the target is a 30 % reduction by 2030, compared with 2005. This covers other sectors, such as housing, agriculture, waste, transport (excluding aviation) and accounts for some 55 % of total EU GHG emissions.

Transport is responsible for almost a quarter of the EU's total GHG emissions. It is therefore of the utmost importance to tackle the issue of vehicle efficiency, and low emission mobility, to achieve the necessary reductions in the non-ETS sectors,⁸ and the EU's commitments under the Paris agreement.

In addition, emissions from transport in 2014 were 20.1 % above 1990 levels, despite a decline between 2008 and 2013. Emissions from road transport increased by 17 % compared with 1990 levels.⁹ **Transport GHG emissions need to fall by around two thirds by 2050**, compared with 1990 levels, in order to meet the long-term 60 % GHG emission reduction target set out in the 2011 Transport [White Paper](#).¹⁰



GHG emissions, by source sector, EU-28, 2014 (% of total)
Source: Eurostat ([env air gge](#)), European Environment Agency

2. Legislation

Efforts to reduce CO₂ from cars and vans in the EU were originally a response to the conclusion of the [Kyoto Protocol](#) and date back to 1999, when a [voluntary agreement](#) was reached between the European

³ <http://www.climatechangenews.com/2015/12/14/foie-gras-oysters-and-a-climate-deal-how-the-paris-pact-was-won/>

⁴ http://unfccc.int/meetings/copenhagen_dec_2009/meeting/6295.php

⁵ 8-9 March 2007, Council of the European Union, Presidency [conclusions](#)

⁶ COM (2007) 1

⁷ 23-24 October 2014, Council of the European Union, Presidency [conclusions](#)

⁸ European Commission [impact assessment](#) accompanying the [policy framework for climate and energy in the period from 2020 up to 2030](#)

⁹ <http://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases/transport-emissions-of-greenhouse-gases-6>

¹⁰ COM (2011) 144

Commission and the Association of European Automobile Manufacturers (ACEA). Under this agreement, the industry committed to reduce average CO₂ emission figures for all new cars to 140 g/km by 2008.

Annual reporting on these efforts¹¹ demonstrated, however, that while some progress was being made in reducing emissions, manufacturers collectively were failing to meet their own commitments. The European Commission thus decided to introduce mandatory CO₂ standards for all new passenger cars in 2009. [Regulation No 443/2009](#) established a 2015 target of 130 g/km for the fleet average of all manufacturers combined. Individual manufacturers were allowed a higher or lower CO₂ emission value, depending on the average vehicle weight of their fleet. This regulation, in contrast to pollutant emissions regulations,¹² does not set maximum limits per vehicle: the heavier the average weight of the cars sold by a manufacturer, the higher the CO₂ level allowed. A similar CO₂ standard for vans was introduced in 2011.¹³ It sets a target of 175 g/km for 2017.

Targets were then reinforced in early 2014, with the European Parliament and the Council of the European Union reaching an agreement on mandatory 2020 CO₂ emission targets:

- passenger cars are set at 95 g/km of CO₂, phasing in for 95 % of vehicles in 2020 with 100 % compliance in 2021,¹⁴
- light-commercial vehicle standards are 147 g/km of CO₂ for 2020.¹⁵

Mandatory CO₂ emission targets:

- 95 g/km for cars in 2021
- 147 g/km for vans in 2020

The 2015 and 2021 targets represent reductions of 18 % and 40 % respectively compared with the 2007 fleet average of 158.7 g/km.

The regulations also contain specific provisions on technologies that should be taken into account when reducing the specific CO₂ emissions target of a manufacturer.

For cars, **eco innovative technologies** will be taken into account if the methodology used to assess them is capable of producing verifiable, repeatable and comparable results.

For vans, **alternative fuel vehicles** (capable of running on a mixture of petrol with 85 % bioethanol (E85), and which comply with relevant EU legislation or European technical standards) a reduction in the calculation of CO₂ emissions will be allowed.

3. Monitoring, reporting and review clauses

The **monitoring and reporting** requirements are set out in Article 8 of each of the regulations and are further specified in delegated and implementing acts.¹⁶

Each Member State has to monitor and report relevant data to the European Commission each year. In particular, the following details are required for each new passenger car and van registered: manufacturer name, type approval number, type, variant, version, make and commercial name, specific emissions of CO₂, mass of the vehicle, wheel base, track width, engine capacity, fuel type and fuel mode.

¹¹ For instance: 'How Clean is Your Car Brand? – The car industry's commitment to the EU to reduce CO₂ emissions: a brand-by-brand progress [report](#)', European Federation for Transport and environment, October 2006

¹² Emissions of particulate matter (PM), nitrogen oxides (NO and NO₂, when measured combined they are referred to as NO_x), un-burnt hydrocarbons (HC) and carbon monoxide (CO) are pollutants regulated by 'Euro emissions standards'. Current standards for light duty vehicles (cars and vans) are **Euro 6**: Regulation (EC) [715/2007](#).

¹³ [Regulation \(EU\) No 510/2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO₂ emissions from light-duty vehicles.](#)

¹⁴ [Regulation \(EU\) No 333/2014 of 11 March 2014 amending Regulation \(EC\) No 443/2009 to define the modalities for reaching the 2020 target to reduce CO₂ emissions from new passenger cars.](#)

¹⁵ [Regulation \(EU\) No 253/2014 amending Regulation \(EU\) No 510/2011 to define the modalities for reaching the 2020 target to reduce CO₂ emissions from new light commercial vehicles.](#)

¹⁶ [Commission Regulation \(EU\) 1014/2010 on monitoring and reporting of data on the registration of new passenger cars pursuant to Regulation \(EC\) 443/2009 of the European Parliament and of the Council and Commission Implementing Regulation 2012/293/EU on monitoring and reporting of data on the registration of new light commercial vehicles pursuant to Regulation 510/2011 of the European Parliament and of the Council.](#)

Since 2010 the European Environment Agency (EEA) has been collecting data from cars and vans registered in all EU Member States. All data for [cars](#) and [vans](#) are openly available on the EEA website. Following the collection of data, the EEA publishes an annual monitoring report.

The latest report on **Monitoring CO₂ emissions from new passenger cars and vans** was published on 16 December 2016.¹⁷ It presents the 2015 main statistics by Member States, as well as the progress made by manufacturers towards their targets. The main findings are the following:

- New cars sold in the EU in 2015 had average emissions of 119.5 g CO₂/km, which was 8.0 % below the 2015 target, and 3.1 % lower than in 2014.
- The average emissions of new light commercial vehicles in 2015 were 168.3 g CO₂/km, below the 2017 target of 175 g CO₂/km; a reduction of 0.4 % compared with 2014.

Official data indicate a progressive decline in CO₂ emissions from cars. But there is increasing evidence to suggest that officially reported CO₂ values do not reflect the actual performance of the vehicles on the road.

The regulations also include **review clauses to establish CO₂ emission targets for the period beyond 2020 and 2021.**

According to Article 13 of both regulations, by 31 December 2015 the European Commission was required to review the emission targets, modalities, and other aspects needed to set standards beyond 2020. The review clauses also require targets to be

set so as to maintain a 'clear emissions reduction trajectory, comparable to that achieved in the period to 2020'.

These reviews to establish post-2020 CO₂ emission targets for cars and vans were announced by the European Commission in February 2015,¹⁸ then included in the [European strategy for low-emission mobility](#)¹⁹ and finally announced by the [2017 Commission Work Programme](#)²⁰ and confirmed in the [Updated Roadmap for the Energy Union – State of play: 1 February 2017](#).²¹ The reviews will have to take into account the new worldwide harmonised light vehicles test procedure (WLTP)²² for CO₂ emissions, with the aim of increasing the efficiency of transport, including a gradual shift to zero-emission vehicles.

The European Commission published an [inception impact assessment](#) on 20 July 2016 announcing the launch

The current European type-approval procedure for fuel consumption and CO₂ emissions of cars (the new European driving cycle, or NEDC) includes a number of tolerances and flexibilities and is considered to no longer accurately reflect state-of-the-art technologies. The EU will replace it with the newly developed worldwide harmonised light vehicles test procedure (WLTP) in September 2017. The WLTP differs in some details from the NEDC, which will affect the determination of the official EU type-approval emission values. This also has consequences for the NEDC-based passenger car CO₂ emissions target for 2020/2021 (95 g CO₂/km), which will have to be adapted to the new testing procedure.

of a [public consultation](#) (see below) and the continuation of the impact assessment started in July 2015. The inception impact assessment states that there are still a range of market barriers inhibiting the development and deployment of CO₂-reducing technologies with lower costs than benefits and that regulation is required to develop and deploy CO₂-reducing technology. To reach that objective, the inception impact assessment outlines six scenarios – but clearly favours option 3: reviewing the existing legislation for the period beyond 2020. It underlines that the assessment of options will explore a range of different aspects

¹⁷ http://www.eea.europa.eu/publications/monitoring-co-2-emissions-from/at_download/file

¹⁸ Energy Union Strategy, [COM \(2015\) 80](#)

¹⁹ COM (2016) 501

²⁰ COM(2016) 710

²¹ COM (2017) 53

²² Adopted by the technical regulatory committee gathering Member States representatives (Technical Committee of Motor Vehicles) on 14 June 2016. The WLTP introduces a new, more realistic, test procedure for measuring CO₂ emissions and fuel consumption from cars and vans.

identified in the 2015 evaluation,²³ by the co-legislators and by stakeholders. The European Commission states that the impact assessment will make sure that the revised legislation contributes to the 2030 climate and energy targets and the longer-term decarbonisation objective in a cost effective way.

That was reaffirmed by Commissioner Miguel Arias Cañete, Commissioner responsible for Climate action and Energy, on 13 March 2017,²⁴ in the European Parliament's Committee on the Environment, Public Health and Food Safety (ENVI). He underlined that the impact assessment would look at the costs and benefits of different options, including for the synergy and the timing of the targets, as well as for incentives for low and zero emission vehicles. He confirmed that the post-2020 targets would be based on the WLTP. Finally, the Commissioner indicated that the drafting of the legislative proposal was ongoing, with a view to publication before the summer of 2017.

The European Commission will present a revision of the cars and vans regulations in 2017, setting CO₂ emission performance standards with post-2020 targets.

4. European Commission public consultation

The European Commission conducted a [public consultation](#) on the revision of the cars and vans regulations from 20 July 2016 until 29 October 2016 (12 weeks). The objective of the consultation was to collect the views of stakeholders and citizens and it was divided into two sections: general questions and technical questions, intended for a well-informed audience. The results of the consultation should be summarised and published on the European Commission website, but no indicative timing is available.

5. EU-level reports and studies

European Parliament [study](#) on the differences between the EU and US legislation on emissions in the automotive sector,²⁵ December 2016

This study was requested by the European Parliament Committee of Inquiry into Emission Measurements in the Automotive Sector (EMIS). It provides a comparative study on the differences between EU and US legislation on emissions in the automotive sector. EU and US legislation on GHG emissions differ in terms both of historical development and of how targets are set and measured. Comparing the standards is therefore challenging. Whereas the EU, after some debate during the adoption process of the regulation on CO₂ emissions from passenger cars²⁶, sets its CO₂ emissions standards on a fleet-average basis calculated by the mass of each vehicle, the fleet average standards in the US are based on the 'vehicle footprint', defined as the product of the average track width (the distance between the centreline of the tires) and wheelbase (the distance between the centres of the axles). Each vehicle footprint value is then assigned a target specific to that footprint value. Compliance is then determined by comparing a manufacturer's fleet average fuel economy in a model year with a required fuel economy level calculated using the manufacturer's actual production levels and the category targets. The latter approach gives manufacturers a stronger incentive to reduce emissions, for example by using lighter materials.

[Trends and projections in Europe 2016: Tracking progress towards Europe's climate and energy targets](#), EEA, prepared for the European Commission, December 2016

Here the European Environment Agency provides an assessment of the progress of the EU and Member States towards achieving their climate mitigation and energy policy objectives. The report states that the EU is well on track to achieving its GHG emission reduction target of a 20 % decrease compared with 1990 levels by 2020. However, the pace of GHG emission reductions is projected to slow down after 2020. A continuation of this pace will not be sufficient to achieve the EU's target of a 40 % reduction by 2030 (compared with 1990

²³ See below, [Evaluation](#) of Regulations 443/2009 and 510/2011 on CO₂ emissions from light-duty vehicles

²⁴ <http://www.europarl.europa.eu/ep-live/fr/committees/video?event=20170313-1900-COMMITTEE-ENVI>

²⁵ This study was commissioned by Policy Department A at the request of the committee of inquiry into emission measurements in the automotive sector (EMIS) and carried out by external contractors.

²⁶ Regulation (EC) No 443/2009

levels). Even faster rates of GHG emission decreases are necessary to achieve a reduction of 80 %, or of 95 % by 2050, even if the 2030 target is met.

The report shows that the second largest increase in fuel combustion emissions occurred in transport (+20.2 Mt CO₂-eq) – after 'Other sectors' that consist mainly of residential and commercial activities. This seems to be a trend in almost all EU Member States, as emissions from transport increased in 22 Member States. The largest increases were in Poland (+3.1 Mt CO₂-eq), Italy (+3.0 Mt CO₂-eq) and Spain (+2.7 Mt CO₂-eq), while the largest reductions were in Greece (–0.3 Mt CO₂-eq).²⁷

[Closing the gap between light-duty vehicle real-world CO₂ emissions and laboratory testing](#), Scientific Opinion No 1/2016 from the High-Level Group of Scientific Advisors, prepared for the European Commission, November 2016

The high-level group points out that compliance of new cars with the cars and vans regulations is verified by laboratory testing. However, there is a significant and growing gap between declared CO₂ emission rates and their average real-world emissions. The opinion highlights that this may undermine the effectiveness of the cars and vans regulations, while also affecting national taxation and misleading consumers.

According to the high-level group, [Regulation 333/2014](#), adopting the WLTP is a step in the right direction. However, while the new legislation for pollutants provides for verification of laboratory-based measurements of pollutants through real driving emissions (RDE) testing, this is not the case for CO₂ emissions.

Consequently, the High-Level Group of Scientific Advisors recommends that the introduction of the WLTP should be complemented by a number of measures that allow the monitoring of real driving emissions as well as actions that help build consumer trust in the regulatory system. A framework for monitoring the development of the gap between type approval testing and real driving emissions could be set up, including by:

- using data from portable emissions measurement systems (PEMS), which include the measurement of CO₂, to monitor the gap;
- developing targeted ex-post RDE methodology for CO₂ emissions;
- framing a standard approach to collecting, storing, using and communicating fuel consumption values, as fuel consumption could be a reliable and cost-effective indicator of the tank to-wheel CO₂ emissions of a car.

Finally, the high-level group underlines that there is an urgent need to find more robust methods for setting standards and monitoring carbon emissions from light-duty vehicles to underpin future policies and legislation designed to reduce the EU's overall carbon emissions and incentivise the uptake of low carbon technologies.

[Towards Low-Emission Mobility](#) Strategic Note, European Political Strategy Centre (EPSC) of the European Commission, 20 July 2016

Reaffirming EU leadership in the mobility sector, the strategic note adds that the EU should adopt a more comprehensive approach to mobility that encompasses maximising efficiency and creating synergies across sectors – from transport to the energy and digital sectors. It underlines that the EU should have a systemic approach that acts at the intersection between technology, infrastructure financing, multi-modal mobility and public-private partnerships. This implies coherence between mutually reinforcing policies such as climate, energy, transport, the circular economy, industrial competitiveness, and research and innovation.

European Commission [Staff Working Document](#) on the implementation of the 2011 Transport White Paper, 1 July 2016

The European Commission published a staff working document²⁸ on 1 July 2016 stating that setting new targets for CO₂ emissions from cars and vans in 2014 was a major achievement and that the post-2020 CO₂

²⁷ Based on the Member States' 2016 GHG inventories submitted to UNFCCC for the years 1990-2014 and proxy estimates for 2015.

²⁸ SWD(2016) 226.

emission standards for cars and vans are under development. The European Commission underlines that evaluation work is ongoing, and that it envisages including CO₂ criteria as an incentive for the use of cleaner vehicles in a planned revision of the Eurovignette Directive.²⁹

Finally, the European Commission adds that shifting to CO₂-free cities, would mean not only phasing out conventional cars but also changing the way cars are used, e.g. by increasing the occupancy rate through car-/ride-sharing and offering viable alternatives to the use of private cars.

[Evaluation of Regulations 443/2009 and 510/2011 on CO₂ emissions from light-duty vehicles, prepared for the European Commission, 8 April 2015](#)

On 8 April 2015, the European Commission issued an extensive evaluation of the existing regulations, as part of REFIT. The ex-post evaluation covers the regulations for both cars and vans, and shows that they **have been effective in reducing CO₂ emissions** from new cars by 138 MtCO₂ and from new vans by 5 MtCO₂.³⁰ It points out that while the regulations have been largely effective and have delivered CO₂ reductions at a lower cost than originally foreseen, there are still areas deserving of consideration in the future revision. These include the measurement of the emissions and the utility parameter (a way to differentiate between manufacturers' fleets), upstream emissions from energy production and embedded emissions from vehicle manufacture. The evaluation recognises that the regulations entail a small administrative burden, but notes that this was not an issue raised by stakeholders and does not appear to be significant. It also states that market fragmentation would likely result from uncoordinated Member State level action with the use of differing tools and levels of ambition. This would lead to higher costs, both for industry and vehicle purchasers, for achieving the goal and probably be less effective at actually reducing GHG emissions. Current evidence from the use of CO₂-linked vehicle taxation clearly demonstrates the widely differing approaches that would result from Member State action and the additional costs this would cause.

The analysis also highlights some key weaknesses that may need to be addressed in future policy proposals:

- **Test cycle:** test cycle performance is not an accurate reflection of real-world emissions. This is a significant concern as the increasing discrepancy between test cycle and real-world emissions performance has eroded the benefits of the regulations.
- **Well-to-tank emissions:** the regulations incentivise the use of powertrains that have 'zero' CO₂ emissions as measured on the test cycle, but which have higher indirect emissions associated with their production than fossil fuels. These emissions are not considered within the regulations.
- **Embedded emissions:** the regulations incentivise the use of vehicles that have higher GHG emissions associated with their production and disposal than more conventional vehicles; these are not considered within the regulations either.

Finally, the evaluation recalls that the ultimate aim of the regulations is to deliver CO₂ emission reductions in the real world. While CO₂ emissions as measured on the test cycle are one element of this, there are other external trends that influence CO₂ emissions from the transport sector. This evaluation provides a good basis for assessing elements that could be improved in future legislation.

[Transport and Environment Reporting Mechanism \(TERM\) 2012: transport indicators tracking progress towards environmental targets in Europe, European Environment Agency, 2012](#)

This 2012 report includes the first assessment of progress towards targets set out in key transport and environment-related policy and legislation. It recalls that average emissions of CO₂ for the new car fleet are monitored annually by the European Commission and the EEA and stresses that these emissions decreased from 140.2 g CO₂/km in 2010 to 135.7 g CO₂/km in 2011. If similar progress is made each year, then the 2020 target for passenger cars of achieving a fleet average of 95 g CO₂/km will be achieved.

[White paper on transport, prepared by the European Commission, 28 March 2011](#)

²⁹ Directive [1999/62/EC](#) of the European Parliament and of the Council of 17 June 1999 on the charging of heavy goods vehicles for the use of certain infrastructures.

³⁰ Ex-post estimate of the lifetime real-world well-to-wheels CO₂ savings for new cars registered between 2006 and 2013.

On 28 March 2011, the European Commission adopted its white paper³¹ on transport. It provides a roadmap of 40 concrete initiatives to be completed by 2020. Key goals to be achieved by 2050 include:

- no more conventionally-fuelled cars in cities;
- a 50 % shift of medium distance intercity passenger and freight journeys from road to rail;
- all of which will contribute to a 60 % cut in transport emissions by the middle of the century;

6. European Parliament position

6.1. Parliament reports and resolutions

[Report on the inquiry into emission measurements in the automotive sector](#), 2 March 2017

The EMIS Committee report³² adopted in April 2017, points out that the EU fleet average targets are more ambitious than those in place for CO₂ emissions in the USA.

The report also states that an analysis of the difference between laboratory tests and real world emissions revealed discrepancies in CO₂ emissions and fuel economy, with on-road CO₂ emissions up to 40 % higher than those measured in type-approval tests.³³ It goes on to underline that 'the WLTP has been chosen by the European Commission and Member States as the test procedure for CO₂ emissions' (paragraph 7), but does not express an opinion on whether this type of measure could be sufficient to tackle the problem.

It should be noted that this is almost the only time where CO₂ emissions are mentioned, although it was clearly in the EMIS mandate ('investigate whether the ban on defeat devices was properly enforced by the Member States and overseen by the European Commission, whether measures addressing the use of defeat devices were adopted by the European Commission, and whether there was evidence of the use of prohibited defeat devices before the Notice of Violation of the US EPA (also as regards CO₂ emissions)').

[Resolution of 2 December 2015 on sustainable urban mobility](#), 2 December 2015

Underlining the importance of sustainable urban mobility plans in achieving EU targets regarding CO₂ emissions, the report³⁴ points out that there is a need for a holistic approach to air pollution in European cities. It also adds that there is a need to set ambitious car emission performance standards for 2025 and 2030 in a timely review of the CO₂ and cars regulation ((EC) No 443/2009).

In its [response](#), the European Commission stresses the importance of transport decarbonisation and announces its [European strategy for low-emission mobility](#).³⁵

[Resolution on emission measurements in the automotive sector](#), 27 October 2015

The resolution³⁶ expresses deep concerns regarding the Volkswagen revelations about the manipulation of emission test results and calls on the European Commission to introduce measures to restore customers' confidence and prevent such occurrences in the future. It calls for the urgent adoption of the real driving emission (RDE) procedure and swift adoption of the WLTP. It states that discrepancies between test results and vehicle performance in normal use also exist for CO₂, and that according to independent studies the gap between official and real-world CO₂ emissions from cars in Europe stood at 40 % in 2014. It underlines that the existing fleet average CO₂ emission targets for manufacturers should be adapted to the new WLTP test, with due respect for the principle of 'comparable stringency'.

In its [response](#), the European Commission underlines that effective emission limits are a crucial instrument for reducing CO₂ from transport, and that a reduction can be achieved only with a systemic and integrated approach combining different policy instruments. This approach should accommodate the use of alternative energies in transport, increased energy efficiency of vehicles and vessels, and intelligent management of transport demand and infrastructure.

³¹ COM (2011) 144

³² 2016/2215(INI)

³³ The European Commission however specified (Press release, 25 September 2015, [http://europa.eu/rapid/press-release MEMO-15-5705_en.htm](http://europa.eu/rapid/press-release_MEMO-15-5705_en.htm)) that if defeat devices were used to influence CO₂ emissions tests, it was likely that their impact would be lower than for pollutant emissions.

³⁴ 2014/2242(INI)

³⁵ COM (2016) 501

³⁶ 2015/2865(RSP)

[Draft legislative resolution](#) on the proposal for a regulation of the European Parliament and of the Council amending Regulations No 715/2007 and No 595/2009 as regards the reduction of pollutant emissions from road vehicles, 29 September 2015

The ENVI Committee calls on the European Commission to carry out an in-depth impact assessment evaluating the proper conversion of methane emissions into CO₂ emissions and its feasibility within the framework of the revision of European Union legislation on the reduction of CO₂ emissions from cars and vans. It added that the European Commission should consider including methane emissions in the calculation of CO₂ emissions only for the post-2020 period, after carrying out a clear and detailed impact assessment.

6.2. Hearings and workshops

The European Parliament Committee on Transport and Tourism (TRAN) organised a [public hearing](#) on 'A European Strategy for Low-Emission Mobility' on 22 March 2017. The hearing looked for answers on how the EU could lower its environmental impact through low emission mobility, including road transport.

A representative from the European Environment Agency (EEA) highlighted that EU air quality policies have worked, but that many challenges remain, especially since although cars are more efficient, the number of cars and the distance travelled is continuing to rise.

The secretary-general of the European Automobile Association (ACEA) mentioned some of the main challenges ahead for the car industry when it comes to achieving low-emission mobility:

- testing: the need to shift to WLTP as soon as possible;
- fuel consumption: this should be optimised;
- alternative vehicles with low emission: a closer look must be taken at second-generation biofuels and electrification;
- the need to leverage the potential of digitalisation;
- new business models to move towards decarbonisation: mobility as a service, car sharing, etc.

Finally, he stated that the industry needs a transition phase to move from low-emissions to zero-emissions with a holistic and coherent regulatory approach.

6.3. MEPs' questions

Several MEPs have tabled questions, especially following the revelation of the 'Volkswagen scandal' by the US Environmental Protection Agency (EPA) on 18 September 2015. More than 70 written questions originating from Members from diverse political groups and nationalities relate to illegal software to cheat emission tests.³⁷

In its answers, the European Commission underlines that the risk of increased real driving emissions was public knowledge and known by the European Commission and Member States. However, the European Commission adds it they were not aware of any specific instances of use of defeat devices, and that they will review legislation to prevent the repeat of such a scandal in the future.

Another range of questions – described in more detail below – relates to the links between the cars and the vans regulations and other regulatory instruments with the same objective of contributing to the transition towards low-emission mobility – namely the Fuel Quality Directive,³⁸ the type approval of motor vehicles directive,³⁹ the Clean and Energy Efficient Vehicles Directive,⁴⁰ and the establishment of a monitoring and reporting system for heavy duty vehicles.⁴¹ Members insist on the need for consistency between those

³⁷ The most recent written questions being: [Volkswagen Investigation, Scandal surrounding emissions from diesel engines, Car emission limits after the Volkswagen scandal, Rules for emission measurements and type-approval tests, Volkswagen emissions scandal, Volkswagen scandal – compensating European consumers, Compensation for EU customers after Dieselpgate, Protection of consumers in Europe that have been affected by the Volkswagen emissions scandal, Compensation for consumers following the Volkswagen emissions scandal, Repair of, and compensation for, Volkswagen cars, Volkswagen emissions problem, Motor vehicle emissions under normal driving conditions, Emission standards for diesel cars, Car emission limits after the Volkswagen scandal, Investigation of the automobile industry](#)

³⁸ [Directive 2003/17/EC of 3 March 2003 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels.](#)

³⁹ [Directive 2007/46/EC establishing a framework for the type approval of motor vehicles and their trailers.](#)

⁴⁰ [Directive 2009/33/EC of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles.](#)

⁴¹ Monitoring Heavy Duty Vehicles' (HDV) fuel consumption and CO₂ emissions with a view to improving purchaser information, [Inception Impact Assessment.](#)

instruments currently under review or in the process of being adopted. The European Commission agrees in its answers that the creation of a clear, consistent and transparent framework is a key challenge.

The Members' questions also underline the importance of the European Commission taking into account the new application of the WLTP method for measuring consumption in cars, in the redefinition of fleet CO₂ emission targets. Finally, other MEP questions relate to:

- the [age of the vehicle fleet in EU Member States](#);
- [negotiations with China and exemptions for smaller volume automobile manufacturers](#);
- [transport as a source of greenhouse gas emissions](#);
- [electric cars with cosmetic environmental effects](#);
- [under-reported car CO₂ emissions](#); and
- [excess pollutant emissions from light-duty vehicles](#).

[Written question by Marc Tarabella](#) (S&D, Belgium), 31 October 2016

This question outlines the importance in the carbon footprint of cars and vans, alongside the direct emissions involved in their manufacture, of the logistics chain that brings together the necessary parts and then distributes the product to the end consumer. It asks whether the European Commission is considering measures to provide customers with clear and comparable information on the carbon footprint of a product's logistics chain.

[Answer given by Mr Arias Cañete on behalf of the European Commission](#), 7 February 2017

The European Commission answers that they plan to introduce a certification procedure and to present a measure on the monitoring and reporting of certified CO₂ emissions and fuel consumption from lorries, buses and coaches, as knowledge about the CO₂ emissions of the purchased vehicle will help logistics companies to calculate the carbon footprint of their activities.

[Written question by Wim van de Camp](#) (EPP, The Netherlands), 30 June 2016

This question enquires about existing technological solutions — such as higher-quality petrol — that could potentially decrease fuel consumption, and how to ensure that the European Commission gives recognition to the potential benefits of higher octane fuel, and higher compression ratio engines, in its revision of Regulation EC/443/2009 and Directive 98/70/EC (Fuel Quality Directive).⁴²

[Answer given by Mr Arias Cañete on behalf of the European Commission](#), 9 September 2016

The European Commission emphasises that, with respect to post-2020 CO₂ emissions standards for cars and vans, the measurement of tailpipe emissions will continue to be based on the type approval framework. As a result, the increased efficiency of high compression ratio engines using high octane fuels may not be fully reflected in the official CO₂ emission value on account of the use of standardised reference fuels. However, other incentives may be considered. For instance, innovative technologies not showing effects at type approval could be addressed under the eco-innovation regime. As another example, alternative fuel vehicles capable of running on a mixture of petrol with 85 % ethanol have been incentivised through specific accounting rules for compliance purposes. The experience gained from the implementation of such modalities will be considered for the design of the post-2020 legislation.

[Written question by Luděk Niedermayer](#) (EPP, Czech Republic), 20 April 2016

The European Commission is asked whether the application of the WLTP method for measuring consumption in cars would imply the recalculation of fleet CO₂ emission targets.

[Answer given by Mr Arias Cañete on behalf of the European Commission](#), 7 July 2016

The European Commission recalls that the new European driving cycle (NEDC) test procedure is due to be replaced by the WLTP and that a new procedure will be introduced as part of the type approval legislation.⁴³ As the existing CO₂ emission targets were set with reference to the NEDC, the measured levels of CO₂ emissions are expected to change. The European Commission is preparing a methodology (with an implementing regulation) to correlate the WLTP measurements into equivalent NEDC emission values. It is

⁴² [Directive 98/70/EC relating to the quality of petrol and diesel fuels](#).

⁴³ [Directive 2007/46/EC establishing a framework for the type approval of motor vehicles and their trailers](#).

proposed to use the correlated NEDC values during the phasing-in of the WLTP, i.e. from 1 September 2017 to 31 December 2020. Moreover, the European Commission is preparing (using a delegated regulation) to change from NEDC-based manufacturer targets to WLTP-calculated targets starting from 2021.

Both measures should ensure that the stringency of the CO₂ reduction requirements specified in Regulation (EC) No 443/2009 remain comparable following the transition from the old to the new test procedure.

[Written question by Kostas Chrysogonos](#) (GUE/NGL, Greece), 17 September 2015

The Member refers to a Transport and Environment [survey](#), stating that pollutant emissions from nine out of ten new diesel cars are on average seven times the EU statutory limit. He calls for the European Commission to tighten up the relevant provisions in line with the US, where cars sold by the same manufacturers are required to comply with stricter emission limits.

[Answer given by Ms Bieńkowska on behalf of the European Commission](#), 12 July 2016

The European Commission refers to reports from the Joint Research Centre dating from 2011⁴⁴ and 2013⁴⁵ also indicating that laboratory tests do not accurately capture the amount of NO_x emitted during real driving conditions. It considers that the introduction of the WLTP will be a major step towards improving the robustness of the testing. It also notes that a [proposal](#)⁴⁶ has been made to amend the type-approval framework in order to improve the market surveillance system.

7. European Council

[European Council, 17-18 December 2015 – conclusions](#)

The European Council welcomed the historic outcome reached in Paris and invited the Commission and the Council to assess the results of COP21 by March 2016, in particular in view of the 2030 climate and energy framework, and to prepare the next steps. It also assessed progress in building the energy union with a forward-looking climate policy and called for a swift submission of the relevant legislative proposals.

8. European Economic and Social Committee (EESC)

The EESC adopted an opinion on the [reduction of pollutant emissions from road vehicles](#)⁴⁷ on 29 April 2014, indicating serious doubts about including methane (CH₄) as a CO₂ equivalent since this would involve reviewing the current rules on CO₂. It underlined that the objectives indicated in these regulations were set without taking into account CO₂ equivalents, the possible introduction of which would require an accurate impact assessment to ensure a proper review of these regulations.

9. European Court of Auditors (ECA)

A [seminar](#) was organised on 19 and 20 January 2017 by the ECA to discuss the challenges auditors face in auditing energy and climate policies, and to identify potential opportunities in this field. Auditors from 19 Supreme Audit Institutions (SAI) and the ECA exchanged views on auditing the cost-effectiveness of energy programmes. They underlined that some auditors considered more short-time cost issues, whereas others found longer term-impacts. One of the challenges in auditing cost-effectiveness and its impacts was found to be setting the right frame for the audit, establishing a long-term perspective and taking a systemic view.

⁴⁴ [Analysing on-road emissions of light-duty vehicles with portable emission measurement systems \(PEMS\)](#).

⁴⁵ [A complementary emissions test for light-duty vehicles: Assessing the technical feasibility of candidate procedures](#).

⁴⁶ COM (2016) 31.

⁴⁷ Opinion on the Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EC) No 715/2007 and (EC) No 595/2009 as regards the reduction of pollutant emissions from road vehicles COM(2014) 28 final – 2014/0012 (COD).

10. Conclusions

According to the various reports and assessments presented in this briefing, the existing cars and vans regulations appear to be well implemented, with the majority of car and van manufacturers meeting their CO₂ specific emission targets in 2015, and some well on their way to reaching the 2020/2021 targets.⁴⁸

However, the ultimate aim of the regulations is to deliver a significant reduction in real-world CO₂ emissions.

While CO₂ emissions as measured on the test cycle is one element of this, there are other external trends that influence CO₂ emissions from cars and vans, including the total number of cars and vans and the distance covered, and the level and composition of fuels. The effectiveness of the legislation should be considered in conjunction with other policy instruments, including laboratory test cycles, embedded emissions or the use of CO₂-linked vehicle taxation.

In addition, any future evaluation of the regulations and the setting of new effective emission limits should take into account the introduction of the new worldwide harmonised light vehicles test procedure (WLTP) in September 2017, and the entry into force of the new [type approval regulation](#). To significantly reduce transport emissions, the setting out of new CO₂ emission targets could include the adoption of a number of measures that would allow for better monitoring of real driving emissions.

In order to achieve lasting and sustainable emission reductions in the transport sector, and rebuild the trust of consumers in the regulatory system and the car industry, a much broader and holistic approach appears necessary. This could consist of a systemic and integrated approach combining various policy instruments, accommodating the use of alternative energies in transport, increased vehicle energy efficiency and intelligent management of transport demand and infrastructure.

11. Other sources of information

- EPRS Briefing, [Towards low-emission EU mobility](#) (March 2017).
- [Fuel Consumption and CO₂ Emissions from Passenger Cars in Europe – Laboratory versus Real-World Emissions](#), European Commission, Joint Research Centre, February 2017.
- [Emission measurements in the automotive sector](#), European Parliament Policy Department, 2017.
- [Europe 2020 indicators – climate change and energy](#), Eurostat, June 2016.
- [Implementing the Paris agreement – issues at stake in view of the COP 22 Climate Change Conference in Marrakech](#), European Parliament Policy Department, 2016.
- EPRS Briefing, Implementation Appraisal, [Climate Action – Greenhouse Gas Emissions and the EU Emissions Trading System](#) (2015).
- [Progress report on the implementation of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles](#), European Commission, COM (2010) 656.

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www.europarl.europa.eu/thinktank (Internet) – www.eptinktank.eu (blog) – www.eprs.sso.ep.parl.union.eu (Intranet)

⁴⁸ According to the latest data available, new cars sold in the EU in 2015 had average CO₂ emissions of 119.5 g CO₂/km, which was 8.0 % below the 2015 target, and 3.1 % lower than in 2014. EEA [Report](#) No 27/2016, Monitoring CO₂ emissions from new passenger cars and vans in 2015.