

NEWSLETTER

International Regulatory Developments

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EUROPE

TCMV Meeting Key-Outcomes

On 5 July 2022, the EU Commission's Technical Committee on Motor Vehicles (TCMV) met in-person to discuss various aspects of European emissions regulations.

The TCMV approved amendments to Regulation (EU) 2017/1151 regarding type approval of motor vehicles with respect to emissions from light passenger cars and commercial vehicles. A new Euro 6e step is added, which reflects the adaptation to technical progress achieved in the UN World Forum for Harmonisation of Vehicle Regulations (WP.29) on the UN Regulation No. 154 for the Worldwide harmonised Light-duty vehicles Test Procedure (WLTP) and in the draft UN Regulation on Real Driving Emissions (RDE).

The measure improves the RDE test procedure and repeals obsolete provisions for the rules on access to vehicle on-board diagnostics (OBD) information and vehicle repair and maintenance information, which were incorporated into Regulation (EU) 2018/858 (Type Approval Framework). Amongst other important items, the new Regulation redefines the former conformity factors (CF) as PEMS error margin. The values are reduced in line with the Commission's Joint Research Centre (JRC) third Report on conformity factors of 22 February 2021. The regulation includes a revised nitrogen oxides (NOx) margin of 0.10 as well as a reduced Particle Number (PN) margin to 0.34.

The amendments included the utility factor (UF) update for OVC-HEV and OVC-FCHV (OVC stand for Off-Vehicle Charging, i.e. PHEV). Where the normalised distance shall be revised at the latest by 31 December 2024, taking into account the real-world fuel consumption data recorded by fuel consumption monitoring devices on-board and collected under Implementing Regulation (EU) 2021/392.

TCMV also approved a Regulation amending Commission Regulation (EU) No 582/2011 regarding the type-approval of heavy-duty vehicles, adding pure biodiesel (B100) as a new reference fuel. Any blend between B7 and B100 is covered without further testing at type approval. It does however contain an amendment to Annex II of the Regulation to specify that in case of a B100 type approval, approval authorities may request to test the vehicles on biodiesel with any FAME content as part of In-Service Conformity. This measure aims to facilitate the emissions type-approval of heavy-duty vehicles operating on pure biodiesel and on different blends of biodiesel, in accordance with Article 3 of Commission Regulation (EU) No 582/2011.

Finally, the TCMV voted and approved a proposal for a Commission implementing act laying down rules for the application of Regulation (EU) 2019/2144 of the European Parliament and of the Council with regards to uniform procedures and technical specifications for the type-approval

of the automated driving system (ADS) of fully automated vehicles for heavy-duty vehicles.

This aims to extend the certification and on-road verification of CO₂ emissions and fuel consumption to heavy buses, medium lorries and new technologies i.e., hybrid and fully electric vehicles, dual-fuel vehicles, waste heat recovery and advanced driver assistance systems (ADAS). The measure is part of the European Union's strategy for reducing CO₂ emissions and fuel consumption from HDVs.

The voted Euro 6e act can be found at circabc.europa.eu/4273d650-b8a9-4093-ac03-18854fbba4b5/library/5f08baf3-5abf-4b82-8d37-912534960d33

with its annexes at

circabc.europa.eu/4273d650-b8a9-4093-ac03-18854fbba4b5/library/69cd584d-196f-4aba-a6a6-89c668344b4c.

The B100 Regulation can be found at

circabc.europa.eu/4273d650-b8a9-4093-ac03-18854fbba4b5/library/639797eb-f1cf-44cd-b042-447e01849064.

The implementing act on ADS is at

circabc.europa.eu/4273d650-b8a9-4093-ac03-18854fbba4b5/library/e3138eae-effe-4eef-b56e-11fb5289c639.

EC Statement on Council General Approach on Car CO₂ Standards

On 14 July 2022, the European Commission issued a statement about the European Council's recently agreed General Approach on the CO₂ emission standards for cars and vans proposal, as the Council adopted its General Approach on the file during the Environment Council on 28 June 2022.

The EC statement reads "The Commission recalls the Council that it reserves its position on the overall proposed changes to its proposals pending the start of the trilogues between the co-legislators.

On the new recital 9a regarding the presentation of a Commission proposal for registering after 2035 vehicles running exclusively on CO₂ neutral fuels in conformity with EU law, outside the scope of the fleet standards, and in conformity with the Union's climate neutrality objective, the Commission reserves its right of initiative pursuant to its institutional prerogatives under the Treaty".

The Commission's statement can be accessed at

data.consilium.europa.eu/doc/document/ST-10777-2022-ADD-1/en/pdf.

Letters of Formal Notice Regarding Air Quality Rules

On 15 July 2022, the European Commission announced decisions it had made in its July Infringements package.

These decisions, covering various sectors and EU policy areas, aim to ensure the proper application of EU law for the benefit of citizens and businesses.

In the area of air quality, the Commission is calling on Finland (INFR(2022)2029) and Ireland (INFR(2022)2053) to bring national legislation fully in line with EU law on air quality. It states that these Member States have not correctly transposed certain requirements of the Air Quality Directive, for instance with regards to sampling points, data quality objectives, and providing public information. Finland and Ireland now have two months to respond and address the shortcomings raised by the Commission. In the absence of a satisfactory response, the Commission may decide to issue a reasoned opinion.

Full details of the EC decisions are at ec.europa.eu/commission/presscorner/detail/en/INF_22_3768.

Indicators on Progress Towards Environment and Climate Goals

On 26 July 2022, the European Commission presented a list of headline indicators for monitoring progress towards the EU's environment and climate goals to 2030, as well as the 2050 long-term vision to "live well, within planetary boundaries".

The headline indicators follow the structure of the 8th Environment Action Programme building on the European Green Deal and include the 2-3 most policy relevant and statistically robust indicators for each of the thematic priority objectives to 2030, covering climate mitigation, climate adaptation, circular economy, zero pollution, and biodiversity. In addition, the list includes five indicators to measure progress towards addressing the main environmental and climate pressures.

INDICATOR	TARGET	SOURCE ²⁰
Climate change mitigation (Article 2(2)(a))		
1. Greenhouse gas emission (GHG, index 1990=100, tonnes of CO2 equivalent)	Climate neutrality: reduce net GHG emissions by at least 55% by 2030 from 1990 levels ²¹	EEA

Zero pollution and a toxic free environment (Article 2(2)(d))		
7. Premature deaths due to exposure to fine particulate matter (PM2.5) (number of premature deaths)	Environmental impact on health: reduce premature deaths from air pollution by 55% (from 2005 levels) by 2030 ²⁷	EEA

Environmental and climate pressures related to EU production and consumption (Article 2(2)(f))		
12. Energy consumption (in million tonnes of oil equivalent)	Energy efficiency: reduce (primary and final) energy consumption by at least 13% by 2030 compared to 2020 ³⁵	Eurostat
13. Share of renewable energy in gross final energy consumption (in %) ³⁶	Sustainable energy: at least [45%] of energy from renewable sources in gross final energy consumption by 2030 ³⁷	Eurostat

Enabling conditions (Article 3)		
17. Share of environmental taxes in total tax revenues (in %)	Making polluters pay: increase the share of environmental taxes in total revenues from taxes and social contributions	Eurostat
18. Fossil fuel subsidies (EUR million) ⁴⁰	Making polluters pay: reduce environmentally harmful subsidies, in particular fossil fuel subsidies, with a view to phasing them out without delay	European Commission

The Commission will report annually on the progress made, based on stocktaking done by the European Environment Agency from 2023 onwards, with the help of the selected headline indicators. This reporting will facilitate an annual exchange between the Commission, the Member States and the European Parliament to be held in accordance with the 8th Environmental Action Programme.

In addition, the Commission will conduct two in-depth assessments during the lifespan of the programme – a mid-term review in 2024 and a final evaluation in 2029.

The Commission press release is at ec.europa.eu/commission/presscorner/detail/en/IP_22_4667, with details of the headline indicators at eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2022%3A357%3AFIN.

Public Consultation on EU Roadworthiness Package

On 6 July 2022, the European Commission launched a 12-week public consultation on the Roadworthiness Package.

The consultation, in the form of an online survey, aims to gather the views of individuals and stakeholders to help the Commission to revise the Roadworthiness Package. The questionnaire is focusing on topics including improving road safety, reducing air pollutant emissions, and facilitating the free movement of goods and people.

The information received in the consultation will support the revision of Directive 2014/45/EU on periodic roadworthiness tests for motor vehicles and their trailers, Directive 2014/46/EU on the registration documents for vehicles and Directive 2014/47/EU on the technical roadside inspection of the roadworthiness of commercial vehicles circulating in the Union.

The consultation is open for responses until 28 September 2022. It can be accessed at ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12521-Roadworthiness-evaluation-of-EU-rules_en.

Study on Updating Air Quality Guidance

On 25 July 2022, the European Commission published an external study recommending updating the current guidance on air quality monitoring, modelling and plans of Directives 2008/50/EC and 2004/107/EC, the Ambient Air Quality

Directives (AAQDs). The aim of the study was to support the European Commission in the process to strengthen the provisions for air quality monitoring, modelling and plans of the AAQDs. In particular, this involved mapping and analysing established practice across Member States to identify key issues related to implementation of the provisions for air quality monitoring, modelling and air quality plans.

The study proposed a list of 42 technical solutions designed to address the issues identified. One of the key findings is that the timeframe for planned implementation of the technical solutions under review is short, as the majority of the technical solutions (39) are expected to take less than five years to implement, and half (24) are expected to impact air quality decision making in under a year following implementation.

The costs to implement the solutions were found to vary significantly, and the greatest one-off costs are associated with solutions where new monitoring sampling points are required. The study also found that additional costs will be incurred where the successful implementation of a solution is dependent on a certain standard of modelling capability. It says that national, regional, and local competent authorities will often be required to implement the solutions and the costs described for each of the solutions will often fall on the same implementing bodies. Finally, the majority of solutions (30) are targeted to one or two issues. However, synergies exist as regards the tools and mechanisms to deliver the technical solutions.

The Commission will finalise its proposal for a revision of the Directives over the coming months. It is provisionally expected to be adopted on 26 October 2022. Once presented, the proposal would be sent to the European Parliament and to the Council for examination.

The study can be found at op.europa.eu/en/publication-detail/-/publication/d9eb88c1-0c8c-11ed-b11c-01aa75ed71a1/language-en.

ITRE Committee Vote on Renewable Energy Directive

On 13 July 2022, the Industry, Research and Energy (ITRE) Committee of the European Parliament voted on the draft report and amendments to the proposed Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652. The amended proposal for a Directive was published last July by the EU Commission as part of the 'Fit for 55' package. The EP's ITRE Committee is leading the discussion of the dossier within the European Parliament.

MEPs in ITRE Committee voted to raise the share of renewables in the EU's final energy consumption to 45% by 2030, under the revision of the Renewable Energy Directive

(RED), a target also backed by the European Commission under its "RepowerEU" package.

The ITRE Committee demands that Member States set an indicative target for innovative renewable energy technology of at least 5% of newly installed renewable energy capacity and insisted on the transparency of green electricity components and the simplification of the hydrogen ramp-up, including a simpler system for guaranteeing its origin.

In the transport sector, renewables deployment should lead to a 16% reduction in greenhouse gas emissions, through the use of higher shares of advanced biofuels and a more ambitious quota for renewable fuels of non-biological origin such as hydrogen.

MEPs in ITRE adopted the report on the RED with 54 votes to 14, with 6 abstentions. The file will be put to a vote by the full House during the plenary session in Strasbourg that will be held from 12 till 15 September.

The ITRE press release can be found at europarl.europa.eu/news/en/press-room/20220711IPR35006/meps-back-boost-for-renewables-use.

EEA Report on Air Quality in European Cities

On 11 July 2022, the European Environment Agency (EEA) published its updated European City Air Quality Viewer report.

Over 340 cities are included in the European city air quality viewer. Cities are ranked from the cleanest to the most polluted based on average levels of fine particulate matter (PM2.5). The data behind the ranking was collected from over 400 monitoring stations across EEA member countries over the past two calendar years.

From 2020 to 2021, air quality was good in only 11 cities, meaning that levels of PM2.5 were below the World Health Organization's (WHO) health-based guideline for long-term exposure to PM2.5 of 5 micrograms per cubic meter of air (5 $\mu\text{g}/\text{m}^3$). The guideline was exceeded in 97% of the 343 European cities included in the viewer.

In contrast, the European Union's (EU) annual limit value for PM2.5 of 25 $\mu\text{g}/\text{m}^3$ was only exceeded in the three most polluted cities, including Nowy Sacz, Poland, and Cremona and Padova in Italy, highlighting the difference between the WHO guideline and the EU standard.

The viewer focuses on long-term concentrations of PM2.5, as long-term exposure to air pollution causes the most serious health effects, and PM2.5 is the air pollutant with the highest impact on health in terms of premature death and disease.

The Air Quality Viewer is available to download at eea.europa.eu/highlights/air-pollution-which-european-cities?utm_source=EEASubscriptions.

EEA Reports on Air Pollutants in EU and UNECE Requirements

Also on 11 July 2022, the EEA published two reports looking at emissions of air pollutants, targeted by different EU and UNECE requirements.

Under the National Emission reduction Commitments (NEC) directive, EU Member States are required to meet national commitments to reduce emissions for five air pollutants in order to deliver clean air for human health and the environment. Under the Directive, the year 2020 saw a transition to a new, more ambitious set of national emission reduction commitments. In 2020, just under half of Member States met all their national emission reduction commitments according to annual EEA report.

Two Member States need to reduce their NO_x emissions to meet their 2020-2029 national emission reduction commitments. For Lithuania, these reductions represent 33% of the 2020 emission levels, while for Romania it is 4%.

The road transport sector is largely responsible for emissions of NO_x. In 2020, the COVID-19 lockdowns led to significant declines in road traffic levels, and this may have helped Member States achieve their NO_x emission reduction commitments for 2020. EEA says this is likely to be a short-term effect only, with NO_x emissions expected to have rebounded once lockdowns ended and traffic levels increased.

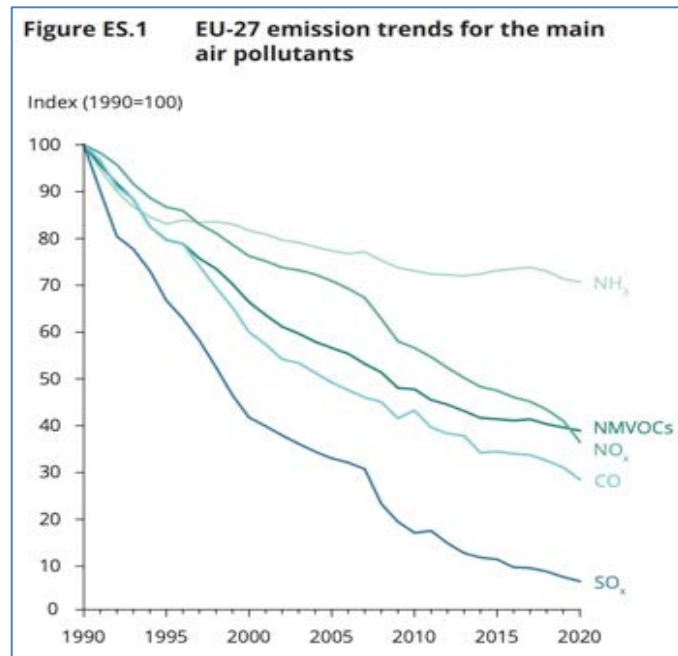
Regarding NO_x emissions in 2020, seven Member States met their emission reduction commitments for 2030, while the remaining 20 Member States will need to reduce emissions. For many Member States the reduction needed is significant: seven Member States will need to reduce 2020 emission levels by more than 30%, while Malta will need to reduce them by more than 50%. Twelve Member States will need a reduction of up to 30%.

Two Member States need to reduce their PM_{2.5} emissions to meet their 2020-2029 national emission reduction commitments. Romania needs to reduce its PM_{2.5} emissions by 22% of 2020 levels to reach its 2020-2029 emission reduction commitment, while Hungary needs to reduce its emissions by 5%.

The EEA says the main source of PM_{2.5} emissions is energy consumption in the residential, commercial and institutional sectors. Significant emissions also result from the manufacturing and extractive industry and from road transport, including from internal combustion engines and from tyre and brake wear.

Regarding PM_{2.5} emissions, seven Member States met their 2030 emission reduction commitments in 2020. Two countries, namely Hungary and Romania, will need to reduce their emissions by more than 50% of 2020 levels, while seven countries will need to reduce emissions by between

30% and 50%. Eleven Member States will need a reduction of up to 30%.



The EEA also published the annual EU emission inventory report 1990-2020, which looks at air pollutant emissions reported by the EU under the UNECE Air Convention. The report shows a continued, albeit recently slowing, downward trend in emissions from 1990-2020 of six key air pollutants: carbon monoxide, ammonia, nitrogen oxides, non-methane volatile organic compounds, sulphur oxides and particulate matter.

The report also states that total PM emissions dropped, mainly thanks to the introduction or improvement of abatement measures across the energy, road transport and industry sectors.

EEA says the road transport sector has been reducing CO and NMVOCs emissions since 1990, and since 1992 NO_x emissions have also continued to decrease. The sector has achieved this primarily through legislative measures requiring the abatement of vehicle exhaust emissions.

The NEC report can be found at eea.europa.eu/publications/national-emission-reduction-commitments-directive-2022/nec-directive, while the emission inventory report is at eea.europa.eu/publications/european-union-emissions-inventory-report.

Updated EP Think Tank Briefing on CO₂ Emission Standards for Cars and Vans

On 5 July 2022, the European Parliament's Think Tank updated its briefing on CO₂ emission standards for new cars and vans, following the EP's vote and the outcome of the Environment Council meeting on the subject.

The update outlines the legislative process over the next few years, particularly in relation to progress reports and funding for a just transition, as well as methodologies for lifecycle assessment and measuring and comparing the efficiency of zero- and low-emission vehicles.

The EP's Think Tank document can be found at [europarl.europa.eu/RegData/etudes/BRIE/2022/698920/EPRS_BRI\(2022\)698920_EN.pdf](https://europarl.europa.eu/RegData/etudes/BRIE/2022/698920/EPRS_BRI(2022)698920_EN.pdf).

Assessment of Sustainable Transport Fuels in Context of Russia-Ukraine Crisis

On 8 July 2022, the of the European Parliament's research department (Research4Committees) published an assessment of the potential of sustainable fuels in transport in the context of the Ukraine-Russia crisis.

The report says that sustainable biofuels will have a role to play in decarbonising transport, especially in aviation and maritime, under strict sustainability conditions and according to a progressive pathway. However, their quick ramp-up will have limited scope as a viable option to make a substantive contribution to the rapid phase out of fossil energy sources.

It goes on to say that in the medium- to long-term (beyond 2030), domestic or imported renewable hydrogen and its derivatives could partially replace fossil energy sources, especially in the aviation and maritime sectors, and possibly in heavy-duty road vehicles. However, renewable hydrogen will not contribute at scale, in the short-term, to a fossil fuel phase out.

The report adds that the effectiveness and the extent of the future contribution of hydrogen and its derivatives to the reduction of fossil fuel use and transport decarbonisation depends on progress that can be achieved to stimulate demand, especially in sectors where there are more cost-effective options than direct electrification for decarbonisation.

The full report can be found at research4committees.blog/2022/07/07/assessment-of-sustainable-fuels-in-transport-in-context-of-ukraine-russia-crisis.

Court of Justice Ruling on Defeat Devices

On 14 July 2022, the Court of Justice of the European Union (CJEU) issued a ruling on what constitutes a defeat device. This follows a case brought by purchasers of Volkswagen vehicles fitted with software that reduces the recirculation of a vehicle's pollutant gases according to, among other things, the temperature detected were requesting that the Austrian courts annul sales contracts they concluded between 2011 and 2013.

According to the information provided by those courts, that software ensures compliance with the limits laid down at EU level for emissions of nitrogen oxide (NOx) only when the outside temperature is between 15 and 33°C ('the temperature window'). Outside of that window, the rate of

exhaust gas recirculation (EGR) reduces in a linear way down to zero, which leads to those limits being exceeded.

The CJEU found that a device which ensures compliance with the NOx emission limits only in the temperature window does in principle constitute a defeat device prohibited under Article 5(2) of Regulation No 715/2007.

The Court pointed out, in that regard, first, that ambient temperatures below 15°C are to be considered as normal within the territory of the European Union. Second, emission limits laid down at EU level must be observed even where those temperatures are significantly below 15°C. Accordingly, software such as that at issue reduces the effectiveness of the emission control system under conditions of normal use.

For that reason, the mere fact that that device contributes to protecting separate engine parts such as the EGR valve, the EGR cooler and the diesel particulate filter does not make it lawful.

That may not be the case if it were established that that device strictly meets the need to avoid immediate risks of damage or accident to the engine, caused by a malfunction of one of those parts, of such a serious nature as to give rise to a specific hazard when a vehicle fitted with that device is driven. Such a 'need' exists only where, at the time of the EC type-approval of that device or the vehicle equipped with it, no other technical solution makes it possible to avoid such risks. The Court noted, that the sole aim of protecting the engine against clogging up and ageing does not justify the installation of a defeat device.

The Court added that In any event, even if there were such a need as the one outlined above, the defeat device is prohibited if, under normal driving conditions, it operates during most of the year.

As regards the rights of consumers where they have purchased goods that are not in conformity with the sale contract, the CJEU found that a vehicle does not show the quality which is normal in goods of the same type and which the consumer can reasonably expect, and therefore is not in conformity with the contract, where, although it is covered by a valid EC type-approval and may, consequently, be used on the road, that vehicle is fitted with a prohibited defeat device.

The Court's press release is available to read in full at curia.europa.eu/jcms/upload/docs/application/pdf/2022-07/cp220124en.pdf.

Horizon 2020 Road Transport Summary Report

On 5 July 2022, the Horizon 2020 Road Transport Research report for 2021 was published. The report summarises status and results of each project, as reported during the H2020 conference at the end of March 2022.

Section 15 covers projects related to heavy-duty vehicles of the future (AEROFLEX and LONGRUN), while section 18 describes projects related to understanding and reducing harmful emissions for human health (including modales, DIAS and NEMO).

The H2020 report can be found at <https://zeroemission.eu/wp-content/uploads/2022/07/Booklet-Outcome-H2020RTR21-1.pdf>.

Implementation of PN PTI in Belgium

From 1 July 2022, the Flemish, Brussels and Walloon regions in Belgium added a particle number test to the periodic technical inspection (PTI-PN test) of diesel vehicles, so that cars without or with a faulty diesel particulate filter (DPF) can no longer pass the technical inspection. This test, conducted using a PN counter instrument, has been applied in all Belgian inspection centres.

The PTI-PN test involves tailpipe PN emission measurement with the vehicle stationary, at low idle speed. PN threshold limit values between 250 000 and 1 000 000 particles per cm³ have usually been considered. The PN test replaces the former smoke opacity test, which is not sensitive enough to detect DPF problems on modern diesel cars.

Belgium is the first country to implement PTI-PN testing requirements. While the development and adoption of the PTI-PN test was spearheaded by the Netherlands, their original July 2022 implementation date has been postponed until January 2023 due to insufficient availability of PN counter instruments. Belgium has a centralised PTI system, which required only about 100 PN counters. The Netherlands, on the other hand, has a decentralised PTI system that will require several thousand PN testers to implement the PTI-PN test.

Details of the initiative are at <https://lydia-peeters.prezly.com/verandering-bij-de-technische-controle-vanaf-1-juli>.

UK Government Plan for Phase-out of Non-Zero Emission L-Category Vehicles

On 14 July 2022, the UK government set out a range of measures to “mark a year of success” since the Transport Decarbonisation Plan was introduced. As part of this, the government has launched a new public consultation to accelerate the transition to zero emission travel by phasing out the sale of new fossil-fuelled motorbikes and mopeds by 2035, or even earlier for some vehicles.

The consultation proposes 2035 as the latest date by which there will be no sales of non-zero emission L-category vehicles. 2030 is the year when the government wants no further sales of sub-categories L1 (light two-wheel powered Vehicle), L2 (three-wheel moped), L3e-A1 (low-performance motorcycle), L6 (light quadricycle) and L7 (heavy quadricycle).

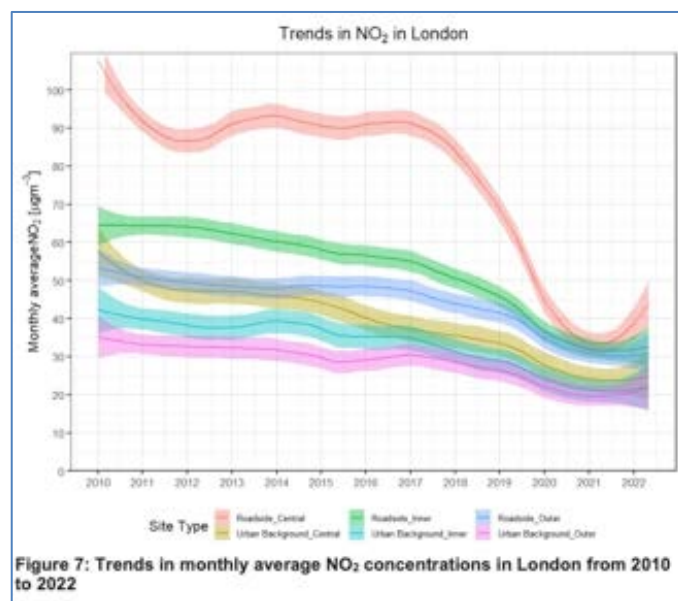
As part of the consultation, the government is looking at which L-category vehicles could be derogated, the methods to enforce requirements, and the role, if any, of alternative fuels in achieving this goal.

The consultation is open for response until 21 September. It can be found at <https://assets.publishing.service.gov.uk/file/1090200/when-to-end-the-sale-of-new-non-zero-emission-l-category-vehicles.pdf>.

Impact of London ULEZ Expansion

On 19 July 2022, the Mayor of London issued a press release detailing the impact of expanding the Ultra Low Emission Zone (ULEZ) to the North and South Circular roads in October 2021.

Nitrogen dioxide (NO₂) concentrations in inner London are estimated to be 20% lower than they would have been without the ULEZ and its expansion. In central London, NO₂ concentrations are estimated to be 44% lower.



94% of vehicles seen driving in the zone meet the ULEZ standards on an average day, up from 87% in the weeks before the zone expanded and 39% in February 2017 when changes associated with the ULEZ began. There were also 67 000 fewer non-compliant vehicles in the zone on an average day compared to the period right before the ULEZ expanded, a fall of 54%.

The report says that there is still more work to do to ensure all Londoners can experience the benefits of cleaner air. For this reason, the Mayor of London has asked Transport for London (TfL) to consult on expanding the ULEZ London-wide in August 2023. The consultation was open for comment until 29 July.

The ULEZ emissions standards are Euro 4 and Euro 6 for petrol and diesel cars and vans respectively, and Euro 3 for motorbikes. Euro VI applies to heavy-duty vehicles in the LEZ.

The report is available to download from london.gov.uk/press-releases/mayoral/londoners-breathing-cleaner-air-thanks-to-ulez.

ASIA-PACIFIC

Singapore Vehicular Emissions Scheme

On 30 June 2022, Singapore’s National Environment Agency (NEA) and Land Transport Authority (LTA) announced the extension of the enhanced Vehicular Emissions Scheme (VES) for three years to 32 December 2025. Tightened pollutant thresholds will be introduced from 1 January 2024.

The VES is an outcome-based feebate scheme to encourage the purchase of cleaner cars with lower emissions of carbon dioxide, hydrocarbons, carbon monoxide, nitrogen oxides and particulate matter. Under VES, buyers of new cars receive a rebate off the Additional Registration Fee (ARF), subject to a minimum ARF payable of \$5,000 (€3 556), or pay a surcharge depending on the VES band of the car model.

Tightened pollutant thresholds for the enhanced VES will be introduced from 1 January 2024 to 31 December 2025. The more stringent thresholds for emissions of carbon dioxide, hydrocarbons, carbon monoxide, nitrogen oxides and particulate matter clearly distinguish pure ICE cars, cleaner alternatives such as hybrids and Electric Vehicles (EVs). Only cars with zero tailpipe emissions (e.g., EVs) will qualify for Band A1 while Band A2 will include EVs with high power consumption, most hybrids, and some pure ICE cars that are smaller and more efficient. Other pure ICE cars and some hybrids will fall under the other bands.

There will be no change to the VES rebate until 31 December 2023 and no change to the VES surcharge until 31 December 2025. The applicable VES rebates from 1 January 2024 will be announced in 2023.

Full details of the VES are at nea.gov.sg/media/news/news/index/enhanced-ves-to-be-extended-with-tightened-pollutant-thresholds.

Indian Government Proposal for Heavy-Duty Fuel Efficiency Standards

On 4 July 2022, the Indian government was reported as having proposed fuel consumption standards for heavy-duty vehicles.

From April 2023, all types of buses and trucks would have to comply with the fuel consumption standards and fuel consumption target. The new norms, which have been proposed in a draft notification issued by the road transport ministry, will compel manufacturers and importers to make or bring fuel efficient vehicles in the Indian market.

Government-approved testing agencies will carry out tests of vehicles to check whether they are compliant. All of these vehicles will be tested for Constant Speed Fuel Consumption (CSFC) standard and for compliance with the fuel

consumption target. In the CSFC protocol, trucks are driven at constant speed on a test track at 40 and 60 km/h and buses are run at 50 km/h.

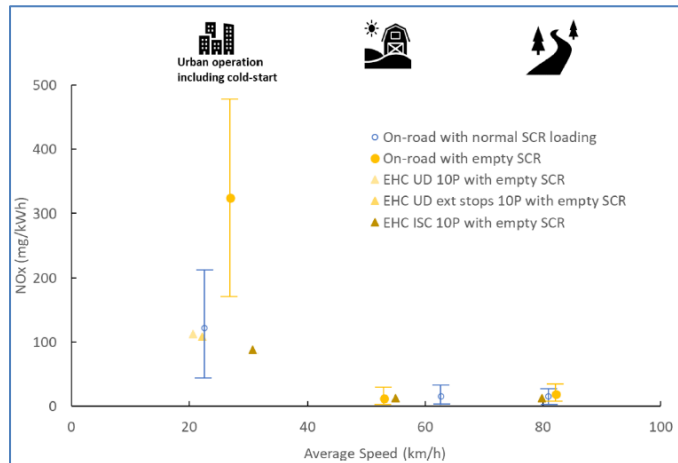
A report on the measures can be found at timesofindia.indiatimes.com/business/india-business/govt-proposes-fuel-efficiency-norms-for-trucks-buses-from-april-23.

GENERAL

AECC-FEV Journal Paper

On 8 July 2022, a joint journal paper from AECC and FEV was published in the journal Transportation Engineering, titled ‘Future-proof heavy-duty truck achieving ultra-low pollutant emissions with a close-coupled emission control system including active thermal management’. It describes results obtained on the AECC heavy-duty diesel demonstrator vehicle.

The abstract states the European Commission is developing legislative proposals for Euro 7 emissions regulations for light- and heavy-duty vehicles. The new regulation will likely focus on ensuring the emissions from heavy-duty vehicles are minimised over extensive on-road operating conditions, in particular urban driving and cold-start operation. The vehicles will need to achieve low secondary emissions like NH₃ and N₂O as well.



The paper outlines the ultra-low pollutant emissions achieved by a heavy-duty diesel demonstrator vehicle. The Euro VI long-haul truck is equipped with an innovative layout of state-of-the-art emission control technologies, combined with active thermal management. The new emissions control system integrates a close-coupled DOC including an electrically heated catalyst (EHC), a catalysed DPF, dual-SCR system – one in a close-coupled position – with twin AdBlue® dosing controlled by FEV-developed software. Both SCR catalysts contain an ammonia slip catalyst. The innovative system layout allows ultra-low NOx emissions and well controlled secondary emissions in even the most challenging conditions with minimal impact on CO₂ emissions. Pollutant emissions were evaluated over a broad

range of operating conditions and the testing was conducted with a single payload of 10% to show the emissions reduction potential.

The open access paper is available at [sciencedirect.com/science/article/pii/S2666691X22000239](https://www.sciencedirect.com/science/article/pii/S2666691X22000239).

ICCT White Paper on Mild-Hybrid Vehicles

On 4 July 2022, the International Council on Clean Transportation (ICCT) published a white paper titled 'Mild-Hybrid Vehicles: a near-term technology trend for CO₂ emissions reduction'.

The paper provides an overview of mild-hybrid technology and recent developments in 48V mild hybridisation of conventional vehicle powertrains. It estimates the CO₂ reduction potential, as well as current and future system cost, for different mild-hybrid electric vehicle (MHEV) system configurations. It also reviews the market penetration trends and future projections of MHEV technology in Europe.

The report says that for mild-hybrid systems with comparable technical parameters, conservative estimates for the CO₂ reduction potential under type-approval conditions compared with a baseline stop/start system range from about 7% for the P0 architecture to almost 16% for the more complex P2, P3, and P4+P0 architectures. Optimising engine operation and increasing electric motor power can yield an additional 5% to 10% CO₂ reduction on P2, P3, and P4 architectures.

The ICCT states that the costs of mild-hybrid technologies increase with system complexity. The P0 manufacturing cost is conservatively projected to drop from €558 in 2020 to €338 in 2030. For systems with similar battery capacity and power, the cost for a mild-hybrid technology packet with P2 or P3 architecture is about 30% higher and a P4+P0 system added to a front-wheel drive vehicle is about 50% higher than for the P0 system.

The paper also derives the cost incurred for each percentage point CO₂ emissions reduction. ICCT says the increase in overall powertrain efficiency of more complex MHEV architectures, due to added functionality and advantageous positioning of the electric machine, outweighs the additional cost and results in lower cost per percentage point CO₂ reduction compared to the P0 architecture. The P3 and P2 coaxial architectures are the most cost efficient, with over 40% lower cost than the P0 for the same CO₂ reduction.

ICCT concludes that mild hybridisation also has the potential to reduce pollutant emissions. Brake particle emissions can be reduced when using the electric machine for regenerative braking. In addition, using the assistance of the electric machine during accelerations can reduce engine-out emissions. The higher power of a 48V system allows the application of electrically heated catalysts and electrical turbochargers, which can substantially reduce emissions at cold start and during transient operation.

The white paper is available to download from theicct.org/publication/mild-hybrid-emissions-jul22/.

RESEARCH SUMMARY

Effects of Emissions and Pollution

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Ultrafine particle exposure and biomarkers of effect on small airways in children, Paul Robinson, et al.; *Environmental Research* (in press), [doi: 10.1016/j.envres.2022.113860](https://doi.org/10.1016/j.envres.2022.113860).

Hospital admission risks and ambient fine particulate matter exposure in Beijing, China, Ziting Wu, et al.; *Atmospheric Environment* (in press), [doi: 10.1016/j.atmosenv.2022.119291](https://doi.org/10.1016/j.atmosenv.2022.119291).

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Quantifying on-road vehicle emissions during traffic congestion using updated emission factors of light-duty gasoline vehicles and real-world traffic monitoring big data, Xue Chen, et al.; *Science of The Total Environment* (in press), [doi: 10.1016/j.scitotenv.2022.157581](https://doi.org/10.1016/j.scitotenv.2022.157581).

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Emissions Control, Catalysis, Filtration

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Road life-cycle carbon dioxide emissions and emission reduction technologies: A review, Nieyangzi Liu, et al.; *Journal of Traffic and Transportation Engineering* (in press), doi: [10.1016/j.jtte.2022.06.001](https://doi.org/10.1016/j.jtte.2022.06.001).

FORTHCOMING CONFERENCES

Catalysis and Automotive Pollution Control (CAPoC12)

29-31 August 2022, Brussels, Belgium

capoc.ulb.ac.be

SAE Powertrains, Fuels and Lubricants

6-8 September 2022, Krakow, Poland

sae.org/attend/pfl

Cenex-LCV

7-8 September 2022, Millbrook, UK

cenex-lcv.co.uk/

7th Rostock Large Engine Symposium

15-16 September 2022, Rostock, Germany

rgmt.de

3rd SAENA Conference on Sustainable Mobility

25-28 September 2022, Catania, Italy

universitacusano.com/csm2022

Aachen Colloquium Sustainable Mobility

10-12 October 2022, Aachen, Germany

aachener-kolloquium.de/en

AECC will make a presentation.

8th International MinNOx Conference

26-27 October 2022, Berlin, Germany

iav.com/en/events/8-internationale-minnox-conference

13th ECMA International Conference & Exhibition

10-11 November 2022, New Delhi, India

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

Transport Research Arena 2022

14-17 November 2022, Lisbon, Portugal

traconference.eu/about-tra

FEV Zero CO₂ Mobility

15-16 November 2022, Aachen, Germany

fev-live.com/zero-co2-mobility/conference-program/

POLIS Annual Conference

30 November – 1 December 2022, Brussels, Belgium

polisnetwork.eu/2022-annual-polis-conference

WCX SAE World Congress Experience

18-20 April 2023, Detroit, USA

sae.org/highlights/wcx

Deadline for abstracts 13 September 2022.

44th International Vienna Motor Symposium

26-28 April 2023, Vienna, Austria

wiener-motorensymposium.at/fileadmin/Media

Deadline for abstracts 30 September 2022.

SAE Heavy-Duty Diesel Sustainable Transport Symposium

3-4 May 2023, Gothenburg, Sweden

AVL Vehicle & Environment Conference

25-26 May 2023, Graz, Austria

avl.com/-/vehicle-environment?j=3464186&sfmc_sub