

NEWSLETTER

International Regulatory Developments

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EUROPE

Amendment to Heavy-duty Euro VI Implementing Regulation published

On 2 July 2018, Commission Regulation (EU) 2018/932 was published in the Official Journal of the EU, amending the Euro VI implementing Regulation (EU) No 582/2011 to correct type-approval issues that were encountered after the introduction of Euro VI-D requirements.

The Regulation in particular amends the conditions for compliance with the urban window requirement for Portable Emission Measurement Systems (PEMS) testing of N3 vehicles (long-haul trucks). The urban trip share for N3 vehicles is enlarged at the expense of the motorway trip share (the requirement of 20% urban, 25% rural and 55% motorway operation becomes 30% urban, 25% rural and 45% motorway). In addition, the maximum overall trip length for all vehicles is extended from 7 times the work of WHTC to 8 times (or alternatively from 7 times the CO₂ emissions of WHTC to 8 times).

The Regulation also updates the reference to European Committee for Standardization (CEN) standards for certain common Fatty Acid Methyl Ester (FAME) diesel blends and paraffinic diesel.

Finally, it harmonises the procedure to demonstrate the required tolerances for the engine control unit (ECU) torque signal in cases of universal fuel range type-approval.

The amendment entered into force on 22 July 2018.

Commission Regulation (EU) 2018/932 is at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0932&from=EN>.

Heavy-duty CO₂ Monitoring and Reporting Regulation published

On 9 July 2018, Commission Regulation (EU) 2018/956 on the monitoring and reporting of CO₂ emissions and fuel consumption of heavy-duty vehicles (HDV) was published in the Official Journal of the EU.

As of 1 January 2019, truck manufacturers will have to monitor and report annually to the Commission the CO₂ emissions and fuel consumption of each new vehicle they produce for the EU market. This information will be calculated using the Vehicle Energy Consumption Calculation Tool (VECTO) according to Commission Regulation (EU) 2017/2400.

I. Starting years for the monitoring and reporting of data for the heavy-duty vehicle categories set out in points (a) and (b) of the second paragraph of Article 2:

Category of heavy-duty vehicles	Vehicle group in vehicle category (as referred to in Annex 1 to Regulation (EU) 2017/2400)	Starting year Monitoring	Starting year Reporting
N ₁	—	—	—
N ₂	1 and 2	2020	2021
N ₃	3	2020	2021
	4, 5, 9 and 10	2019	2020
	11, 12 and 16	2020	2021

Manufacturers will have to determine the CO₂ emissions and fuel consumption of new trucks above 7.5 tonnes. The data collected on CO₂ emissions and fuel consumption together with other relevant technical information on the vehicles, including the aerodynamic drag, will be made publicly available by the European Environment Agency (EEA) starting in 2020 to cover data monitored in 2019.

Commission Regulation (EU) 2018/956 is at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0956&from=EN>.

Amendment to Light-duty NEDC-WLTP CO₂ Correlation published

On 17 July 2018, Commission Implementing Regulation (EU) 2018/1002 was published in the Official Journal (OJ) of the EU, amending Implementing Regulation (EU) 2017/1153 on the methodology for the passenger cars' CO₂ correlation between NEDC and WLTP.

The amendment stems from experience gained with new type-approvals using WLTP. In particular, it complements the existing method for defining the end-points of the interpolation line used for calculating the NEDC CO₂ emission value of an individual vehicle. Those end-points, which are represented by a test vehicle with the highest CO₂ emission values, and test vehicle with the lowest values, should be defined so that the difference between the two test vehicles high and low is ≥ 5 g CO₂/km.

Also, when road load matrix families are used, the calculation of the CO₂ emissions value of an individual vehicle is simplified by deriving the road load coefficients to be used for the calculation of the NEDC CO₂ value from the WLTP road load coefficients of the individual vehicle as determined under Regulation (EU) 2017/1151.

To improve robustness of the correlation, the number of cylinders in the engine is added as an input to be provided for the correlation tool (CO2MPAS).

Finally, editorial errors are corrected.

Regulation (EU) 2018/1002 is at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1002&from=EN>.

Also on 17 July 2018, Commission Implementing Regulation (EU) 2018/1003 was published in the OJ, similarly amending Implementing Regulation (EU) 2017/1152 on the NEDC-WLTP CO₂ correlation methodology for light-commercial vehicles.

Regulation (EU) 2018/100 is at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1003&from=EN>.

Amendments to Non-Road and Tractors Emissions Regulations published

On 18 July 2018, five Regulations were published in the Official Journal of the EU that amend Stage V emissions regulations for Non-Road Mobile Machinery (NRMM) and agricultural and forestry tractors.

Commission Delegated Regulation (EU) 2018/989 amends and corrects Delegated Regulation (EU) 2017/654 on technical requirements for Stage V NRMM. For instance, the fatty-acid methyl ester (FAME) content permitted in diesel fuel blends is increased from 7% (B7) to 8% (B8).

Commission Delegated Regulation (EU) 2018/987 amends and corrects Delegated Regulation (EU) 2017/655 on in-service monitoring of gaseous emissions of NRMM Stage V equipment.

Commission Implementing Regulation (EU) 2018/988 amends and corrects the NRMM Stage V Implementing Regulation (EU) 2017/656.

Commission Delegated Regulation (EU) 2018/985 supplements Regulation (EU) No 167/2013 with Stage V environmental and propulsion unit performance requirements (REPPR) for agricultural and forestry vehicles and their engines. It repeals Commission Delegated Regulation (EU) 2015/96.

Finally, Commission Implementing Regulation (EU) 2018/986 amends Implementing Regulation (EU) 2015/504 to adapt the administrative provisions for the approval and market surveillance of agricultural and forestry tractors to Stage V emissions limits.

The five new Regulations are at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2018:182:TOC>.

Commission concerned by OEMs inflating WLTP CO₂ Declared Values

On 18 July 2018, Commissioners for Industry, Elżbieta Bieńkowska, and for Climate Action, Miguel Arias Cañete sent a letter to the Austrian presidency of the EU, the chair of the European Parliament Environment Committee and the Rapporteur on post-2020 CO₂ targets for cars, raising some concerns with the car industry manipulating the new WLTP emissions tests.

The letter comes with an explanatory 'non-paper', both made publically available by the Non-Governmental Organization Transport & Environment (T&E).

The non-paper details the methods used to inflate CO₂ emissions values. The available preliminary data assessed by the Joint Research Centre (JRC) of the Commission indicate that the declared WLTP CO₂ emission values exceed the measured WLTP CO₂ values by 4.5% on average. For individual type-approvals, the difference was up to 13%.

The Commission explains that inflating WLTP CO₂ emissions in 2020 would result in less strict WLTP CO₂ targets applying in 2021. As the 2021 WLTP targets also act as the starting point for the 2025 and 2030 targets, such inflation would lead to lower real life emissions reduction in the target years. Also, as only some manufacturers might inflate the starting point, this could lead to distortion of the level-playing field between manufacturers.

The Commission proposed three actions to tackle the issue identified:

- Clarify in the post-2020 CO₂ regulation for cars and vans that the starting point for the CO₂ reduction targets is the "WLTP values measured" on the 2020 certified models instead of the "WLTP values declared".
- The Commission is considering some amendments to the NEDC-WLTP correlation regulation (implementing acts) to be submitted to the Climate Change Committee of Member States in the autumn. These amendments would aim to collect the necessary data, ensure consistent implementation of the two test procedures and increase transparency.
- The Commission will continue to support a correct implementation of the WLTP regulation by Member States and monitor its proper enforcement.

The Commission letter and non-paper are at www.transportenvironment.org/publications/european-commission-finds-evidence-car-industry-manipulating-wltp-tests-cheat-co2.

On 26 July 2018, the European Automobile Manufacturers' Association (ACEA) reacted with a statement where they fully agree that CO₂ values should not be artificially increased on purpose in any way that would undermine the post-2020 CO₂ targets.

ACEA is committed to engage further with the European Commission and other stakeholders to help make the current regulation even more robust if that proves necessary. ACEA generally agrees with the three solutions proposed in the joint letter by Commissioners Cañete and Bienkowska.

The ACEA reaction is at www.acea.be/press-releases/article/wltp-car-industry-stands-ready-to-help-further-fine-tune-lab-test.

Parliament Committees' Opinions on Light-Duty Post-2020 CO₂ Standards

On 10 July 2018, the Transport (TRAN) Committee of the European Parliament adopted its opinion on the Commission proposal for post-2020 CO₂ standards for cars and vans.

TRAN members backed the Commission proposal to set a 30% CO₂ reduction target for 2030, with a mandatory interim target of 15% by 2025. The opinion was adopted with 23 votes in favour, 18 against and 2 abstentions.

Nevertheless, the Rapporteur drafting the opinion, MEP Revault d'Allonnes-Bonnefoy (S&D, FR), removed her name from the report after losing key votes pushing for a 50% target.

The TRAN opinion will now feed into the work of the Environment, Public Health and Food Safety (ENVI) Committee, which has the lead on the dossier.

The TRAN opinion is at www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+COMPARL+PE-619.220+02+DOC+PDF+V0//EN&language=EN.

Also on 10 July 2018, MEPs in the Committee on Industry, Research & Energy (ITRE) failed to reach an agreement on their opinion.

ITRE Rapporteur MEP Dalunde (Greens, SE) wanted to include a 75% target by 2030 but the ITRE committee will now not contribute with an opinion to the final ENVI report.

Draft Parliament Report on Heavy-Duty CO₂ Standards

On 18 July 2018, the draft report of the European Parliament's Environment Committee on the Commission's proposal for CO₂ standards for Heavy-Duty Vehicles (HDVs) was released.

The Rapporteur MEP Bas Eickhout (Greens, NL) considers that decreasing CO₂ emissions from the transport sector is key to fulfilling the EU target of reducing its greenhouse gas emissions by at least 30% below 2005 levels in 2030 in the most cost-efficient way.

He supports the approach of the Commission to introduce CO₂ emission performance requirements to the most polluting vehicles as a first step, before widening the scope to all HDV categories in the near future. He nevertheless proposes more ambitious CO₂ reduction targets with 20% in 2025 and 45% in 2030 compared to reference year 2019 (the European Commission proposed 15% and 30% reductions respectively).

According to the MEP Bas Eickhout, binding minimum shares of zero- and low-emission vehicles in a manufacturer's fleet of new HDVs should be set at 10% in 2025 and 35% in 2030.

Also, in his view the introduction of on-road in-service conformity testing is necessary to ensure the real-world representativeness of the certified CO₂ emissions and fuel consumption of HDVs.

The Rapporteur finally proposes that all new buses placed on the EU market in 2030 should be zero-emission vehicles.

The report will now be discussed in the ENVI Committee before other amendments are tabled. It will first be voted in ENVI committee before it goes to plenary.

The draft ENVI report is at www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+COMPARL+PE-625.231+01+DOC+PDF+V0//EN&language=EN.

Stakeholder Event on EU's Vision for a Modern, Clean Economy

On 10 and 11 July 2018, the European Commission Directorates General for Climate Action (DG-CLIMA) and for Energy (DG-ENER) co-hosted a stakeholder event discussing a long-term EU strategy for reducing greenhouse gas emissions and building a modern, clean economy.

At the request of Member States and the European Parliament earlier this year, the European Commission is preparing a proposal for a Strategy for long-term EU greenhouse gas emissions reduction in accordance with the Paris Agreement. The two-day event was organized to gather views from stakeholders from Member States, industry, research and NGOs.



Commissioner for Climate Arias Cañete explained that the long-term strategy will not be a regulatory proposal but will set clear milestones and policy domains that will need particular focus. This long-term strategy, to be adopted in November 2018, will not be a mere exercise of trajectory settings but rather a vision for a prosperous low-carbon society. It will include findings from the Intergovernmental Panel on Climate Change (IPCC) on limiting global warming to 1.5°C. The EU needs to consider more ambitious options than an 80% reduction by 2050 and the EC will look at pathways towards carbon neutrality. All industrial sectors have scope for major changes, he added. Industry is actively looking at how to change with, for instance, zero-carbon steel, hydrogen and circular economy. The role of consumers needs to be addressed too as the transition will imply broad societal transformation including new jobs and a 'just transition'.

A number of panel discussions were held on cost-efficient ways to achieve a post-carbon European economy; the long-term strategy in an international context; benefits of a low-carbon world for all Europeans – a citizen's perspective; experience with long-term strategies in Europe; economy, finance, investment; innovation, technology; and the role of natural resources.

Some Member States presented their national climate protection strategies. Germany, represented by the Environment Ministry (BMU), aims to reduce greenhouse gas emissions by 95% in 2050 which means that fossil fuels should be fully phased out and residual emissions will come from industry and agriculture. Germany wants to be a climate pioneer again. It was noted that the German industry association (BDI) has commissioned its own study for 2050, which shows that climate protection and economic development can go together. The Czech Republic underlined the need to include nuclear power to meet the Paris Agreement and decarbonize electricity. France has a carbon-neutrality strategy for 2050 as established in their "Plan Climat" from July 2017. A cross-

sectoral approach is essential. Coal-power plants (4 remaining) will be shut down by 2022, nuclear electricity share will reduce from today's 75% to 50%. Building insulation is a key element to save energy. Transport is the most challenging sector; France is offering scrapping schemes as incentives for electric vehicle purchase.

During the panel on innovation and technology, the Director General of CEFIC (European Chemical Industry Council) noted that their aim is not to decarbonize but rather about how to recycle the carbon molecules and make more use of them. He also noted that hydrogen and renewable electricity are key to a low carbon world.

A number of speakers highlighted the need to create emission sinks to mitigate climate change.

Industry Commissioner Bieľkowska stressed that industrial challenges to reduce emissions are difficult as we need to move to carbon-neutrality, re-skill the workforce and secure access to raw materials. The transition to a digital and circular economy has started and there is no way back, nor benefit in delaying, she added.

In the closing address, former UN COP21 President Laurent Fabius noted that the context has changed since the Paris Agreement was struck in 2015. Some negative but also some positive. For instance, industry has started to invest as climate does bring business opportunities. A long-term vision is essential and needs to inform short-term choices. In view of the climate situation, part of the text of the Paris agreement is worth clarifying to close any ambiguity. This will be one of the aims of this year's UN COP24 in Katowice, Poland in December 2018.

More info and video recordings of the event are at https://ec.europa.eu/info/events/eus-vision-modern-clean-economy-stakeholder-event-2018-jul-10_en.

Public Consultation on the EU Strategy for Long-term Reduction of GHG

On 17 July 2018, following the high-level event held the week before (see above), the European Commission launched a public consultation on the strategy for long-term EU greenhouse gas (GHG) emissions reduction.

The public consultation will feed into the Commission's deliberations for a strategy that will reflect on a long-term vision for a modern European economy for all Europeans and the opportunities and challenges that a long-term decarbonisation implies.

The consultation aims at collecting views and opinions on the technological and socio-economic pathways that should be explored and at gathering factual information, data and knowledge, including drivers, opportunities and challenges relevant to the long-term strategy. It covers the types of transformations required, the level of ambition and key actions to achieve it.



The public consultation is open until 9 October 2018 and is at https://ec.europa.eu/clima/consultations/strategy-long-term-eu-greenhouse-gas-emissions-reductions_en.

JRC Study on Need to reduce CO₂ Emissions to meet Climate Agreement

On 4 July 2018, the Joint Research Centre (JRC) of the European Commission reported on a new study they co-authored which showed that higher ambition is needed to meet Paris Agreement climate targets.

With current climate policies and efforts to increase clean power generation, the remaining use of fossil fuels in industry, transport and heating in buildings will cause enough CO₂ emissions to push climate targets out of reach, the study shows. Accelerated energy efficiency improvements and a widespread electrification of energy demand are needed.

Even with very strong efforts by all countries, including early and substantial strengthening of the intended nationally determined contributions, residual carbon emissions will reach around 1000 gigatons of CO₂ by the end of the century. This goes considerably beyond the level needed to achieve the 1.5°C target. CO₂ removal is therefore no longer a choice, but a necessity. None of the scenarios the scientists modelled were able to achieve this target without the availability of a negative emissions technology, such as bioenergy with carbon capture and storage technology.

More info and links to publications are at <https://ec.europa.eu/jrc/en/news/higher-ambition-needed-meet-paris-climate-targets>.

Final Assessment of Dialogue between European Commission and Volkswagen

On 17 July 2018, the European Commission and national consumer authorities in EU Member States published their conclusions on the 8.5 million car recalls made in the EU by VW after the "diesalgate" scandal.

In their conclusions, the European Commission and consumer authorities agree that the actions undertaken by VW have so far resulted in positive developments regarding the online information available, with extensive questions and answers and video clips, on the reason for the update and how to obtain it and on the Trust Building Measure. The rate of repair is now reaching 80% and VW committed to continue the free-of-charge update and the related de facto guarantee to solve problems that arise after the update until the end of 2020.

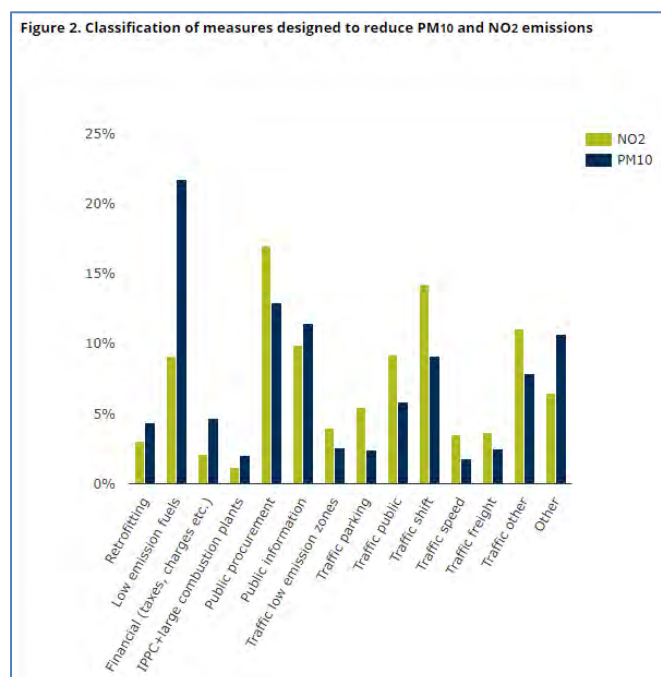
On the other hand, VW has not provided a full and clear guarantee that the update is not affecting the cars' performance and has refused to simplify the conditions giving access to the Trust Building Measure.

More info is at https://ec.europa.eu/info/live-work-travel-eu/consumers/enforcement-consumer-protection/coordinated-actions_en#volkswagen.

EEA Briefing on Air Quality Improvement Measures by Countries

On 9 July 2018, the European Environment Agency (EEA) published an overview of the different types of abatement measures the EU Member States are putting in place under the EU Air Quality Directives.

According to the report, Member States focus mainly on measures designed to reduce people's exposure to the two air pollutants that most commonly exceed air quality standards: particulate matter (PM₁₀) and nitrogen dioxide (NO₂). In general, the road transport sector is the largest contributor to NO₂ emissions in the EU, while fuel combustion in the commercial, institutional and households sector is the largest contributor to total primary PM emissions, particularly in some eastern European countries.



Traffic-related measures include those encouraging a shift to less polluting types of transport, better urban planning to ensure more sustainable transport infrastructure, improving public transport, and targeted public procurement measures.

Measures targeting commercial and residential combustion and industry sectors encourage the uptake of low-emission fuels, set eco-design standards and standards for fuels, and require emission control equipment in industrial premises.

The EEA report on Member States' air quality measures is at www.eea.europa.eu/themes/air/improving-europe-s-air-quality/improving-europe-s-air-quality.

EEA Report on Climate Change Mitigation Policies and Measures

On 5 July 2018, the European Environment Agency (EEA) released a report assessing national policies and measures on climate change mitigation in Europe in 2017.

Information reported to the EEA shows that more than 1500 national policies and measures have either been adopted, implemented or are being planned in the EU to reduce greenhouse gas (GHG) emissions, and achieve climate change and energy targets. However, quantitative evidence on the effectiveness and costs of these measures remains insufficiently reported.



Member States primarily report information on regulatory and economic instruments, energy efficiency measures (particularly in buildings) and actions addressing renewable energy and vehicle emissions. Quantitative information on national policies and measures, in particular GHG emission savings resulting from existing policies, continues to be underreported.

Of the reported national policies, 74% relate to the implementation of EU policies.

EU policies promoting renewable energy and energy efficiency are expected to deliver significant emission savings by 2020.

Despite important policy developments at international and EU levels between 2015 and 2017 (e.g. adoption and entry into force of the Paris Agreement and policy proposals to achieve the EU's 2030 climate and energy targets), Member States adopted few new policies and measures over this period.

The EEA report is at www.eea.europa.eu/publications/national-policies-and-measures-on-climate-change-mitigation.

Stuttgart's Clean Air Plan includes Ban of Old Diesel Vehicles

On 11 July 2018, the State Government of Baden-Württemberg in Germany agreed on a Clean Air Plan which includes vehicle access restrictions in Stuttgart.

In order to mitigate the persisting air pollution issue, pre-Euro 5/V diesel vehicles will be banned from driving in Stuttgart starting on 1 January 2019. Local residents will have until 1 April 2019 to make the transition, while delivery vehicles and certain craftsmen will be excluded from the ban.

In the event that, by 1 July 2019, compliance with the EU Air Quality limits is not in sight by the end of 2019, the driving ban could be extended to Euro 5/V vehicles in 2020. In any case, Euro 5/V diesel vehicles that have been retrofitted with hardware will not be banned, the State said. Baden-Württemberg will continue to campaign for a hardware upgrade of Euro 5/V diesel vehicles. Euro 5/V diesel vehicles with software update get a transitional period of two years.

In addition, the State is taking further measures to make the switch to alternative means of transport more attractive. At the Neckartor, one of the country's most polluted crossings, a bus lane will be set up to increase use of public transport. A lane specifically for electric vehicles is also being considered while ticket prices for use on the mass transit system could be reduced.

Baden-Württemberg's Clean Air Plan (in German) is at www.baden-wuerttemberg.de/de/service/alle-meldungen/meldung/pid/massnahmenpaket-zur-luftreinhaltung-stuttgart.

German Environment Minister calls for Diesel Retrofit

On 19 July 2018, German Environment Minister Svenja Schulze called for retrofitting diesel cars to avoid any driving bans.

In a press release, she stressed that reducing NOx emissions from diesel cars with hardware retrofit has now become technically feasible. The German federation for motor vehicle trade and repairs (Zentralverband Deutsches Kraftfahrzeuggewerbe or ZDK) presented to Ms Schulze a retrofit system fitted to a Euro 5 diesel car.

Further on, the Environment Minister explained: "Those who seriously want to avoid further driving bans, like I do, definitively need to think about hardware retrofits for older diesels. People have the right to clean air – and that is what the German cities should guarantee."

Car owners must not pay for the massive mistakes made by the car industry, which is why the car industry should retrofit the affected vehicles at their own expense. At the moment, we need a uniform set of regulations for such retrofits that needs to be provided by the Transport Ministry."



The EU air quality annual average limit for NO₂ of 40 µg/m³ is currently exceeded in 65 German cities. Retrofitting diesel vehicles could reduce their NOx emissions by approximately 70%.

More info (in German) is at www.bmu.de/pressemitteilung/schulze-hardware-nachruestungen-verhindern-fahrverbote.

German Authorities investigate Opel for Manipulating Diesel Emissions

On 13 July 2018, the German automaker Opel reportedly faced questions over emissions from its diesel vehicles.

The German Federal Motor Transport Authority (KBA) confirmed to the weekly *Bild am Sonntag* that according to their investigations, Opel is suspected to have manipulated exhaust emission levels. The KBA informed the car manufacturer about its suspicion and Opel had two weeks to take an official position regarding the reproaches made by the authority. So far, Opel denied any accusation and stated that it would not be possible for them to comment on open procedures that started more than two years ago.

According to the KBA, evidence was found that the car manufacturer would have switched off the exhaust aftertreatment systems of three of their car models (Cascada, Insignia und Zafira) while driving. Opel would not provide any technical reason why the aftertreatment is switched off. The cars concerned would exceed the NOx limit levels by 10 times.

The German media reported that on a global level, there would be 60 000 Euro 6 diesel vehicles being affected EU-wide, including 10 000 cars registered in Germany.

In addition Opel explained that they "already recognized the potential for improvement in December 2015 and started a technology initiative for more transparency, credibility and efficiency for the benefit of its customers." Further on, the car manufacturer specified that "part of the voluntary measures is a recall of the Insignia (previous generation), Zafira Tourer and Cascada ranges with Euro 6 and SCR technology from model year 2013-2016."

Three TNO Reports on Cars and Vans Emissions

On 13 July 2018, research organization TNO published three new reports on results of studies they carried out for the Dutch Ministry of Infrastructure and the Environment measuring the emissions of passenger cars and vans.

The first TNO report is titled **'Emissions of six petrol vehicles with high mileages'** (TNO 2018 R10657) and contributes to increasing knowledge on emissions factors used for air quality assessment and national inventories.

Six petrol cars (two Euro 3, three Euro 4 and one Euro 5) with odometer readings between 155 000 and 254 000 km were tested on a chassis dynamometer according to the Artemis (CADC) driving cycle.

The results show a large spread in the emissions behaviour of these six vehicles. NOx emissions varied between 17 and 1234 mg/km. Particulate Matter (PM) emission levels of 0.1 to 3.9 mg/km were measured; this is below the NEDC limit value for diesel cars and GDI vehicles, and the current estimate of the particulate mass emission of these vehicles, despite the fact that some vehicles had a substantial oil consumption. Five vehicles perform well on hydrocarbon (HC) emissions, ranging from 8 to 138 mg/km. Only one Euro 4 car exceeded its type-approval limit value of 100 mg/km.

Three vehicles with increased CADC NOx emissions were also subject to a Periodic Technical Inspection (PTI) emissions test, based on the CO, CO₂, O₂ and HC tailpipe emission and a lambda value at idle. The vehicles passed the PTI emission test without faults.

The second TNO report is titled **'Real-world fuel consumption of passenger cars based on monitoring of Dutch fuel pass data 2017'** (TNO 2018 R10371) and analyses tank pass data obtained from Travelcard Nederland BV. Data covered the period from 2004 up to April 2017 and included a total number of 443 000 vehicles.

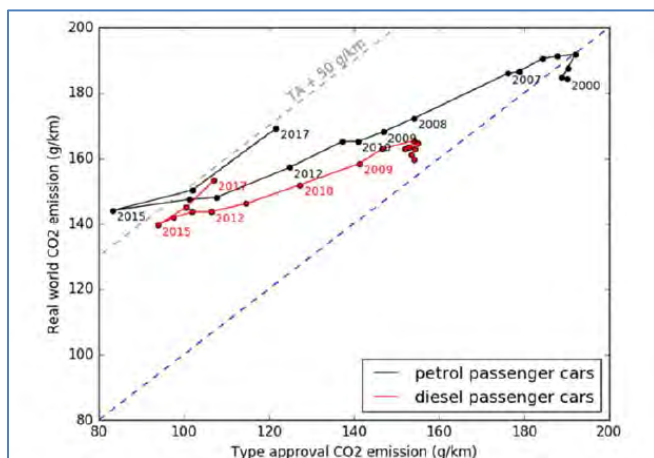


Figure SE1: Average real-world CO₂ emissions versus the average type approval value of new petrol and diesel cars, including plug-in hybrids, differentiated by the year of introduction / registration in the Netherlands (2017 value is preliminary)

Over the whole fleet included in the tank pass data for the period January to December 2016, the relative difference between the average real-world and type-approval CO₂ emissions was around 41%. For vehicles entering the Dutch fleet in 2016, the absolute difference is about 46 g/km. Plug-in hybrid vehicles, which are encompassed in these averages, show a much larger difference between real-world and type-approval value: 90 g/km on average. This anomaly is caused by a larger share of electric kilometres at the type-approval test compared to the real-world use.

And the third TNO report is titled **'NOx emissions of eighteen diesel Light Commercial Vehicles: Results of the Dutch Light-Duty road vehicle emission testing programme 2017'** (TNO 2017 R11473).

This report describes the results of on-road emission measurements of ten Euro 6b and three Euro VI light commercial vehicles (LCVs), two Euro 6b passenger vans and three Euro 5b LCVs.

The Euro 6/VI vehicles tested showed NOx emission levels varying between 1 and 8 times the type-approval limit values of 105 and 125 mg/km, depending on vehicle reference mass. Their average NOx emissions in urban traffic ranged from 130 to 850 mg/km.

According to TNO, the new Real Driving Emissions (RDE) test, which requires on-road type-approval testing with mobile measurement equipment, is expected to lead to lower real-world NOx emissions.

For LCVs in the heavy class (III) with a reference mass between 2380 and 2840 kg, manufacturers may choose either the Euro 6 light-duty (vehicle-certified) or the Euro VI heavy-duty (engine-certified) regime for the emissions type-approval. Both regimes differ with regard to emission limits and test procedures. Comparison of real-world NOx emissions of vehicles with a Euro 6 or Euro VI type-approval showed no significant difference in the average of the two regimes. However, the Euro 6 vehicles clearly showed a large spread in NOx emissions, whereas NOx emissions of Euro VI vehicles were more consistently low. This may be attributed to the on-road In-Service Conformity test that has been mandatory from 2014 for Euro VI engines and vehicles.

Low NOx emissions in the range of 30-90 mg/km were measured for both the Euro 6 and the VI variant of a particular vehicle model. Another Euro 6 vehicle showed similar low values.

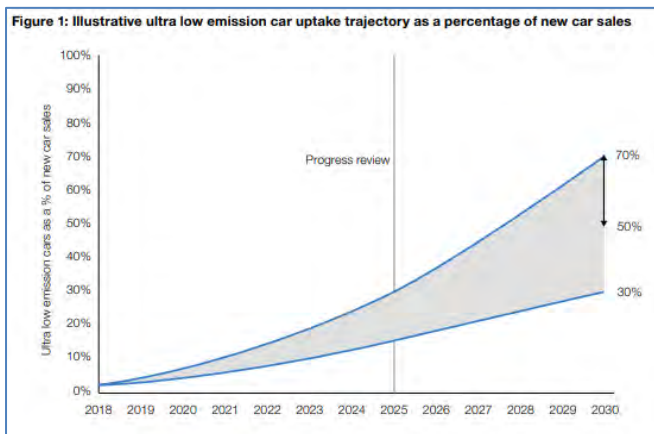
The three TNO reports can be found at www.tno.nl/en/focus-areas/traffic-transport/roadmaps/mobility/clean-mobility/overview-of-reports-measuring-the-emissions-of-passenger-cars-and-vans/.

UK Government launches "Road to Zero" Strategy

On 9 July 2018, the UK Government launched its "Road to Zero" Strategy to lead the world in zero-emission vehicle technology.

According to the UK Department for Transport (DfT), this strategy sets the stage for the biggest technology advancement to hit UK roads since the invention of the combustion engine.

As set out in the national Air Quality plan, the UK will end the sale of new conventional petrol and diesel cars and vans by 2040. The “Road to Zero” Strategy will build on this commitment and outlines how the government will work with industry to support achieving this. The strategy sets out the UK ambition for at least 50% – and as many as 70% – of new car sales to be ultra-low emission by 2030, alongside up to 40% of new vans.



The “Road to Zero” Strategy is technology neutral and does not speculate on which technologies might help to deliver the 2040 mission. The UK government has no plan to ban any particular technology - like hybrids - as part of this strategy.

The UK government has already committed to investing £1.5 billion (€1.7 billion) in ultra-low emission vehicles by 2020 and the “Road to Zero” Strategy outlines a number of ambitious measures including:

- a push for charging points to be installed in newly built homes, and new lampposts to include charging points;
- the launch of a £400 million (€452 million) Charging Infrastructure Investment Fund to help accelerate the roll-out of charging infrastructure;
- creating a new £40 million (€45 million) programme to develop and trial innovative, low-cost wireless and on-street charging technology;
- providing up to £500 (€565) for electric vehicle owners to put in a charge point in their home and an increase in the value of grants available to workplaces to install charge points;
- the extension of the Plug-In Car and Van Grants to at least October 2018 at current rates, and in some form until at least 2020;
- the launch of an Electric Vehicle Energy Taskforce to bring together the energy and automotive industries to plan for the increase in demand on energy infrastructure that will result from a rise in the use of electric vehicles.

The strategy also notes that cleaner diesel cars and vans can play an important part in reducing CO₂ emissions from road transport during the transition to zero-emission vehicles, whilst meeting ever more stringent air quality standards. For diesel vehicles to play their part fully, their air quality impact must continue to be reduced. The UK government wants new cars and vans to be as clean as possible as fast as possible and welcomes the continued innovation and investment by vehicle manufacturers to develop cleaner diesel vehicles that meet the more challenging RDE requirements, delivering critical improvements in NO_x emissions on the road.

The strategy says that battery electric vehicles have substantially lower greenhouse gas (GHG) emissions than conventional vehicles, even when taking into account the electricity source and electricity used for battery production. Although the environmental performance of range extenders, plug-in, and non-plugin hybrids depends on their use and zero-emission range, these vehicles are amongst the cleanest vehicles on the market. A full petrol-hybrid electric car is estimated to deliver GHG emissions reductions of around 5% vs. diesel and 20% vs. petrol. A plug-in petrol hybrid electric car is estimated to deliver GHG emissions reductions of around 33% vs. diesel and 43% vs. petrol.

Finally, to help provide consumers with the information they need about the environmental performance of different vehicle and fuel options, the UK government will, in partnership with industry, consumer groups and motoring organisations, set up a Road Transport Emissions Advice Group to work together to ensure clear and consistent consumer messaging and advice on fuel and technology choices.

The UK Road to Zero Strategy is at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/723501/road-to-zero.PDF.

UK Public Consultation on E10 Fuel Introduction

On 20 July 2018, the UK Department for Transport (DfT) launched a public consultation on the possible introduction of E10 to the UK market.

Unleaded petrol in the UK currently contains up to 5% bioethanol (i.e. E5). E10 petrol contains up to 10% bioethanol and is not yet available in the UK.

The consultation seeks feedback on proposals to ensure a continued supply of traditional E5 petrol for those motorists who will need it; a call for evidence on whether and how best to introduce E10 petrol; proposals to implement new fuel labelling as required by the Alternative Fuels Infrastructure Directive; and plans to change the consumer message that must accompany the sale of E10.

The consultation is open until 16 September 2018 and is at www.gov.uk/government/consultations/e10-petrol-consumer-protection-and-fuel-pump-labelling.

Draft Clean Mobility Plans of France

On 20 July 2018, the French Minister for Ecological and Inclusive Transition Nicolas Hulot and Transport Minister Elisabeth Borne presented their draft clean mobility plans.

The new law will require all agglomerations of more than 100 000 inhabitants to consider by 2020 setting up a Low Emission Zone (LEZ) where the use of the most polluting vehicles would be restricted.



The selection of areas, types of vehicles and schedules will be the responsibility of local authorities. They will have to decide on the geographical area of the LEZ, on categories of vehicles concerned (e.g. all vehicles or only heavy goods vehicles), on time arrangements, on prohibited vehicles (e.g. vehicles not eligible to Crit'Air label), on implementation over time

(e.g. progressive timetable with strengthened requirements up to 2024) and on possible exemptions.

Areas in France that are currently facing NO₂ exceedances will be targeted first. Beside Paris and Grenoble where a LEZ is already in place, these are Fort-de-France, Lyon, Marseille-Aix, Montpellier, Nice, Reims, Saint-Etienne, Strasbourg, Toulon, Toulouse, the Arve Valley and the Rhône Valley.

More info (in French) is at www.ecologique-solidaire.gouv.fr/sites/default/files/2018.07.20%20DP%20Mobilit%20A9%20propre_0.pdf.

French Report on Electrification Impact per Vehicle Segment

On 5 July 2018, the French Agency on Environment and Energy Management (ADEME) published a report, prepared together with IFP Energies nouvelles, which assesses the impact of electrification per vehicle segments.

It is a summary of the main results of the project "Economic, Energetic and Environmental Study Road Transport Technologies in France" (E4T).

Overall, the report shows that, except for the long-haul truck segment, conventional powertrain (petrol or diesel) will struggle with more competitive technologies in 2030, whether from the point of view of its total cost of ownership (TCO) or its environmental impact (Greenhouse Gas (GHG) and pollutant emissions). The diffusion of conventional powertrain should therefore slow down considerably by 2030.

The Mild Hybrid 48V architecture (MHEV 48V), pushed to the maximum of its performances, could be a very interesting solution to compete with the current Full Hybrid solutions (HEV). Plug-in Hybrid Vehicles (PHEVs) seem to be the most relevant solutions from the point of view of the impact on GHG emissions, thanks to their limited-size battery perfectly adapted to the most usage of the vehicle. Their economic profitability, without purchase subsidy, remains nevertheless difficult to reach.

Battery electric vehicles (BEV) are an effective solution to reduce local pollution and GHG emissions, especially if they are intensively used (like buses) to compensate the environmental impact of battery manufacturing by vehicle use. Nevertheless, the economic profitability of these solutions is currently limited (or becomes viable only thanks to purchase subsidy) but should become so by 2030 with the announced reduction in batteries cost.

Finally, the current trend to increase the size of batteries to improve the electric vehicles range is detrimental to the impact on GHG. This point should be considered wisely in the future.

The ADEME report (in French) is at www.ademe.fr/sites/default/files/assets/documents/projet-e4t-bilan-impact-electrification-2018.pdf.

Spain transposes National Emission Ceilings Directive

On 6 July 2018, the Spanish Council of Ministers approved a Royal Decree establishing new ceilings to the emissions of sulfur dioxide (SO₂), nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), ammonia (NH₃) and fine particles (PM_{2.5}) for 2020 and 2030.

The National Air Pollution Control Programme is being developed with measures applicable to sectors such as agriculture, power generation, industry, road transport, water transport, domestic heating, the use of non-road mobile machines and the use and manufacture of solvents. It transposes the new EU National Emission Ceilings (NEC) Directive (EU) 2016/2284.

To date, Spain was one of only four EU Member States that had not yet enacted legislation to transpose the NEC Directive into national law. Germany, Bulgaria and Croatia are the other three.

The Royal Decree (in Spanish) is at www.mapama.gob.es/en/prensa/180706cmrdtechosemisionesatmosfericas_tcm38-456693.pdf.

NORTH-AMERICA

US EPA Air Quality Report

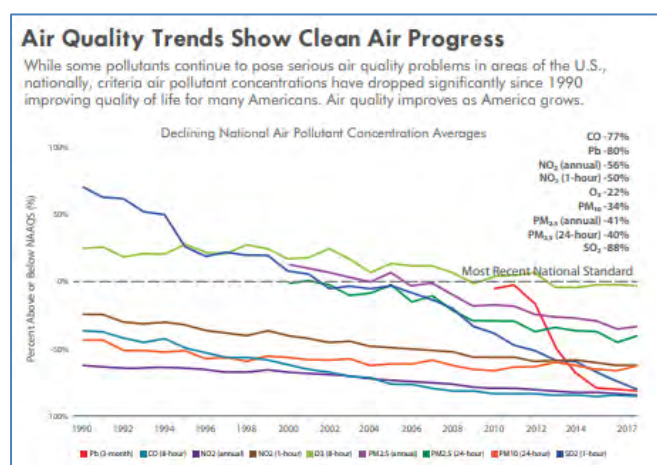
On 31 July 2018, the US Environmental Protection Agency (EPA) published its annual report on air quality.

The report, titled "Our Nation's Air: Status and Trends Through 2017", documents the improvements in air quality across America over more than 45 years. It highlights that,

between 1970 and 2017, the combined emissions of six key pollutants dropped by 73%, while the US economy grew more than three times.

A closer look at more recent progress shows that between 1990 and 2017, average concentrations of harmful air pollutants decreased significantly:

- Sulfur dioxide (1-hour): -88%
- Lead (3-month average): -80%
- Carbon monoxide (8-hour): -77%
- Nitrogen dioxide (annual): -56%
- Fine Particulate Matter (24-hour): -40%
- Coarse Particulate Matter (24-hour): -34%
- Ground-level ozone (8-hour): -22%



The US EPA Air Quality report is at <https://gispub.epa.gov/air/trendsreport/2018>.

US Approval of Final VW Diesel Modification to remove Defeat Devices

On 13 July 2018, the California Air Resources Board (CARB) and the US Environmental Protection Agency (EPA) approved emissions modifications for the last remaining Volkswagen vehicles containing undisclosed software shutting down emissions control equipment.

The vehicles affected by the final modification are 3-litre, Generation 1.2 diesels. For these vehicles, the only remaining action is for VW and Audi to submit their resale plans for modified vehicles that owners have returned.

This approval marks the end of three year of redesign of more than 500 000 vehicles in the US, with 80 000 of them registered in California.

More info is at ww2.arb.ca.gov/news/carb-and-us-epa-announce-approval-final-volkswagen-diesel-modification-remove-illegal-defeat.

US-wide Recall of Cummins Heavy-duty Trucks for Non-Durable SCR Catalyst

On 31 July 2018, the California Air Resources Board (CARB) announced that 500 000 heavy-duty trucks manufactured by Cummins Inc. will be recalled due to excess emissions caused by defective catalysts.

The excess emissions were discovered after CARB launched its new Heavy Duty In-Use Compliance programme in 2016. The Cummins action marks the first major recall resulting from the programme, in which subject vehicles are tested on the road with Portable Emissions Measurement Systems (PEMS).

Initial readings of some of the Cummins engines revealed higher than expected NOx emissions. The testing confirmed that the Selective Catalytic Reduction (SCR) systems were defective, causing emissions of NOx to exceed California and US Federal standards. CARB noted that the high NOx emissions were due to faster-than-expected degradation of the SCR catalyst and not the result of a 'defeat device'.

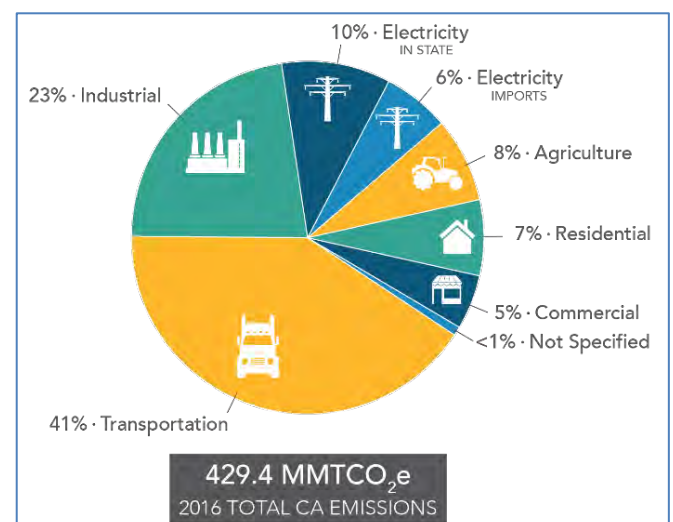
The same problem was found to affect about 60 Cummins engine families found in a wide range of vehicles, from big-rigs, to larger pick-up trucks and some buses. The trucks will be recalled in a two-phase operation. Starting in August 2018, owners of the 500 000+ affected vehicles will receive letters with instructions on how to get their catalysts replaced. The second phase will begin in March 2019.

More info is at ww2.arb.ca.gov/news/carb-investigation-leads-nationwide-recall-500000-cummins-heavy-duty-trucks.

California 2016 Greenhouse Gas Inventory

On 11 July 2018, the California Air Resources Board (CARB) published its greenhouse gas (GHG) inventory for 2016 showing that emissions in California fell below 1990 levels for the first time since they peaked in 2004.

California must reduce its GHG emissions to 1990 levels (431 million tonnes) by 2020 and further reduce them by 40% in 2030. According to the newly published inventory, in 2016, California emitted 429 million tonnes of GHG – a drop of 12 million tonnes, or 3%, from 2015.



Electricity generation had the largest decline. Emissions from this sector declined 18% in 2016, reflecting continued growth in renewable energy, such as solar, wind and geothermal and a corresponding drop in natural gas

generation. Solar electricity, including rooftop generation, grew 33%, while natural gas fell more than 15%.

The transportation sector, California's largest source of GHG, saw a 2% increase in 2016 because of increased fuel consumption. But the State also saw cars and trucks use a record amount of biofuels – 1.5 billion gallons (3.8 billion litres) in all. These low-carbon alternative fuels, consisting mostly of biodiesel, renewable diesel, and ethanol, avoided 14 million tonnes of CO₂ from entering the atmosphere, compared to what would have happened if conventional fossil fuels had been used, CARB said.

Emissions from the industrial sector, including refineries, oil and gas extraction, cement plants, and other stationary sources, fell 2% from 2015 levels, though emissions from refineries increased slightly.

More info is at ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time.

CARB 2017 Annual Enforcement Report

On 28 June 2018, the California Air Resources Board (CARB) released its 2017 Annual Enforcement Report.

Overall, in 2017, CARB closed 1650 enforcement actions for \$17 485 277 (€15 million) in penalties.

Regarding enforcement of the Truck and Bus Regulation, the report says that as of early 2018, the overall compliance rate is 74% for heavy trucks and 88% for light trucks. Compliance rates are lowest for smaller fleets (66%) and highest for large fleets (91%). Overall, there are more than 57 000 heavy trucks and nearly 25 000 light trucks registered in California that are not compliant with the regulation. In addition, there are almost 260 000 trucks in fleets registered in other states that report mileage in California and appear to be non-compliant, the report says.

Regarding field enforcement of trucks, the report says that the CARB Enforcement Division staff issued 3963 citations in 2017. These citations were issued across all programmes, with 1499 (38%) for Truck and Bus violations, 921 (23%) for off-road vehicles, 783 (20%) for transport refrigeration unit violations, and the remaining 760 (19%) for all other diesel programmes.

The CARB 2017 Enforcement Report is at www.arb.ca.gov/enf/reports/2017_enf_annual_report.pdf.

ASIA PACIFIC

Heavy-duty China VI Standard

On 28 June 2018, the Ministry of Ecology and Environment (MEE) of the People's Republic of China released the final rule for the China VI emission standard for heavy-duty vehicles (HDVs) as GB17691-2018.

The China VI standards are applicable to new diesel compression ignition engines and spark-ignited engines fuelled with natural gas or Liquefied Petroleum Gas (LPG) for HDVs > 3500 kg.

China VI will be implemented in two phases: China VI-a and China VI-b. China VI-a is largely equivalent to Euro VI. It will take effect on 1 July 2019 for new gas-powered HDVs, on 1 July 2020 for new urban HDVs, and on 1 July 2021 for the remaining new HDVs.

China VI-b will take effect on 1 January 2021 for new gas-powered HDVs, and on 1 July 2023 for all new HDVs. It introduces slightly more stringent testing requirements and a remote emission monitoring system.

The International Council on Clean Transportation (ICCT) published on 20 July 2018 a summary of these final rules.

Table 8 Comparison of China V/Euro V, Euro VI, China VI-a and China VI-b HDV standards.

	China V/Euro V	Euro VI	China VI-a	China VI-b
Engine test cycle	ESC, ETC	WHSC, WHTC, WNTE		
Emission limits on transient cycle				
NO _x (g/kWh)	2	0.46		
PM (g/kWh)	0.03	0.01		
PN (#/kWh)	No limit	6E+11		
PEMS test	No	Yes		
Emission limits for PEMS test				
NO _x (g/kWh)	N.A.	0.69 (CF=1.5)		
PN (#/kWh)	N.A.	No limit	No limit	1.2E+12 (CF=2.0)
Altitude boundary for PEMS test	N.A.	<1,700 m	<1,700 m	<2,400 m
Pay load for PEMS test	N.A.	50%-100% (Euro VI-c and before) 10%-100% (Euro VI-d)	50%-100%	10%-100%
OBD requirements	Euro V OBD	Euro VI OBD	Euro VI OBD + US anti-tampering provisions	
Remote OBD data reporting	No	No	No	Yes
Emission durability periods for different vehicle categories	100,000 km/5 years 200,000 km/6 years 500,000 km/7 years	160,000 km/5 years 300,000 km/6 years 700,000 km/7 years	200,000 km/5 years 300,000 km/6 years 700,000 km/7 years	
Emission warranty program	No	No	Yes	

Specifically, the HDV China VI standard features:

- Reductions in NO_x and PM emission limits by around 70% from the current China V standard;
- The introduction of particle number (PN) limits;
- A shift from the European Steady-state Cycle (ESC) and European Transient Cycle (ETC) to the World Harmonized Stationary Cycle (WHSC) and World Harmonized Transient Cycle (WHTC);
- Inclusion of new World Harmonized Not-to-Exceed (WNTE) test;
- Extended durability requirements;
- Adoption of full vehicle Portable Emission Measurement System (PEMS) testing and requirements based on the European PEMS regulation, with modifications that address the unique driving conditions in China for type test, new production and in-service conformity testing;
- Improved on-board diagnostic (OBD) system and anti-tampering provisions based on US OBD requirements;
- A requirement for vehicles to be equipped with a remote emission monitoring on-board terminal (remote OBD), a first in vehicle regulation across the globe;

- A multi-component compliance programme involving agency- and manufacturer-run emission tests during pre-production, production, and in-use stages;
- China's first emission warranty programme for HDVs, in which manufacturers are required to guarantee emission control parts for a minimum distance travelled or service time.

The final rule-making includes one statement that indicates future possible requirement on CO₂ emission from HDVs.

The China VI GB17691-2018 standard is at http://kjs.mep.gov.cn/hjbhzbz/bzwb/dqhjbh/dqydywrvpfbz/201807/t20180703_445995.shtml and the ICCT summary is at www.theicct.org/sites/default/files/publications/China_VI_Policy_Update_20180720.pdf.

Sri Lanka moves to Euro 4 Emissions Standard

On 15 July 2018, *the Sunday Times* of Sri Lanka reported that the Environment Ministry had just issued final regulations requiring that all vehicles and engines, imported into or assembled locally in Sri Lanka, must now conform to Euro 4 emission standards.

Director (Air Resource Management & National Ozone Unit) of the Environment Ministry, S. Dharmakeerthi said the tougher regulations are for reduction in vehicular emissions, adding that all imported vehicles since 2003 are of Euro 2 standards. This follows many countries in the region which are moving to a higher level of European emissions standards.

ICCT Report on Real-World Emissions of Two China 5 Gasoline Cars

On 13 July 2018, the International Council on Clean Transportation (ICCT) published a report on laboratory and on-road testing of exhaust emissions of two modern China 5 light-duty gasoline vehicles.

For this study, two modern China 5 gasoline cars were tested in the laboratory on a chassis dynamometer and on the road by using a Portable Emissions Measurement System (PEMS). Laboratory chassis dynamometer tests included standard China 5 type-approval tests (NEDC, 25°C, and cold start) and tests under various cycles and conditions to reflect real-world complexity, such as low/high ambient temperature, cold/hot start, air conditioning operation, and on the WLTP. The RDE test routes, equipment, and ambient conditions all met the provisions in the China 6 RDE regulation.

Vehicle A, a 1.6 L small sedan with port fuel injection (PFI), and Vehicle B, a 2.4 L multi-purpose vehicle with gasoline direct injection (GDI), both passed the China 5 type-approval tests over the NEDC. However, NO_x emissions of the PFI increased significantly on the hot-start NEDC and on cold-start WLTP and exceeded the China 5 limit. In addition, the NO_x results of the PFI car in RDE tests were on average 1.6 times the China 5 limit. On the contrary, NO_x emissions from the GDI vehicle were even lower than

the China 6b limit under all laboratory and RDE tests. Investigation indicates that the high NO_x of Vehicle A is most likely attributable to a poor and lenient design of the fuel injection control strategy.

Both vehicles showed significantly higher emissions of CO over the more dynamic WLTP tests. This is probably because the engines were running at rich air-to-fuel ratios during the higher engine loads imposed by harder accelerations in the WLTP. In RDE tests, CO emissions in some cases exceeded the China 5 limit by 2.8 times. According to the ICCT, the results provide sound arguments that CO emissions from gasoline cars are not properly controlled under real-world driving conditions and need particular attention from the regulators.

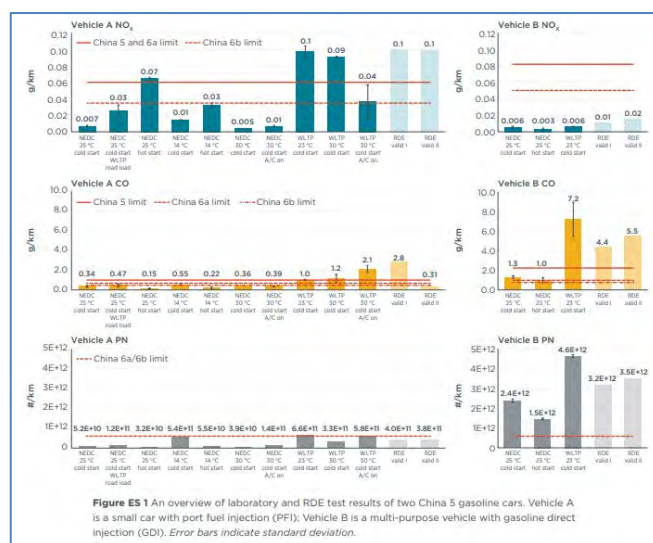


Figure ES 1 An overview of laboratory and RDE test results of two China 5 gasoline cars. Vehicle A is a small car with port fuel injection (PFI); Vehicle B is a multi-purpose vehicle with gasoline direct injection (GDI). Error bars indicate standard deviation.

Particle number (PN) emissions from the conventional PFI car managed to stay at low levels in all circumstances, while the GDI one had an order of magnitude higher PN emissions in laboratory and RDE tests.

The ICCT report is at www.theicct.org/sites/default/files/publications/China5_LDV_testing_White_Paper_20180713.pdf.

Indian Study exposes Massive Dumping of Used Vehicles in Africa and South Asia

On 23 July 2018, the Indian Think-Tank Centre for Science and Environment (CSE) released a study titled 'Clunkered: Combating Dumping of Used Vehicles – A roadmap for Africa and South Asia'.

The study found that over 40 million vehicles of the 2 billion global vehicle fleet (i.e. 4% of global automobile ownership) reach end-of-life every year. Large numbers of these get traded to low- and middle-income countries of Africa and South Asia. About 80-90% of vehicles imported to Africa are old and used, with emissions of pollutants, greenhouse gases and black carbon worsening public health and climate change risks.

Importing countries are fighting the problem with age-caps, higher taxes on older vehicles, emissions-based

taxation or outright bans but exporting countries must also take responsibility to stop exporting old and damaged vehicles and support in-use emissions management and scrapping of older vehicles in poorer countries.

CSE says that as European countries phase out old diesel cars, there are serious fears about their dumping in Africa which neither has clean diesel nor the capacity to monitor emissions from vehicles. Nigeria and Mauritius have been able to prevent this thanks to higher taxation on diesel fuel compared to gasoline but other countries are vulnerable.

More info is at www.cseindia.org/new-study-from-cse-exposes-massive-environmental-dumping-of-old-and-used-vehicles-in-africa-and-south-asia-8871.

AFRICA

Ghana's Draft Motor Vehicle Emission Standards and Regulations

On 17 July 2018, the United Nations Environment Programme (UNEP) announced that the Environmental Protection Agency of Ghana has drafted its Motor Vehicle Emission Standards and Regulations.

The document was drafted with support from UNEP and the Swedish International Development Cooperation Agency. Key recommendations proposed during the stakeholder's engagement workshop include in particular:

- There is a need to speed up full implementation of fuel quality standards (e.g. max 50 ppm diesel sulfur content nationwide from local refining).
- There is need to set guidelines/specifications for emission control systems on vehicles (i.e. exhaust gas recirculation, catalytic converters, diesel particulate filters, etc.) that would help meet and/or exceed the emissions requirements.
- Testing garages should be evenly spread across the country and not concentrated around major urban areas only. All testing equipment should be adequately calibrated and maintained. All testing data should be maintained and stored. Testing can be done for parameters not intended to be regulated (e.g. CO₂ and O₃) so as to build a database for use in national planning.
- A public awareness raising campaign should communicate benefits of emissions testing to road users especially commercial vehicle users.
- There was a robust discussion on emission testing offences and penalties for non-compliance, and power of arrest for emission officers.

More info is at www.unenvironment.org/news-and-stories/featured-article/ghana-disseminates-draft-motor-vehicle-emission-standards-and.

GENERAL

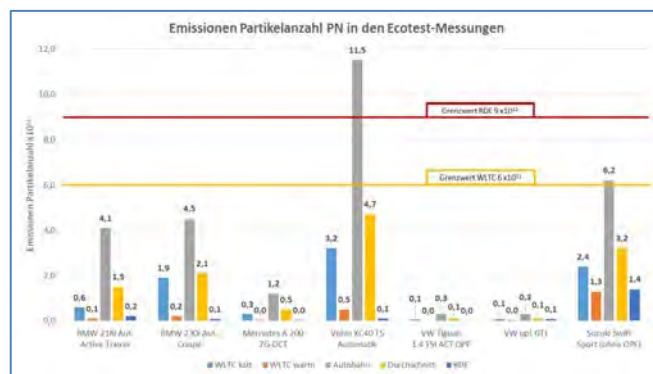
ADAC Ecotest Report of Gasoline Direct Injection (GDI) Cars

On 20 July 2018, the German motor club ADAC published its Ecotest results for seven Gasoline Direct Injection (GDI) cars.

Six of the GDI cars tested by ADAC on chassis dyno and on the road were equipped with a Gasoline Particulate Filter (GPF): a BMW 218i Active Tourer, a BMW 230i Coupe, a Mercedes A 200, a Volvo XC40 T5 AWD, a VW Tiguan 1.4 TSI ACT GPF and a VW up! GTI. Five of these six models are certified to Euro 6d-temp and therefore compliant to Real-Driving Emissions (RDE) requirements. The VW Tiguan was equipped with a GPF but certified only to Euro 6b.

In addition, ADAC also tested a Suzuki Swift Sport which also meets the Euro 6d-temp standard but without a GPF.

All GPF-equipped cars had very low Particle Number (PN) emissions when tested on the road. Amongst the various chassis dyno test cycles, higher PN emissions were measured on the highway cycle, with the Volvo XC40 T5 AWD exceeding 9x10¹¹/km limit. The Suzuki Swift without a GPF was able to meet the PN standard for RDE without a GPF but PN emissions were one order of magnitude higher than the GPF-equipped models.



The ADAC results are at www.adac.de/infotestrat/tests/eco-test/benziner_mit_opf_2018/default.aspx?ComponentId=325572&SoUrcePageId=31832.

ICCT Report on Global Penetration of Diesel Particulate Filters

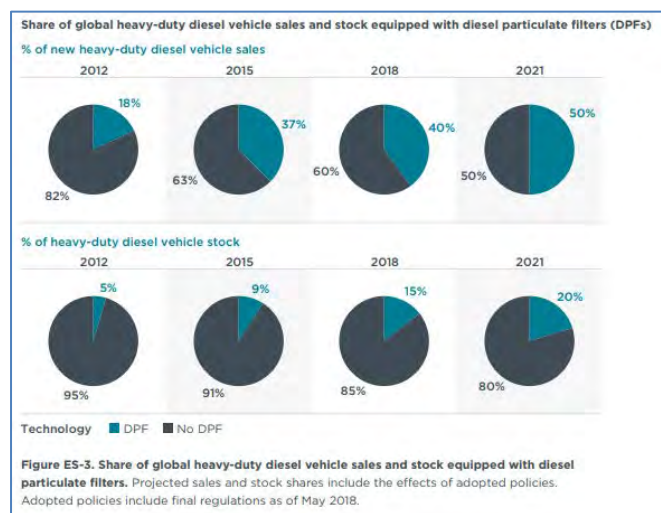
On 2 July 2018, the International Council on Clean Transportation (ICCT) published a report assessing progress in 2018 toward implementing the Climate and Clean Air Coalition's (CCAC) global strategy to introduce low-sulfur fuels and cleaner diesel vehicles.

The rapid reduction of diesel black carbon (BC) emissions is one element of a strategy proposed to reduce near-term climate warming by an average of 0.5°C over 25 years. To achieve this target, emissions of black carbon from all sectors must fall to 75% below 2010 levels by 2030. The Heavy-Duty Vehicles (HDV) Initiative of the CCAC released

its global strategy in 2016 with the aim for all countries to implement vehicle emissions and fuel quality requirements equivalent to Euro 4/IV by 2025 and Euro 6/VI by 2030.

According to the ICCT, in 2018, 40% of new heavy-duty diesel vehicles (HDDVs) sold worldwide are equipped with DPFs. This share is projected to grow to 50% in 2021 after Euro VI-equivalent standards have gone into force in India and Mexico. If China and Brazil introduce Euro VI-equivalent standards, the share of new HDDVs with DPFs would increase to 70%.

Policies adopted as of May 2018 are projected to reduce global BC emissions from diesel road transport by 37% by 2040, equivalent to 40% below 2010 levels. The implementation of the Global Sulfur Strategy could reduce BC emissions to 88% below 2010 levels in 2040.



The ICCT report on soot-free diesel is at www.theicct.org/sites/default/files/publications/Global_progress_soot_free_diesel_20180702.pdf.

ICCT Report on Emissions Reduction Costs for Diesel Non-Road Machines

On 11 July 2018, the International Council on Clean Transportation (ICCT) published a cost assessment of emissions control technologies used in diesel non-road vehicles and equipment.

This report aims to quantify the costs incurred per engine by non-road engine manufacturers to comply with US and European emission standards. The ICCT considered the direct material and manufacturing costs of major emission reduction technologies and fixed costs related to research and development, tooling and certification. The total cost of emission reduction technologies is evaluated for each regulatory step, from Tier 2/3 to Tier 4f standards in the US and from Stage II/IIIA to Stage V in the EU.

The total cost of emission control technologies is proportional to engine rated power. For some engine rating categories, the incremental cost is insignificant, as can be observed for engines rated below 19 kW. The most popular agricultural tractors in India are fitted with engines

rated between 19 and 37 kW; for this particular segment, the incremental cost to reach Tier 4f from Tier 3 is estimated to be less than \$785 (€670) and reaching Stage V would require around \$1000 (€850). Non-road equipment rated at the higher end of the power range shows cost numbers similar to those observed in the heavy-duty vehicle sector. For this engine segment, the largest incremental cost is driven by the adoption of DPF and SCR systems in the Tier 4f and Stage V steps.

Table 22. Summary of non-road emission control technology costs for European regulatory progression

	Standard	<19 kW	19-37 kW	37-56 kW	56-75 kW	75-130 kW	130-224 kW	224-447 kW	447-560 kW
Total costs	Baseline	\$223	\$251	\$485	\$850	\$1,366	\$1,627	\$1,041	\$2,731
	Stage IIIb	—	\$265	\$862	\$1,569	\$2,227	\$2,859	\$3,621	\$5,983
	Stage IV	\$229	\$1,035	\$1,412	\$2,544	\$2,808	\$3,797	\$4,787	\$7,759
	Stage V	\$229	\$1,250	\$1,697	\$3,201	\$3,574	\$4,877	\$6,191	\$10,366
Incremental cost with respect to baseline	Stage IIIb	—	\$14	\$377	\$719	\$861	\$1,232	\$1,680	\$3,202
	Stage IV	\$6	\$785	\$927	\$1,694	\$1,442	\$2,171	\$2,845	\$5,028
	Stage V	\$6	\$999	\$1,212	\$2,351	\$2,208	\$3,520	\$4,250	\$7,635
Incremental costs with respect to previous standard	Stage IIIb	—	\$14	\$377	\$719	\$861	\$1,232	\$1,680	\$3,202
	Stage IV	\$6	\$770	\$550	\$975	\$581	\$939	\$1,165	\$1,826
	Stage V	\$6	\$215	\$285	\$657	\$766	\$1,080	\$1,405	\$2,607

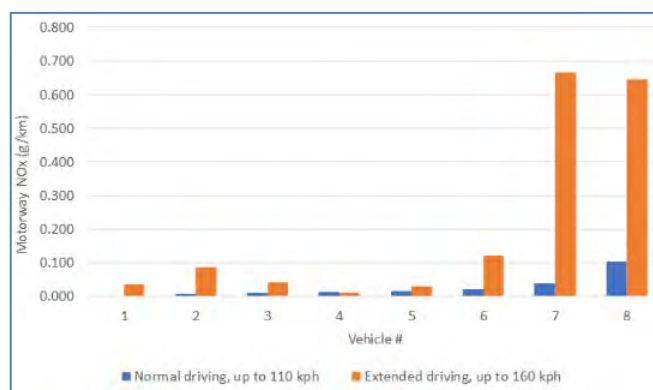
The ICCT report on NRMM ECT cost assessment is at www.theicct.org/sites/default/files/publications/Non_Road_Emission_Control_20180711.pdf.

Emissions Analytics' Risk Assessment of Emissions Performance

On 18 July 2018, Emissions Analytics (EA) announced that they will launch in September 2018 a new evaluation programme that will quantify the risk of excessive emissions for each vehicle tested.

EA have been collecting data for a year and parameters assessed are high vehicle speeds, higher and lower rates of vehicle acceleration, cold start emissions, and emissions under DPF regeneration. This risk assessment will come on top of the existing EQUA index that identifies on-road emissions performance of vehicles.

The ten RDE-compliant Euro 6d-temp cars tested so far by EA performed well during moderate on-road test, but two showed some risk for high emissions (e.g. at 160 km/h).



For reference, under the RDE regulation, the vehicle can be driven between 145 and 160 km/h for up to 3% of the total motorway driving time. The risk of compliance therefore comes from a vehicle that has a significant emissions uplift at 160 km/h and is relatively close to the limit at more moderate speeds, EA said.

More info is at <https://mailchi.mp/emissionsanalytics/real-driving-emissions-is-a-tough-regulation-but-also-a-risky-one?e=6fa3b05d9a>.

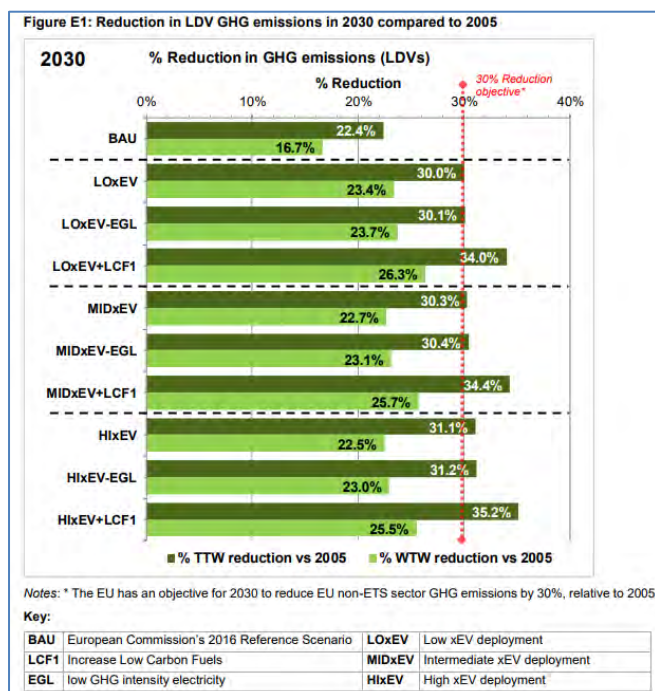
Ricardo Report on Low-Carbon Fuels

On 11 July 2018, the European Renewable Ethanol association, ePure, released a new report commissioned from Ricardo assessing the potential contribution of low carbon fuels in decarbonising conventionally fuelled light duty vehicles (LDVs) from 2020-2050 in the context of the European Commission's 2nd Clean Mobility Package and the EU's medium- and long-term GHG reduction targets.

In the study, Ricardo considered three scenarios of powertrain fuel development: from low to high electric vehicles deployment. For each scenario, greenhouse gas (GHG) emissions were assessed on both a Tank-to-Wheel (TTW) basis, as currently regulated for LDVs, and a Well-to-Wheel (WTW) basis. Two fuel scenarios were then assessed, a reference fuel scenario with constant biofuel substitution share, and a low carbon fuel scenario where biofuel production continues to rise post-2020, at a level considered to reflect realistic rates of development within the industry.

The additional savings generated by the increased use of low carbon fuels, mean that even with low electrification rates in 2030, reductions achieved under a low carbon fuels scenario are greater than a scenario with high electrification but no increased use of low carbon fuels. This is true even if electricity decarbonises more rapidly than in the reference scenario.

Similar results are obtained for 2050, confirming that increased future deployment of sustainable low carbon fuels could make an important contribution to reducing the GHG emissions from LDVs in both the medium and long-term.

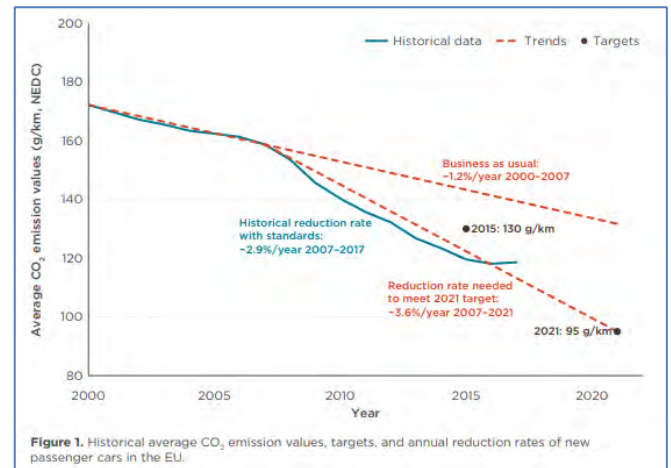


The Ricardo report is at https://epure.org/media/1729/ed51122_epure_cmp_modelling_final_report_issue3.pdf.

ICCT Reports on CO₂ Emissions from European Cars and Eco-Innovations

On 11 July 2018, the International Council on Clean Transportation (ICCT) published two reports related to CO₂ emissions from passenger cars in the EU.

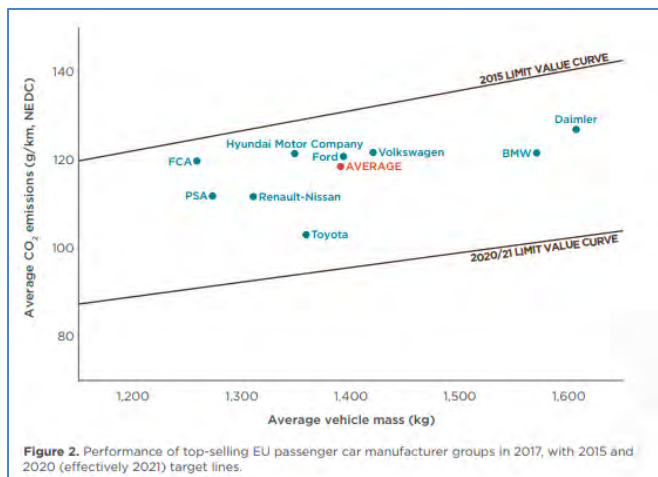
The first report, titled "CO₂ emissions from new passenger cars in the EU: Car manufacturers' performance in 2017", is based on the preliminary dataset recently released by the European Environment Agency (EEA). The sales-weighted average CO₂ emissions from new passenger cars in the EU in 2017 were 119 g/km, 1 g/km higher than in 2016 – the first recorded increase in annual fleet-average CO₂ emissions.



Toyota had the lowest CO₂ emissions out of all manufacturer groups in 2017 and managed to reduce average CO₂ emissions by 2 g/km from the previous year. Only the Hyundai achieved a greater reduction of 3 g/km. Out of the European manufacturer groups, only BMW achieved emission reductions in 2016-2017; average emission values of all other European manufacturer groups either remained stable or increased by up to 2 g/km from 2016 to 2017. With 9 g/km remaining, Toyota was the closest to its 2020/21 target in 2017. Fiat Chrysler was in the worst position to meet its 2020/21 target, with a 29 g/km (24%) reduction left to go. Fleet-average CO₂ emissions will have to decline by 24 g/km (20%) to be compliant with 2020/21 targets.

The diesel market shares continued to fall, from 49% in 2016 to 44% in 2017. All types of electrified powertrains gained ground during the same time: hybrid-electric vehicles (HEVs) grew from 1.9% to 2.7%, plug-in hybrid electric vehicles (PHEVs) from 0.7% to 0.9%, and battery electric vehicles (BEVs) from 0.6% to 0.9%. Those gains were not enough to offset the drop in diesel sales, leaving room for petrol vehicles to grow by 4 percentage points from 2016 to 2017. Other powertrains, predominantly

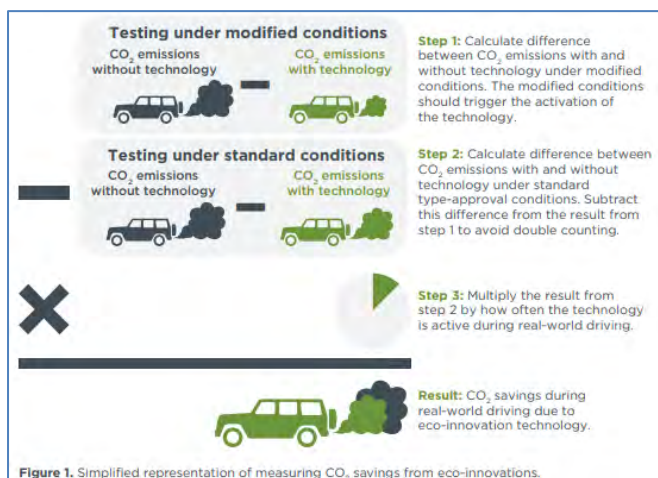
compressed natural gas (CNG) and liquefied petroleum gas (LPG) vehicles, accounted for 1.3% of the market.



The ICCT report on CO₂ emissions from new cars is at www.theicct.org/sites/default/files/publications/EU_manufacturers_performance_CO2_20180712.pdf.

The second ICCT report provides an overview and evaluation of eco-innovations in European passenger car CO₂ standards. The eco-innovations mechanism rewards innovative technologies that produce real-world CO₂ savings beyond what is measured over the standardized test cycle during vehicle type-approval.

While 25 eco-innovations for passenger cars have been approved to date, less than half have made it to market. Fleet-average CO₂ savings from eco-innovations remained low in 2017, at less than 0.04 g/km. Nevertheless, select vehicles achieved CO₂ savings upward of 4 g/km, and future CO₂ targets are expected to accelerate eco-innovations uptake. In addition, a recent amendment to the eco-innovation regulation simplifies the process of approving eco-innovations, incentivizing vehicle manufacturers and component suppliers to market more technologies.



The ICCT report on eco-innovations is at www.theicct.org/sites/default/files/publications/EU_Eco_innovations_Briefing_20180712.pdf.

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Powertrain Modelling and Control Conference 2018

10-11 September 2018, Leicester, UK

www.pmc-conf.com

Topics of interest include electric drivetrains; hybrid powertrains; system identification; powertrain optimization; emission legislation; powertrain / engine testing; fuel cell; noise, vibration and harshness; combustion engine modelling; performance /drivability; ECU development; drive cycles; mapping and calibration; Hardware-in-Loop (HIL) testing; driveline and transmission; and tribology and friction

The Low Carbon Vehicle Event 2018

12-13 September 2018, Millbrook, UK

www.cenex.co.uk/cenex-lcv/

AECC will give a presentation on diesel engines on the pathway to low impact on local air quality.

SAE International Powertrains, Fuels & Lubricants Meeting

17-19 September 2018, Heidelberg, Germany

www.pfl18.org

Topics of interest include general powertrain development; engine combustion; exhaust, aftertreatment & emissions; fuels and lubricants; new engines, components, actuators & sensors; hybrid & electric powertrains; and transmission and driveline technology.

37th FISITA World Automotive Congress: Disruptive Technologies for Affordable and Sustainable Mobility

2-5 October 2018, Chennai, India

www.fisita-congress.com

The congress topics include powertrain & emissions, fuels & lubricants, noise & vibration, vehicle dynamics, active and passive safety, electric & hybrid vehicles, autonomous & connected vehicles, manufacturing & materials, vehicle concepts, and sustainability.

2018 Aachen Colloquium Automobile and Engine Technology

8-10 October 2018, Aachen, Germany

www.aachener-kolloquium.de

The congress provides a wide range of technical presentations addressing current challenges of the vehicle and engine industry.

6th International Conference Real-Driving Emissions

15-17 October 2018, Berlin, Germany

<https://real-driving-emissions.iqpc.de>

SAE Heavy Duty Diesel Emissions Control Symposium

16-17 October 2018, Gothenburg, Sweden

<https://hddec18.org>

At the bi-annual symposium, the very latest trends in global emissions control legislation and the implications of these regulations on engine and after treatment technology will be discussed.

Integer Emissions Summit & AdBlue[®] Forum India 2018

17-18 October 2018, New Delhi, India

www.integer-research.com/conferences/ies-india-2018/

ECT 2018 Conference

25-26 October 2018, Pune, India

www.ecmaindia.in/eventsdetails.aspx?mpgid=41&pgidtrail=42&Eventsid=15

The overall theme for the conference organized by the Emissions Control Manufacturers' Association (ECMA) in India is "BS VI and Real Driving EmissionsPath Forward" with specific themes for each session: regulation and real emissions on road.

Routes to Clean Air 2018

29-30 October 2018, Birmingham, UK

<http://iaqm.co.uk/event/routes-to-clean-air-2018>

The Institute of Air Quality Management (IAQM) presents Routes to Clean Air 2018, a two-day conference where air quality, public health and transport professionals share their experiences of improving traffic emissions.

11th International Congress on Catalysis and Automotive Pollution Control CAPoC11

29-31 October 2018, Brussels, Belgium

<http://capoc.ulb.ac.be>

The International Congress on Catalysis and Automotive Pollution Control will discuss applications and requirements of catalysis in automotive emission control such as catalyst and sorption technologies; particulate emission control for both diesel and gasoline engines; aftertreatment for gaseous HC, H₂ and renewable or reformulated fuel mixtures; emission control for natural-gas and dual-fuel engines; emission control for hybrid vehicles; off-cycles emissions and unregulated pollutants (e.g. greenhouse gases); materials for catalysts, washcoat and fuel-borne catalysts; modelling of aftertreatment systems and catalyst characterization; integrated emission control systems, on-board diagnostics; sustainable fuel technologies; and innovative technologies (new materials, recovery of precious metals).

WHO 1st Global Conference on Air Pollution and Health

30 October - 1 November 2018, Geneva, Switzerland

www.who.int/airpollution/events/conference/en

The conference will bring together global, national and local partners to share knowledge and mobilize action for cleaner air and better health globally. The conference will update the evidence on the health impacts of air pollution; methods of monitoring pollution and health exposures; and tools for assessing and implementing effective interventions. It will support strong health sector leadership for change, in partnership with other sectors. Cities and countries will be invited to join the BreatheLife campaign and commit to reducing air pollution by 2030 in line with WHO Air Quality Guidelines.

Ricardo Motorcycle Conference 5.0

5 November 2018, Milan, Italy

<https://motorcycle.ricardo.com/motorcycle-conference>

A niche annual event that brings together leading global motorcycle industry experts to discuss new technologies and future drivers within the motorcycle and urban mobility arenas.

Integer Emissions Summit USA 2018

6-7 November 2018, Indianapolis, USA

www.integer-research.com/conferences/ies-usa-2018/

16th FAD-Conference "Challenge – Exhaust Aftertreatment for Diesel Engines"

7-8 November 2018, Dresden, Germany

www.fad-diesel.de/Conference_2018

2nd International FEV Conference Zero CO₂ Mobility

13-14 November 2018, Aachen, Germany

www.fev.com/events/fev-conferences/fev-conference-zero-co2-mobility/introduction.html

The conference will offer a platform for strategic discussion on the potential and performance of various forms of energy storage – from battery technologies to eco- and e-fuels.

10th Better Air Quality Conference

14-16 November 2018, Kuching, Malaysia

<http://baq2018.org>

The 10th Better Air Quality (BAQ) is themed, Regional Action, Global Impact. It is organized by Clean Air Asia, the Clean Air Forum Society of Malaysia (MyCAS), Malaysia's Ministry of Natural Resources and Environment, and the Natural Resources and Environment Board of Sarawak.

2018 Polis Conference on "Transport innovation for sustainable cities and regions"

22-23 November 2018, Manchester, UK

www.polisnetwork.eu/2018conference

AECC will give a presentation on Modern, Real-Driving Emissions (RDE)-compliant cars: Key to improving urban air quality

4th Annual Automotive Exhaust Systems Summit

29-30 November 2018, Düsseldorf, Germany

<http://vonlanthengroup.com/en/events/4th-annual-automotive-exhaust-systems-summit.html>

Key practical learning points of the summit include insights on the best practices and latest innovative technologies for exhaust systems, virtual exhaust development, latest advanced design tools, exhaust sensors, real-time OBD, simulation, exhaust heat recovery system development, future diesel engine exhaust systems and diesel exhaust gas aftertreatment, the role of tomorrow's exhaust systems, future powertrains, and future energy carriers for clean mobility, emissions legislation and future requirements, and exhaust emissions of hybrid vehicles.

8th China International Diesel Engine Summit 2018

4-6 December 2018, Beijing, China

www.borscon.com/2018de8/cn/index.html

The summit will cover what is happening in the diesel engine industry in China, with focus on the policies and regulations for efficiency, emission, and fuel consumption which are of the industry's top concern currently, as well as latest technologies, future trends and burgeons of innovative business models.

23rd International Transport and Air Pollution (TAP) Conference

15-17 May 2019, Thessaloniki, Greece

www.tapconference.org

The theme of TAP2019 is 2020-2030: Transport in critical transition. Indeed, this decade will determine whether transport systems will succeed in moving ahead, fulfilling their sustainability targets.

Deadline for abstract: 31 October 2018

40th International Vienna Motor Symposium

16-17 May 2019, Vienna, Austria

<https://wiener-motorensymposium.at>

Deadline for abstract: 30 September 2018

28th Aachen Colloquium Automobile and Engine Technology

7-9 October 2019, Aachen, Germany

www.aachener-kolloquium.de

The congress provides a wide range of technical presentations addressing current challenges of the vehicle and engine industry.