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## LIVE: AECC's Diesel Information Hub

On 16 May 2018, AECC successfully launched its new Diesel Information Hub that aims at bringing fact-based data on modern diesel to the general public.


In the past decade, diesel engines have made great strides in improving their efficiency and reducing their emissions. This has resulted in fuel cost and environmental benefits for car drivers and the wider society. However, the 'dieselgate' scandal, which has been followed by news headlines about national and localised restrictions on older diesel vehicles, has led to confusion surrounding the future of the diesel engine.

The Diesel Information Hub (#dieselinformationhub) is aimed at contributing to the public discourse on the future of mobility and urban air quality by providing clear and concise information on the modern diesel engine.

The AECC Diesel Information Hub is at https://dieselinformation.aecc.eu.

## EUROPE

## TCMV adopts RDE Package 4

On 3 May 2018, the European Commission announced that the 4th package of Real-Driving Emissions (RDE) legislation was adopted in the comitology Technical Committee on Motor Vehicles (TCMV).

Commissioner for the Internal Market, Industry, Entrepreneurship and SMEs Elżbieta Bieńkowska said: "By continuously tightening the screws on the way emissions tests are conducted, we aim to better protect our health and environment, restore consumer confidence, and add yet another incentive for a quick shift to zero emissions vehicles."

The proposal reduces margins of technical uncertainty in RDE testing (PEMS error margin brought down from 0.5 to 0.43), increases emissions checks of cars already in circulation and testing by independent and accredited third parties. It also improves the World Harmonised Light Vehicle Test Procedure (WLTP) procedure by eliminating test flexibilities and introduces on-board fuel and energy consumption monitoring devices, thereby allowing for the first time to compare laboratory results for $CO_2$ emissions with the average real driving situation.

Following the positive vote in comitology, the proposal was transmitted to the European Parliament and Council for a 3-month scrutiny period. It will then be published in the EU Official Journal, and would apply from 1 January 2019.

The adopted text is at https://ec.europa.eu/docsroom/documents/29231.

## Commission Communication 'A Europe that protects: Clean air for all'

On 17 May 2018, the European Commission adopted a Communication entitled 'A Europe that protects: Clean air for all' outlining measures available to help Member States fight air pollution.

The measures proposed by the Commission rest on three main pillars: air quality standards; national emission reduction targets; and emission standards for key sources of pollution, for example from vehicle and ship emissions to energy and industry.


The Commission has now decided to step up its enforcement against 7 EU Member States who have breached agreed EU rules on air pollution limits and type-approval for cars.

The Commission is referring France, Germany and the UK to the EU Court of Justice (ECJ) for failure to respect limit values for nitrogen dioxide ($NO_2$), and for failing to take appropriate measures to keep exceedance periods as short as possible while Hungary, Italy, and Romania are referred to the Court of Justice over persistently high levels of particulate matter ($PM_{10}$). The limits set out under EU legislation on ambient air quality (Directive 2008/50/EC) had to be met in 2010 and 2005 respectively.

Measures being put in place or planned in Czech Republic, Slovakia and Spain, and communicated to the Commission following the Air Quality Ministerial Summit in early 2018 (*see AECC Newsletter of February 2018*), appear to be able to appropriately tackle the identified gaps, if correctly implemented. The Commission will nevertheless continue to closely monitor the implementation of these measures as well as their effectiveness.

To address air pollutant emissions from traffic, the Commission will further strengthen its work with national, regional and local authorities on a common integrated approach for urban vehicle access regulations, under the EU Urban Agenda.

The European Commission also underlined the need to step up cooperation with Member States by engaging with relevant authorities in new 'Clean Air Dialogues', and by using EU funding to support measures to improve air quality.

The Commission also decided to issue additional letters of formal notice to Germany, Italy, Luxembourg, and the UK on the grounds that they have disregarded EU vehicle type-approval rules. These letters request more information on the national investigations and legal proceedings related to these infringements.

In addition, following the discovery of new cases of engine-management irregularities in several diesel cars (Porsche Cayenne, VW Touareg and several Audi A6 and A7 vehicles) the Commission is asking Germany and Luxembourg, as the competent type-approval authorities, which remedial measures and penalties are envisaged. The Commission is also requesting clarifications from the UK on planned national legislation.

An additional letter of formal notice constitutes an official request for information. The Member States now have two months to respond to the arguments put forward by the Commission; otherwise, the Commission may decide to send a reasoned opinion.

The Communication on 'Clean air for all' is at http://ec.europFa.eu/environment/air/pdf/clean_air_for_all.pdf.

## EU Green Week: AECC in Panel on Air Quality in Cities

From 21 to 25 May 2018, the DG Environment of the European Commission (EC) organized its annual "EU Green Week" focussing this year on "Green Cities for a Greener Future". During the 3-day high-level conference in Brussels, AECC took part in a panel discussion on Air Quality in cities, together with other panellists from city authorities and environmental NGOs, as well as EU agencies.

The overall goal of the conference was, according to European Commissioner for the Environment Karmenu Vella's opening speech, to exchange best practices in order to accelerate the transition to urban sustainability and increasing life quality for a maximum of EU citizens. The event tackled questions about how we can steer cities towards a sustainable path, and what the EU can do to support cities, spread successes, improve the ways cities are governed and help them plan for the long-term, as the urban population is quickly growing in Europe and 80% of all energy is consumed by the cities only.

Under its plans for better urban mobility, the EU hopes to see half the amount of fossil-fuelled cars on the road by 2030 and a complete phase-out by 2050. One city that has already improved its urban mobility is Malmö, Sweden. Andreas Nordin, traffic planner and project leader in the city, said: "walking, cycling and public transport are the first choice for all who work, live or visit Malmö." Meanwhile, Radu Andronic from Turda in Romania, noted how his city has become more sustainable with a multi-modal transport plan, electric buses, pedestrian zones, smart traffic management and bike sharing schemes.

Improving urban air quality is a key challenge European cities are facing and as part of the urban agenda of the EU it needs to be tackled more effectively. Air quality is getting better but cities still face smog events and high levels of particulate matter – the most damaging pollutant to our health.

The session dedicated to air quality in cities; solutions and synergies with climate action included AECC's Dirk Bosteels amongst the panellists, as well as the cities of Essen and Bristol, the Polish NGO Smogalert, the H2020 project ClairCity and the European Environmental Agency (EEA) presenting the European Air Quality Index at this occasion.

After thanking the EC organisers for inviting AECC to participate and recalling the successful Green Week on Clean Air in 2013, Dirk Bosteels said that a new era for emissions control has now started with the introduction of RDE, the first global real-world emissions measurement procedure, and the new WLTP certification cycle. He mentioned the introduction of the new Gasoline Particle Filter technology, and the combined use of engine and emission control systems for enhanced NOx emission reduction. He mentioned the newly launched Diesel Information Hub aiming at a more balanced discussion around diesel. In his conclusion he said that the future will see a mix of modern powertrains, optimised for various applications, and this will include modern diesel as well.

The city representative of Essen mentioned that a ban of diesel vehicles would not be a solution as it would displace the $NO_2$ exceedances to other parts of the city. Nevertheless, he agreed with his colleague from the City Council of Bristol, that electromobility would be the solution for the future, in particular regarding public transport and public services in general. He also stated that "each city has to find its own personalized solution in order to succeed".

During the EU Green Week, the Green City Tool was launched. Designed to help cities gauge how sustainable they are, the tool will also help cities discover how they can take the initiative and become greener.

More information, including pictures of the sessions, can be found at www.eugreenweek.eu.

## Public Consultation to support Fitness Check of Ambient Air Quality Directives

On 8 May 2018, the European Commission launched a public consultation to support the fitness check of EU ambient Air Quality Directives.

This fitness check is looking at the performance of the two complementary EU ambient Air Quality Directives (Directives 2008/50/EC and 2004/107/EC). These Directives set air quality standards and requirements to ensure that Member States monitor and/or assess air quality on their territory, in a harmonised and comparable manner.

The questionnaire of the public consultation to support the fitness check addresses general awareness about air quality issues and the EU policy framework and specific views with regard to the functioning of the Ambient Air Quality Directives.

The consultation is open until 31 July 2018 and is at https://ec.europa.eu/info/consultations/public-consultation-support-fitness-check-eu-ambient-air-quality-directives_en.

## 3rd Mobility Package includes $CO_2$ Standards for Heavy-duty Vehicles

Also on 17 May 2018, the European Commission released its third mobility package which includes, for the first time in Europe, legislative initiatives on $CO_2$ standards for heavy-duty vehicles.


Reaffirming the EU's objective of reducing greenhouse gas emissions from transport, the Commission proposed emissions standards for heavy-duty vehicles for which average $CO_2$ emissions from new trucks would have to be 15% lower in 2025 than in 2019. For 2030, an indicative reduction target of at least 30% compared to 2019 is proposed. These targets are said to be consistent with the EU's commitments under the Paris Agreement and will allow transport companies to make significant savings thanks to lower fuel consumption (estimated €25 000 over five years).

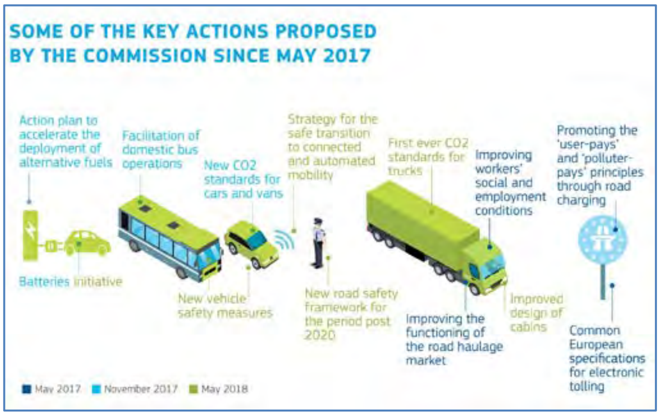
The Commission proposal for a regulation on heavy-duty $CO_2$ standards and its impact assessment are at http://eur-lex.europa.eu/legal-content/EN/HIS/?uri=COM:2018:284:FIN.

To allow for further $CO_2$ reductions, the Commission is also proposing to make it easier to design more aerodynamic trucks and is improving labelling for tyres.

In addition, the Commission is also putting forward a comprehensive action plan for batteries that will help create a competitive and sustainable battery "ecosystem" in Europe. Presenting the action plan, Commission Vice President for the Energy Union Maroš Šefčovič pointed to countries like Portugal, Sweden and Finland as potential leaders in the battery field.

This third Mobility Package also includes:

- A Communication outlining a new road safety policy framework for 2021-2030. It is accompanied by two legislative initiatives on vehicle and pedestrian safety (update of General Safety Regulation) and on infrastructure safety management;
- A dedicated Communication on Connected and Automated Mobility to make Europe a world leader for autonomous and safe mobility systems;
- Two legislative initiatives establishing a digital environment for information exchange in transport.
- A legislative initiative to streamline permitting procedures for the implementation of projects in the core trans-European transport network (TEN-T).




More info on the 3rd mobility package is at http://europa.eu/rapid/press-release_MEMO-18-3681_en.htm.

## Parliamentary Debate on Post-2020 $CO_2$ Standards for Cars and Vans

On 16 May 2018, the Environment Committee (ENVI) of the European Parliament held a debate on post-2020 $CO_2$ standard for cars and vans.

Rapporteur MEP Miriam Dalli (S&D, Malta) presented her draft report on the Commission proposal. She clarified that her text has two overarching objectives: ensuring a clean mobility for the European citizens and fostering the competitiveness of the European automotive sector.

This would be done via the introduction of two ambitious $CO_2$ emission reduction targets: from 1 January 2025, for both passenger cars and vans, the target would be equal to a 25%, instead of 15%, as suggested by the Commission; and from 1 January 2030, for both passenger cars and vans, the target would be equal to a 50%, instead of 30%.

The $CO_2$ targets would be coupled with benchmark levels for Zero and Low Emission Vehicles, to be in line with EU climate objectives and help support an effective technological transition to a low-carbon economy.

These two measures together would stimulate technology production and development within the EU. In this way, the automotive industry's competitiveness would be strengthened, making the needed technological and production shift possible, she said. The Rapporteur argued that these processes will also help stimulate economic growth whilst reinforcing the competitiveness of the European industry, shifting away from dependence on imported oil and petroleum products towards domestically produced energy and electricity. However, the transition towards alternative powertrains is expected to be associated with structural changes in the automotive value chain.

MEP Dalli also addressed the increasing gap between official type-approval figures and real-world $CO_2$ emissions. She suggested that the most reliable way to ensure the real-world representativeness of type-approval values would be via the introduction of a real-world $CO_2$ emissions test, which the Commission will have to be empowered to develop.

Finally, she voiced the need for a clear understanding of the overall lifecycle emissions of the various fuel types of vehicles.

In the debate that followed, the Shadow Rapporteurs had strongly diverging opinions on the emission targets suggested by the Rapporteur.

On one side, Shadow Rapporteurs MEP Jens Gieseke (EPP, Germany), MEP John Procter (ECR, UK) and MEP Kateřina Konečná (GUE, Czech Republic) strongly criticised the proposed emission targets. More specifically, MEP Gieseke lamented the tendency of the ENVI Committee to exaggerate in setting emission standards, irrespective of the efforts and concerns of the automotive industry. Instead, MEP Procter opposed the idea of introducing financial penalties as the $CO_2$ targets are already extremely difficult to be achieved, and adding fines creates an absurd situation for the automotive sector. Finally, MEP Konečná opposed the idea of increasing the $CO_2$ reduction targets suggested by the Commission without presenting sound studies that would assess their impact. Moreover, she added that the technology-neutrality principle seems lost in the draft report.

On the other side, Shadow Rapporteurs MEP Nils Torvalds (ALDE, Finland), MEP Rebecca Harms (Greens, Germany) and MEP Eleonora Evi (EFDD, Italy) supported the level of ambition of Rapporteur Dalli.

More specifically, MEP Torvalds supported the call for a serious evaluation of the overall lifecycle emissions of vehicles. With electric vehicles, he explained, relying only on tailpipe emissions would be simply useless.

MEP Peter Liese (EPP, Germany) intervened in the debate reiterating the EPP group's opposition to the $CO_2$ reduction targets suggested by the Rapporteur.

Mr Artur Runge-Metzger (DG CLIMA Director), representing the European Commission, appreciated the level of ambition of the draft Report. However, he raised concerns on the following issues:

- Impact on the employment sector: the Commission investigated the impact of the new emission standards on the employment in the automotive sector and simulations demonstrated that a target of 40% reduction would have decrease the employment by a 0.5%. However, the 50% reduction suggested by the Rapporteur might have a considerably higher impact on the sector;
- A "double mandate": one for the $CO_2$ emissions reduction as suggested by the Commission too and one for the share of zero- and low- emission vehicles, with a benchmark equal to a 50 % market share of the sales of new passenger cars and new vans in 2030. The Commission would prefer not to make use of mandates in relation to the market uptake of these vehicles;
- Real Driving $CO_2$ Emissions: its introduction might require time and further discussions, to understand the proper way to compare different vehicles.

The vote on the draft report and tabled amendments is provisionally scheduled on 10 September 2018.

The debate can be watched (from 9:40 on) at http://web.ep.streamovations.be/index.php/event/stream/20180516-0900-committee-envi.

## Council adopts New Type-Approval and Market Surveillance Regulation

On 22 May 2018, the Council of the European Union adopted the new regulation reforming the type-approval and market surveillance systems for motor vehicles in the EU.

This major reform modernises the current system and improves control tests on car emissions. Its aim is to achieve a high level of safety and environmental performance of vehicles and to address the main shortcomings identified in the existing type-approval system.

Important changes are introduced in three areas by strengthening:

- the quality of testing that allows a vehicle to be placed on the market through improved technical services;
- market surveillance to control the conformity of vehicles already available on the market, with the possibility for Member States and the Commission to carry out spot-checks on vehicles in order to detect failures at an early stage; and
- the oversight of the type-approval process, in particular empowering the Commission to carry out periodic assessments on national type-approval authorities and through the establishment of a Forum for the exchange of information on enforcement, made up of representatives of national approval and market surveillance authorities.

In addition, the harmonised implementation of the new rules across the EU will reduce differences in interpretation and application by national type-approval authorities and technical services.

The Council's adoption follows the positive vote in the European Parliament in April (*see AECC Newsletter of April 2018*). The regulation, which is still to be published in the Official Journal of the EU, will be applicable from 1 September 2020.

## UN Regulation No. 0 on Whole Vehicle Type-Approval published in the OJ

On 31 May 2018, UN Regulation No. 0 on International Whole Vehicle Type-Approval (IWVTA) was published in the Official Journal of the EU.

This Regulation applies to vehicles of category M1 (passenger cars) and specifies requirements for the type-approval of a whole vehicle.

UN Regulation No. 0 is at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:42018X0780&from=EN.

## EEA Report on $CO_2$ Emissions from New Vans

On 17 May 2018, the European Environment Agency (EEA) published preliminary $CO_2$ data from new light commercial vehicles sold in the EU in 2017 indicating that new vans emitted in average 156.0 g/km of $CO_2$.

This represents a $CO_2$ reduction of 7.7 g/km or 4.7% compared with 2016 and brings the EU average emissions 10.9% below the 2017 target of 175 g/km, which was actually met in 2013. Further efficiency improvements of 6% are still needed to reach the EU's more stringent target of 147 g/km set for 2020.

In 2017, almost 1.6 million new vans were registered in the EU as in 2016. Higher sales in Sweden (+48%), Czech Republic (+26%) and Slovenia (+20%) were balanced by decreasing sales in Croatia (-27%), Hungary (-16%), Ireland (-13%), Poland (-12%) and the UK (-10%). Two out of three new vans (64%) registered in the EU were sold in just four Member States: the UK (20%), France (19%), Germany (15%) and Italy (10%).

The average fuel-efficiency of new vans varied widely across Member States due to the different models and sizes of vehicles sold in each country. As last year, average $CO_2$ emissions were lowest in Portugal (133.2 g/km), Cyprus (133.4 g/km) and Bulgaria (134.9 g/km) and highest in Czech Republic (173.6 g/km), Slovakia (170.1 g/km) and Germany (169.2 g/km).

The average weight of new vans sold in 2017 also varied across countries. Smaller vehicles were sold in Malta, Cyprus and Portugal (< 1 570 kg); larger vehicles (>1 950 kg) in Slovakia, Czech Republic and Finland.

Diesel vehicles continue to make up the vast majority of the new van fleet, constituting 96% of sales.

There is however an increasing number of electric and plug-in hybrid van models available on the EU market. Registrations of such vehicles increased by 32% in 2017, compared with previous year, representing 0.8% of the total EU van sales.

More info is at www.eea.europa.eu/highlights/new-vans-sold-in-europe-2017.

## Parliament Briefing on Climate Change

On 29 May 2018, the European Parliamentary Research Service published a new briefing to MEPs on 'The EU, a world leader in fighting climate change'.

According to the briefing, the EU achieved its 2020 Kyoto target of reducing greenhouse gas emissions by 20% (compared to 1990) ahead of schedule in 2015.

EU economies grew by 53% while emissions dropped by 23% (1990-2016). New EU jobs created in the power and energy efficiency sectors will number 823 000 between 2026 and 2030, on the basis of a 40% emissions cut by

2030 accompanied by a move to a 30% renewable energy share.

The EU is also starting work on a strategy that will guide emissions reductions up to 2050. In the conclusions of its March 2018 meeting, the European Council requested that the European Commission 'present by the first quarter of 2019 a proposal for a strategy for long-term EU greenhouse gas emissions reduction in accordance with the Paris Agreement'.

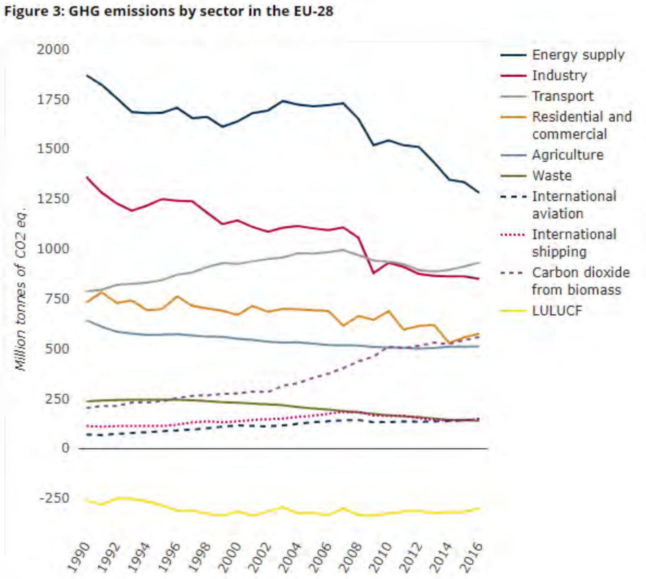
The EP briefing is at www.europarl.europa.eu/RegData/etudes/BRIE/2018/621818/EPRS_BRI(2018)621818_EN.pdf.

## EEA Inventory of Greenhouse Gas Emissions

On 31 May 2018, the European Environment Agency (EEA) published its annual report on the greenhouse gas (GHG) emissions inventory in the EU as well as a briefing on 'trends and drivers in GHG emissions in the EU in 2016'.

In 2016, total GHG emissions decreased by 0.4% in the EU compared to 2015, while the EU's gross domestic product (GDP) increased by 2%. From 1990 to 2016, the EU reduced its net GHG emissions by 22.4%, surpassing its 20% reduction target by 2020. These figures include emissions from international aviation, which are covered by EU targets but not accounted in national totals under the United Nations Framework Convention on Climate Change (UNFCCC).The GHG emission decrease in 2016 was mainly due to using less coal to produce heat and electricity. GHG emissions from road transport increased for the third year in a row. Emissions in the residential and commercial sector also increased because the winter of 2016 was slightly colder than the winter of 2015.

Figure 3: GHG emissions by sector in the EU-28




The UK and Spain accounted for the largest decreases in GHG emissions in absolute terms in the EU in 2016. Reductions in those countries were largely because of lower consumption of solid fuels (mainly coal) in the power sector.

There was a relatively large increase in emissions in Poland, particularly in the road transport sector.

Based on Eurostat data, there was a decline in nuclear electricity generation. This was more than offset by the increase in the use of renewable energy sources.

The EEA briefing is at www.eea.europa.eu/themes/climate/eu-greenhouse-gas-inventory/eu-greenhouse-gas-inventory-2016.

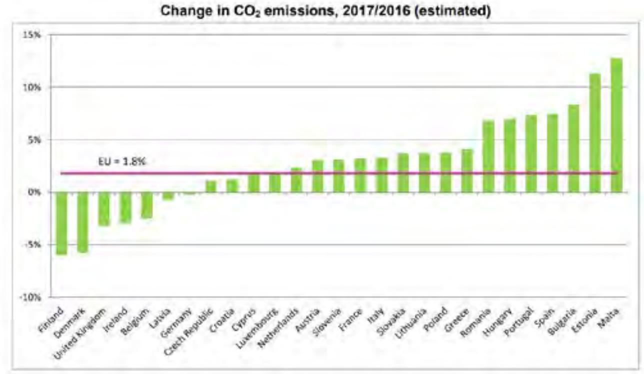
## 2017 Estimates of $CO_2$ Emissions from Energy Use

On 4 May 2018, Eurostat, the statistical office of the EU, released early estimates of $CO_2$ emissions from energy use for 2017.

In average, $CO_2$ emissions from fossil fuel combustion increased by 1.8% in the EU in 2017 compared to 2016.

According to Eurostat estimates based on monthly energy statistics, $CO_2$ emissions rose in 2017 in a majority of EU Member States, with the highest increase being recorded in Malta (+12.8%), followed by Estonia (+11.3%), Bulgaria (+8.3%) Spain (+7.4%) and Portugal (+7.3%). Decreases were registered in seven Member States: Finland (-5.9%), Denmark (-5.8%), the UK (-3.2%), Ireland (-2.9%), Belgium (-2.4%), Latvia (-0.7%) and Germany (-0.2%).

Change in $CO_2$ emissions, 2017/2016 (estimated)




More info is at http://ec.europa.eu/eurostat/documents/2995521/8869789/8-04052018-BP-EN.pdf/e7891594-5ee1-4cb0-a530-c4a631efec19.

## Commission urges 3 Member States to transpose Roadworthiness Directives

On 17 May 2018, the European Commission requested three Member States to fully transpose the Directives on roadworthiness.

Member States were required to transpose by 20 May 2017 the roadworthiness package adopted in 2014. To date, however, Portugal, Slovenia and Spain have not – or only partially – done so.

Firstly, Portugal and Slovenia have not adopted, published and communicated to the Commission the national measures transposing the updated rules on the periodical technical inspection of motor vehicles and their trailers (Directive 2014/45/EU).

Secondly, Spain has not adopted, published and communicated to the Commission national measures transposing the updated rules concerning the vehicle registration documents (Directive 2014/46/EU). This Directive requires Member States to set up electronic vehicle registers with harmonised content, and it defines the procedure to be followed in case of a failed periodic roadworthiness test.

The Commission therefore sent reasoned opinions to Portugal, Slovenia and Spain who now have two months to reply; otherwise, the Commission may decide to refer them to the Court of Justice of the EU.

## Court dismisses Collective Action against Adoption of RDE Package 2

On 4 May 2018, the General Court of the European Union dismissed the action for damages brought by almost 1 500 individuals following the adoption by the Commission of the second Real-Driving Emissions (RDE) regulatory package in 2016.

The emission limits accepted by the Commission (i.e. the Conformity Factors) have been the subject of several actions before the General Court, including those brought by the Cities of Paris, Brussels and Madrid. Those actions for annulment are at present being considered by the General Court, with a hearing fixed in those three cases for 17 May 2018.

At the same time as those actions for annulment, 1 429 people, mainly living in France, have brought an action against the EU for the purpose of seeking compensation for the harm which they claim to have suffered as a result of the adoption of the Commission regulation. The order dismisses this action for damages as lacking any basis in law.

The dismissal of the group action for damages is without prejudice to the outcome of the actions lodged by the Cities of Paris, Brussels and Madrid against the Commission regulation.

More info is at https://curia.europa.eu/jcms/upload/docs/application/pdf/2018-05/cp180061en.pdf.

## $NO_2$ Concentrations across Germany in 2017

On 31 May 2018, the German Environment Agency (UBA) released the final data on $NO_2$ concentrations measured in 2017 across the country.

Last year, 65 cities exceeded the annual average EU limit of 40 micrograms of $NO_2$ per cubic meter of air (µg/m³). At the preliminary evaluation in February 2018 there were still 66 cities. Remscheid dropped; it now complies with the limit value of 40 µg/m³. In 2016, 90 cities had exceeded that limit.

Furthermore, the city with the highest $NO_2$ pollution in 2017 was Munich with 78 µg/m³ annual average concentration, followed by Stuttgart with 73 µg/m³ and Cologne with 62 µg/m³.


The complete list of German cities in exceedances in 2017 is at www.umweltbundesamt.de/sites/default/files/medien/479/dokumente/no2-ueberschreitungen_staedte_stand_30.5.pdf.

## Hamburg bans Old Diesels in Two Streets

On 31 May 2018, the city of Hamburg enforced the first ban on old diesel vehicles in Germany; it affects two streets.



The most polluting trucks will be prevented from using a 1.6 km segment of the Stresemannstraße road. Both cars and heavy good vehicles will also be banned from a 580 m stretch of the Max-Brauer-Allee.

The restrictions will apply to all diesel vehicles that do not comply with Euro 6 (cars) or VI (for trucks).

The decision follows a ruling by Germany's top administrative court to bring air pollution levels in line with European Union rules.

Environmentalists criticized the decision, arguing that the two specific streets of the ban happen to be where traffic air quality monitoring stations are located.

More info (in German) at www.hamburg.de/pressearchiv-fhh/11067386/2018-05-23-bue-diesel-kfz/.

## Light-duty Vehicle Retrofit Studies in Germany

On 2 May 2018, the Federal Ministry of Transport in Germany released two studies on retrofit of light-duty vehicles.

The transport Ministry commissioned scientific studies on hardware retrofit of diesel vehicles in the context of the National Diesel Forum in Germany. The first study addresses the potential of implementing a hardware retrofit for Euro 5 (and Euro 4) diesel vehicles to reduce their NOx emission while the second "short" study examines hardware NOx retrofit options for passenger cars and light commercial vehicles.

Conclusions are that only SCR systems can be considered as meaningful retrofit solutions to reduce NOx emissions from existing vehicles. If these are correctly operated (i.e. in appropriate temperature window and with proper AdBlue® dosing), significant NOx reduction rates are technically feasible. Cost of such SCR retrofit is estimated to be above 5000€ and market availability of retrofit systems is estimated possible within one and a half year with a shortened OEM development process. It is also stressed that even with careful implementation of SCR retrofit, vehicle users must expect quality losses and increased fuel consumption.

There has not been any decision yet from the German government on a possible light-duty vehicle retrofit programme.

The two retrofit studies (in German) are at www.bmvi.de/SharedDocs/DE/Artikel/K/gutachten-hardware-nachruestung.html.

## Germany orders Recalls of some Porsche and Mercedes Euro 6 Diesels

On 18 May 2018, the German Federal Transport Authority (KBA) announced it has ordered a mandatory recall of some Porsche models equipped with a prohibited defeat device was found.

Due to the built-in defeat devices, there may be increased NOx emissions during operation of the vehicles. The SUV models in question are Euro 6 Porsche Cayenne 4.2 litre V8 TDI (6755 cars, of which 3954 are registered in Germany) and Porsche Macan 3.0 litre V6 TDI (52831 cars, of which 15180 are registered in Germany).

On 25 May 2018, the KBA then announced a mandatory recall of Euro 6 Mercedes Vito 1.6 litre diesel vans equipped with a prohibited defeat device.

According to the KBA, the illegal strategies relate to the use of the SCR system. Due to the built-in defeat devices, there may be increased NOx emissions during operation of the vehicles. The Vito recall affects 1372 vehicles in Germany and 4923 vehicles worldwide.

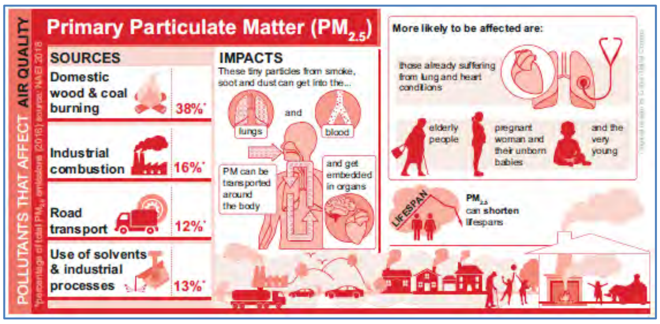
Both Porsche and Mercedes were ordered to remove the defeat device from the affected vehicles and implement upgrade measures once they have been approved by the KBA.

## Public Consultation on Draft UK Clean Air Strategy

On 22 May 2018, the UK Department for Environment, Food and Rural Affairs (Defra) launched a public consultation on a new draft clean air strategy.

The draft Clean Air Strategy 2018 sets out actions to improve air quality across the UK by reducing pollution from a wide range of sources.

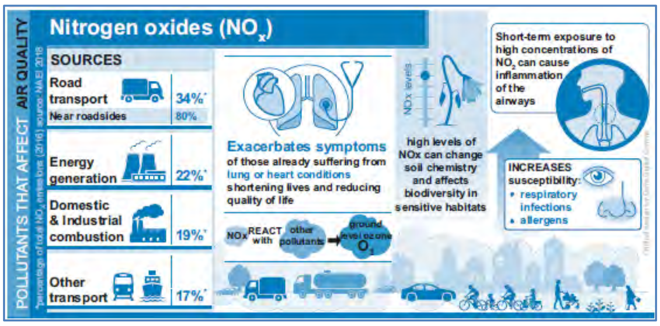
Consultation asks questions on a series of chapters on understanding the air pollution problem, protecting the nation's health, protecting the environment, securing clean growth and innovation, action to reduce emissions from transport, action to reduce emissions at home, action to reduce emissions from farming, action to reduce emissions from industry, leadership at all levels, progress towards UK goals.




As far as transport is concerned (chapter 5 of the consultation), the UK government said it will end the sale of new conventional petrol and diesel cars and vans by 2040. The UK will position itself as the best place in the world to develop, manufacture and use zero exhaust emissions vehicles and, during the transition, the UK will ensure that the cleanest conventional vehicles are driven on our roads.

The UK strategy is also to work with international partners to research and develop new standards for tyres and brakes to enable us to address toxic non-exhaust emissions of micro plastics from vehicles which can pollute air and water.

New legislation will enable the Transport Secretary to compel manufacturers to recall vehicles and machinery for any failures in their emissions control system, and make tampering with an emissions control system a legal offence.




The UK will reduce emissions from rail and reduce passenger and worker exposure to air pollution. By the autumn 2018, the rail industry will produce plans to phase out diesel-only trains by 2040.

Finally, later this year, the UK government will set out ambitious plans to drive down emissions from shipping and aviation. This consultation will inform the final Clean Air Strategy and detailed National Air Pollution Control Programme, to be published by March 2019. It complements three other UK government strategies: the Industrial Strategy, the Clean Growth Strategy and the 25 Year Environment Plan.

The consultation on the UK Clean Air Strategy is open until 14 August 2018 and is at https://consult.defra.gov.uk/environmental-quality/clean-air-strategy-consultation/.

## UK Public Consultation on $NO_2$ Reduction in 33 Cities

On 29 May 2018, the UK Department for Environment, Food and Rural Affairs (Defra) launched another public consultation, this time focussing on $NO_2$ pollution reduction in 33 local authorities.

Defra wants to know what measures citizens think will be effective in reducing roadside $NO_2$ levels in the 33 local authorities across England that it directed in March 2018 to reduce air pollution. These authorities must submit their findings to the UK government by 31 July 2018.

Questions asked also address how these measures should be assessed.

The government will consider the results of the consultation, and will publish a supplement to the $NO_2$ Plan by 5 October 2018.

The UK consultation on $NO_2$ reduction is open until 26 June 2018 and is at https://consult.defra.gov.uk/airquality/supplement-to-the-uk-no2-plan.

## Denmark updates Cars and Vans Road Tax System to WLTP

On 4 May 2018, Denmark notified the European Commission of a change in road taxation for passenger cars and light commercial vehicles.

In order to avoid an unintended increase in recurring taxes for, and in taxes on the purchase of, passenger cars and vans, a correction to the vehicle's data is introduced for fuel economy measured according to the new Worldwide harmonized Light vehicles Test Procedure (WLTP). The correction amounts to an increase of 21%.

More info is at http://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2018&num=194.

## Sweden to introduce Three Types of Low Emission Zones

On 24 May 2018, Sweden notified the European Commission of three classes of Low Emission Zones (LEZ) that will be permitted in the country from 1 January 2020 onwards.

Heavy-duty vehicles (buses and trucks) that are more than 6 years old will be banned from Class 1 LEZ.

Light buses, light lorries and passenger cars will have to be certified to Euro 5 or Euro 6 to be allowed in Class 2 LEZ. From 1 July 2022 onwards, the requirement for driving in Class 2 LEZ in Sweden will become more stringent for diesel cars and other light-duty vehicles; they will then have to be certified to Euro 6.

Class 3 LEZ will allow access to heavy-duty vehicles that are pure electric, hydrogen fuel-cell, Euro VI gas-driven (single- or dual-fuel) and Euro VI plug-in hybrid. These Class 3 LEZ will also be accessible to pure electric, hydrogen fuel-cell and Euro 6 gas-driven (single- or dual-fuel) passenger cars and light-commercial vehicles.

LEZ that have been announced under local traffic regulations before 1 January 2020 will become Class 1 LEZ.

More info is at http://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2018&num=232 and at http://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2018&num=233.

# NORTH-AMERICA

## Canada publishes Final Phase 2 Heavy-Duty GHG Emission Regulations

On 30 May 2018, Environment and Climate Change Canada published in the Canada Gazette, Part II, its final Phase 2 Heavy-Duty Vehicle and Engine Greenhouse Gas (GHG) Emission Regulations.

The regulations will largely follow the current US Phase 2 heavy-duty GHG regulations that were finalized in 2016.

Phase 2 amendments introduce more stringent GHG emission standards that begin with the 2021 model year for on-road, heavy-duty vehicles and engines. In addition, the amendments introduce new GHG emission standards that apply to trailers hauled by on-road transport tractors for which the manufacture is completed on or after 1 January 2020. These emission standards for heavy-duty vehicles, engines, and trailers increase in stringency up to the 2027 model year and maintain full stringency thereafter.

The final Phase 2 regulation is at http://gazette.gc.ca/rp-pr/p2/2018/2018-05-30/html/sor-dors98-eng.html.

## CARB Plan to mitigate NOx Emissions from Volkswagen Defeat Device

On 25 May 2018, the California Air Resources Board (CARB) approved a plan to mitigate statewide harm from more than 10 000 tons of NOx emissions released in California due to VW's use of illegal defeat devices in diesel passenger cars.

The National VW Environmental Trust provides California with $423 million (€360 million) for this purpose. The mitigation plan provides: $130 million (€110 million) for zero emission shuttle buses, school buses and transit projects; $90 million (€77 million) for zero emission heavy-duty freight and drayage trucks; $70 million (€60 million) for zero emission port equipment and marine projects; $60 million (€51 million) for combustion port equipment and marine projects; $10 million (€8.5 million) for light-duty vehicle infrastructure; and $63 million (€53.5 million) in reserve.

# ASIA PACIFIC

## Shenzhen moves forward with Early China 6 Implementation

China's Ministry of Environmental Protection (MEP) announced previously that the China 6 light-duty emissions standard will come into force nationwide starting 1 July 2020. The China 6 light-duty standards include a China 6a and China 6b standards with the second step, China 6b, being implemented nationwide in July 2023.

The city of Shenzhen in south China has nevertheless decided to begin early implementation of China 6b by releasing a notice that the China 6b emission standards for light-duty diesel vehicles will be officially implemented starting 1 July 2018, and the standards for light-duty gasoline vehicles will be officially implemented starting 1 January 2019.

## ICCT Technology Assessment of New Passenger Car Fleet in China in 2014

On 3 May 2018, the International Council on Clean Transportation (ICCT) published a technology assessment and comparison of the new passenger car fleet in China in 2014 vs. 2010.

The study observed the passenger car fleet's characteristics and technology changes by 2014 in response to the Phase III fuel consumption standards implemented in 2012. The findings document the development speed of major efficiency technologies, providing the foundation for projecting the potential of future measures in support of policy-making for 2021-2025 fuel consumption standards.

From 2010 to 2014, the domestic and imported fleets dramatically increased adoption of advanced technologies. Both fleets tripled employment of gasoline direct injection (GDI), doubled the penetration of turbochargers and superchargers, and increased the use of variable valve timing (VVT), variable valve lift (VVL), continuously variable transmissions (CVT), and multi-clutch technologies.

The Phase III fuel consumption standards successfully encouraged the introduction of advanced engine and transmission technologies. The sales-weighted average fuel consumption of the domestic fleet decreased by 6.5% from 2010 to 2014, or an average of 1.7% annually. Most manufacturers met the 2015 fuel consumption targets in 2014. However, market shifts to larger vehicles counteracted the effects of advanced technology deployment. The increase in curb weight was faster than the increase in footprint across major manufacturers.

**Table ES 2** Average of the key parameters by segment

| | Mini | | Small | | Lower Medium | | Medium | | MPV | | SUV | | Minivan | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2010 | 2014 | 2010 | 2014 | 2010 | 2014 | 2010 | 2014 | 2010 | 2014 | 2010 | 2014 | 2010 | 2014 |
| Market Share (%) | 6% | 2% | 15% | 6% | 32% | 33% | 10% | 18% | 2% | 10% | 10% | 20% | 16% | 7% |
| Engine Displacement (cc) | 1,100 | 1,048 | 1,397 | 1,385 | 1,620 | 1,559 | 2,016 | 1,776 | 2,034 | 1,570 | 2,091 | 1,898 | 1,071 | 1,223 |
| Curb Weight (kg) | 918 | 904 | 1,080 | 1,069 | 1,258 | 1,231 | 1,464 | 1,417 | 1,526 | 1,393 | 1,567 | 1,538 | 998 | 1,100 |
| Footprint (m²) | 3.1 | 3.2 | 3.6 | 3.6 | 3.9 | 4 | 4.2 | 4.2 | 4.2 | 4.1 | 4 | 4.1 | 3 | 3.6 |
| Horsepower (kW) | 50 | 53 | 71 | 73 | 84 | 86 | 112 | 100 | 103 | 84 | [illegible] | [illegible] | 45 | 60 |
| Max Speed (km/h) | 142 | 145 | 169 | 170 | 181 | 183 | 198 | 194 | 165 | 157 | 171 | 182 | 110 | 125 |
| Power/Weight (W/kg) | 55 | 58 | 66 | 69 | 67 | 70 | 77 | 75 | 67 | 60 | 70 | 74 | 45 | 54 |
| Fuel Consumption (L/100km) | 6.4 | 5.4 | 6.7 | 6.1 | 7.4 | 6.6 | 8.5 | 7.3 | 9.1 | 7.7 | 9 | 8.1 | 7.6 | 7.2 |

*Note: For each parameter, value decrease from dark green to light yellow*

Based on their analysis comparing the 2010 and 2014 fleets, the ICCT recommends to regulators for further reductions in passenger car fuel consumption:

- Impose more-stringent fuel consumption standards with long-term goals to continue encouraging deployment of advanced technologies.
- Encourage faster uptake of advanced technologies by independent automakers.
- Switch to footprint-based fuel-efficiency standards to slow the increase in fleet weight and set neutral standards that provide incentives for all technologies, including light-weighting.
- Set special policies to encourage production and sale of smaller vehicles.
- Create special incentives to improve efficiency of medium passenger vehicles.

The ICCT report is at www.theicct.org/sites/default/files/publications/2014China_PV_Database_WhitePaper_20180430.pdf.

## ICCT Brief on implementing a Real-Driving Emissions Test in India

On 31 May 2018, the International Council on Clean Transportation (ICCT) issued a position brief on technical considerations for implementing a Real-Driving Emissions (RDE) test for passenger vehicles in India.

ICCT's recommendations are geared towards ensuring that implementation of an Indian RDE programme would narrow the gap between laboratory and on-road emissions performance of vehicles that should meet Bharat Stage

(BS) VI emissions standards. An Indian RDE programme should adopt aspects of the EU and Chinese RDE programmes, while adjusting boundary conditions to better reflect specificities of Indian driving conditions.

Some changes to the India proposal (AIS 137) are suggested, namely on the speed definition for urban, rural and motorway operation (i.e. thresholds should be set at 30 and 50 km/h), on dissemination of RDE test results to the public and not only to those involved in testing and approval procedures, on trip evaluation using total NOx emissions as in the EU 4th RDE package, on NOx and PN Conformity Factors (1.43 in April 2023 and 1.0 in April 2026), on deleting the power binning method for trip validity check, and on inclusion of RDE tests as part of the In-Service Conformity regulation.

The ICCT brief on RDE in India is at www.theicct.org/publications/real-driving-emissions-test-pv-india.

## UNITED NATIONS

### WHO Fact Sheet on Outdoor Air Quality and Health

On 2 May 2018, the World Health Organization (WHO) released a fact sheet on ambient (outdoor) air quality and health.

According to the WHO, air pollution is a major environmental risk to health. By reducing air pollution levels, countries can reduce the burden of disease from stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma. The lower the levels of air pollution, the better the cardiovascular and respiratory health of the population will be, both long- and short-term.

In 2016, 91% of the world population was living in places where the WHO air quality guidelines levels were not met. Ambient (outdoor) air pollution in both cities and rural areas was estimated to cause 4.2 million premature deaths worldwide in 2016. Some 91% of those premature deaths occurred in low- and middle-income countries, and the greatest number in the WHO South-East Asia and Western Pacific regions.

Policies and investments supporting cleaner transport, energy-efficient homes, power generation, industry and better municipal waste management would reduce key sources of outdoor air pollution. Most sources of outdoor air pollution are well beyond the control of individuals and demands concerted action by local, national, and regional level policy-makers.

There are nevertheless many examples of successful policies in transport that reduce air pollution such as shifting to clean modes of power generation; prioritizing rapid urban transit, walking and cycling networks in cities as well as rail interurban freight and passenger travel; shifting to cleaner heavy-duty diesel vehicles and low-emissions vehicles and fuels, including fuels with reduced sulfur content.

The fact sheet also includes the WHO guidelines that apply worldwide and are based on expert evaluation of current scientific evidence for particulate matter (PM), ozone ($O_3$), nitrogen dioxide ($NO_2$), and sulfur dioxide ($SO_2$). These WHO Air quality guidelines are currently under revision with an expected publication in 2020.

The WHO fact sheet is at www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health.

### Global Action Plan on Health, Environment and Climate Change

On 25 May 2018, a global coalition on health, environment and climate change launched an action plan to tackle environmental threats to health, including air pollution and climate change.

The plan was launched at the 71st World Health Assembly in Geneva, Switzerland by the heads of the World Health Organization (WHO), UN Environment and World Meteorological Organization (WMO). The plan is also supported by the Climate and Clean Air Coalition (CCAC).

One of the plan's overarching goals is to reduce the annual 12.6 million deaths caused by environmental risks, and especially air pollution.

"The same pollutants that are driving global warming also cause a massive current health burden from air pollution; if we are able to get the short-lived climate pollutants out of the air, we would save over 2 million lives every year and cut global warming by about 0.5°C," said WHO's Director, Public Health, Environmental and Social Determinants of Health, Dr Maria Neira.


WMO Secretary-General Petteri Taalas highlighted the need to tackle short-lived pollutants but said the top challenge was in cutting emissions of $CO_2$, the main gas driving climate change. This remains in the atmosphere and oceans for many thousands of years. Global average concentrations of $CO_2$ in 2017 exceeded 400 ppm, a level not seen on Earth in three million years, and average temperatures were 1.1°C above pre-industrial levels. Climate change is adversely affecting economies in developing countries, and the cost of natural disasters, in particular tropical cyclones, hit a new record last year, said

Mr Taalas. He claimed greater urgency in implementing the Paris Agreement on climate change to keep the temperature increase to under 2°C by the end of this century. "Realistically we are talking about 2-4°C. If we use all of the fossil fuel resources we will reach 8°C", he said.

Mr Taalas said the world has a "30 year window of opportunity" to reduce the carbon footprint, reign in greenhouse gas emissions and to switch to clean and renewable energy in pursuit of the "win-win solution" of tackling both climate change and pollution.

"The urgency of combating pollution in countries like China has given new impetus to the drive to cut greenhouse gas emissions and tackle long term climate change", said UN Environment Executive Director Erik Solheim. He continued: "If we speed up on renewable energy solutions, fewer people will die from air pollution. Let's create a pollution free environment".

## GENERAL

### AECC Position Paper on Retrofit of Light-Duty Vehicles

On 15 May 2018, AECC published a new position paper on retrofit of cars and light commercial vehicles.

In the public debate, hardware retrofitting is considered as the most effective way to reduce NOx tailpipe emissions of vehicles in the current fleet (namely Euro 5 vehicles). Several technical retrofit demonstration programmes using Selective Catalytic Reduction (SCR)-based systems have shown its general feasibility.

AECC believes that the following technical and certification procedural elements need to be carefully considered to ensure any retrofit/upgrade programme will truly deliver benefits to urban air quality:

Technical elements to be considered are:

- SCR-based retrofit systems will need to be integrated with the vehicle/engine system from both packaging (space needed for extra catalyst and urea tank system) and controls perspective;
- Clear definition of NOx reduction targets and its verification for both fresh and aged systems;
- Durability must be demonstrated; and
- Therefore, close involvement and cooperation with the original vehicle manufacturer is mandatory

Certification elements to be considered:

- A regulatory framework must be established specifying targets, durability and warranty requirements; and
- Type-approval procedures must be adapted to also cover such retrofit schemes, at minimum national but preferably EU-wide approval needs to be granted for each retrofitted vehicle.

The AECC position on LDV retrofit (in English, German, French and Italian) is at www.aecc.eu/wp-content/uploads/2018/05/180514-AECC-position-paper-LDV-retrofit-final-ENDEFRIT.pdf.

### Concawe Report on Euro 6 RDE-Compliant Diesel Cars and ZEV

Concawe, the scientific body of the European Petroleum Refiners Association, has released a new report, prepared by Aeris Europe, which compares Real-Driving Emissions (RDE) from Euro 6 diesel passenger cars with zero emission vehicles and their impact on urban air quality compliance.

This report describes an extension to the Urban Air Quality Study commissioned by Concawe that explored how urban air quality is affected by emissions from road transport and domestic combustion. In the first report a particular focus was placed on the impact of RDE on urban concentrations of $NO_2$ and particulate matter ($PM_{10}$ and $PM_{2.5}$) and the effect this may have on compliance with ambient air quality limit values at European, national and regional level. The aim of this extension study is to determine how measured emissions from newer RDE-compliant Euro 6 diesel passenger cars would affect the concentration of $NO_2$ in European urban environments. A comparison has also been made where the substitution of Euro 6d diesel passenger cars with zero exhaust emission equivalents is explored.

The key findings of the study are:

- In the natural turnover of the vehicle fleet, the significantly reduced NOx emissions from Euro 6d diesel passenger cars will be as effective as zero emission vehicles in helping cities become compliant with air quality standards.
- For $NO_2$, $PM_{2.5}$ and $PM_{10,}$ no appreciable effect on air quality compliance or population exposure is observed between any of the modelled diesel passenger car scenarios or their replacement with equivalent zero emission vehicles.
- $NO_2$ compliance issues in traffic "hot-spots" persist until 2030 in a number of European cities under all modelled scenarios. It is unlikely that measures targeting new diesel cars will address this issue.
- In the case of particulates, modern passenger car emissions are largely independent of the drive-train given that mechanical abrasion (brake, road and tyre wear) is the most significant source.
- It is important to identify the actual emission sources contributing to each unique area of noncompliance to effectively address outstanding issues, for example, domestic heating or urban power generation in addition to road transport and other sources.

The Concawe report is at www.concawe.eu/wp-content/uploads/2018/04/Rpt_18_8.pdf.

## ICCT Policy Update on New Vehicle Type-Approval Framework in Europe

On 29 May 2018, the International Council on Clean Transportation (ICCT) published a policy update briefing on the changes to the motor vehicle type-approval system in the European Union.

It summarizes the key elements of two new regulations that are yet to be published in the Official Journal: the new type-approval framework regulation (*see above*) and an amendment to regulation (EU) 2017/1151 which includes the second act of the European WLTP regulation and the 4th package of the Real-Driving Emissions (RDE). These bring in new elements such as in-service conformity testing with RDE and the introduction of fuel consumption meters for monitoring purposes.


**Figure 1.** Timeline of the four RDE legislative packages.

Under the new rules, each Member State will retain its own type-approval authority, and mutual recognition of type-approval certificates issued by the different national authorities will still apply. Nevertheless, the European Commission (EC) will play a stronger role than today, as in the future it will have the power to carry out its own verification testing and to initiate and monitor vehicle recalls. The regulation will also allow the EC to impose fines of up to €30 000 per non-compliant vehicle on manufacturers, but only in cases where a penalty has not been previously issued by a Member State.

The new regulation will introduce independent market surveillance. This is different from the current EU type-approval scheme, which relies only on the pre-production type-approval tests and verification tests performed by the manufacturers on in-production vehicles. From September 2020 onwards, EU Member States and the EC will be required to perform tests on vehicles already on the market, in order to ensure that vehicles in use still meet their emission limits. For this purpose, each Member State shall install a market surveillance authority independent of the type-approval authority. Each Member State will be required to conduct a minimum number of vehicle compliance tests per year. There will have to be at least one test per every 40 000 new motor vehicles registered in the respective Member State in the preceding year, with at least 20% of the tests emissions-related. Countries with a low number of car registrations will have to conduct a minimum of five tests per year.

With measures improving the procedure for determining emissions of new road vehicles, the EU has taken a major step towards preventing another "dieselgate", the ICCT said. However, some aspects originally proposed by the EC (and supported by NGOs and consumer associations) were not included in the final regulation, such as the creation of an EU-wide type approval authority or breaking the financial ties between vehicle manufacturers and technical services. In addition, thorough implementation of any of the adopted measures in practice will also require that Member States provide sufficient financial resources for their type-approval bodies.

For the future, the EC have signalled that there will not be any further packages of the RDE regulation. Instead, the ICCT expects the EC to focus on developing a Euro 7 regulation. While the previous work on RDE and WLTP was centred around making changes to the way in which vehicle emissions are being measured, key aspects of a Euro 7 standard would be to revise the current emission limits, to harmonize emission limits for different propulsion concepts and technologies, and to add pollutants which are currently not yet regulated, the ICCT concluded.

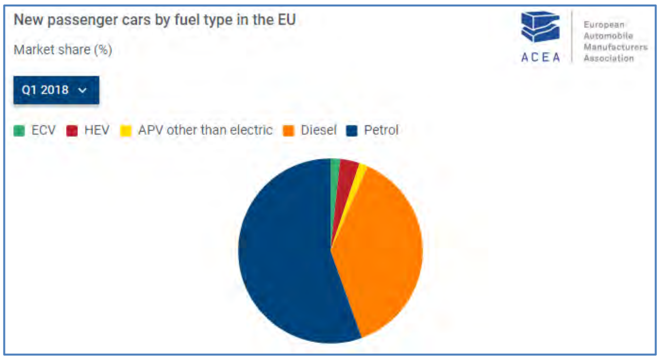
The ICCT briefing is at www.theicct.org/sites/default/files/publications/EU-Type-Approval-System_ICCT-Policy-Update_20180529_vF.pdf.

## Fuel Types of New Cars in the EU

On 3 May 2018, the European Automobile Manufacturers' Association (ACEA) released details on fuel types of newly registered cars in the EU.

In the first quarter of 2018, 37.9% of all new passenger cars in the EU ran on diesel. Petrol cars accounted for 55.5% of the market, making it the most sold fuel type. Alternatively-powered vehicles accounted for 6.5% of EU car sales in Q1 2018, with electrically-chargeable vehicles making up 1.7% of all cars sold.

Registrations of diesel cars totalled 1 574 333 units in the first quarter of the year; 322 622 units (or 17%) less than during the same period in 2017. This drop in demand for diesel vehicles was largely offset by an increase in petrol sales. Demand for new petrol cars grew significantly (+14.6%) from January to March 2018, with petrol sales totalling 2 303 129 units – roughly 300 000 more than last year.




So far in 2018, EU demand for alternatively-powered vehicles grew by +26.9%. Registrations of battery electric (+34.3%) and plug-in hybrid electric cars (+60.2%) accounted for the strongest growth. In total, 69 898 electrically-chargeable vehicles were registered from

January to March 2018 (+47%). At the same time, 139 556 hybrid electric vehicles were sold in the EU, 25.7% more than in the first quarter of 2017. The market for NGV, LPG and E85 cars also started the year strongly; demand increased by 12%.

Compared to one year ago, Germany saw the strongest increase in alternatively-powered vehicle sales (+73.4%), followed by Spain (+53.4%) and France (+15.3%). Demand for alternatively-powered vehicles also continued to grow in the UK (+9.8%) and Italy (+9%), albeit at a more moderate pace.

More info is at www.acea.be/press-releases/article/fuel-types-of-new-cars-diesel-17-petrol-14.6-electric-47-in-first-quarter-o.

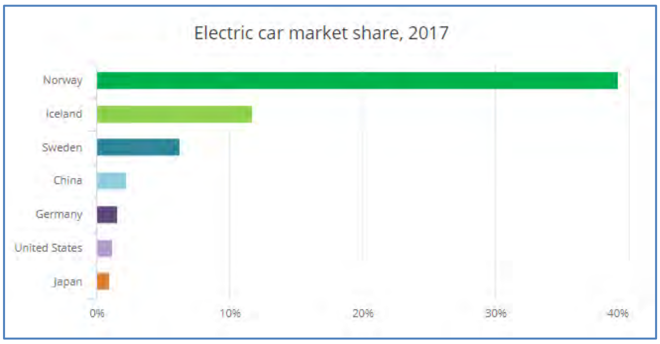
## IEA Global Electric Vehicles Outlook 2018

On 30 May 2018, the International Energy Agency (IEA) released its global electric vehicles outlook 2018.

The number of electric and plug-in hybrid cars on the world's roads exceeded 3 million in 2017, a 54% increase compared with 2016.

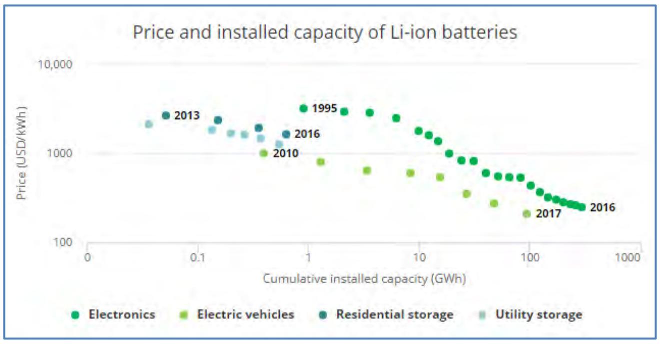
China remained by far the largest electric car market in the world, accounting for half sold last year. Nearly 580 000 electric cars were sold in China in 2017, a 72% increase from the previous year. The US had the second highest, with about 280 000 cars sold in 2017, up from 160 000 in 2016.

Nordic countries remain leaders in market share. Electric cars accounted for 39% of new car sales in Norway. In Iceland, new EV sales were 12% of the total while the share reached 6% in Sweden. Germany and Japan also saw strong growth, with sales more than doubling in both countries from their 2016 levels.




Electric mobility is not limited to cars. In 2017, the stock of electric buses rose to 370 000 from 345 000 in 2016, and electric two-wheelers reached 250 million. The electrification of these modes of transport has been driven almost entirely by China, which accounts for more than 99% of both electric bus and two-wheeler stock, though registrations in Europe and India are also growing.

The growth of EVs has largely been driven by government policy, including public procurement programmes, financial incentives reducing the cost of purchase of EVs, tightened fuel-economy standards and regulations on the emission of local pollutants, low- and zero-emission vehicle mandates and a variety of local measures, such as restrictions on the circulation of vehicles based on their pollutant emission performances.




The rapid uptake of EVs has also been helped by progress made in recent years to improve the performance and reduce the costs of lithium-ion batteries. However, further battery cost reductions and performance improvements are essential to improve the appeal of EVs. These are achievable with a combination of improved chemistries, increased production scale and battery sizes, according to the report. Further improvements are possible with the transition to technologies beyond lithium-ion.

Innovations in battery chemistry will also be needed to maintain growth as there are supply issues with core elements that make up lithium-ion batteries, such as nickel, lithium and cobalt. The supply of cobalt is particularly subject to risks as almost 60% of the global production of cobalt is currently concentrated in the Democratic Republic of Congo.

Additionally, the capacity to refine and process raw cobalt is highly concentrated, with China controlling 90% of refining capacity. Even accounting for ongoing developments in battery chemistry, cobalt demand for EVs is expected to be between 10 and 25 times higher than current levels by 2030.

Supportive policies and cost reductions are likely to lead to continued significant growth in the EV market. In the IEA's New Policies Scenario, which takes into account current and planned policies, the number of electric cars is projected to reach 125 million units by 2030. Should policy ambitions rise even further to meet climate goals and other sustainability targets, the number of electric cars on the road could be as high as 220 million in 2030.

The IEA Global EV Outlook is at www.iea.org/gevo2018/.

## Resource Implications from EV Take-up by McKinsey

McKinsey has published a short analysis titled "three surprising resource implications from the rise of electric vehicles (EVs)" which predicts economic consequences for energy, raw materials, and land.

McKinsey estimates that by 2030 EVs (including battery electric vehicles and plug-in hybrids) could rise to almost 20% of annual global sales (and almost 35% of sales in

Europe). These rates could rise even faster under aggressive scenarios.

Recent surveys suggest that 30% of car-buying individuals and nearly 50% of millennials will consider purchasing an EV for their next car instead of one powered by an internal combustion engine (ICE).

ICE fuel efficiencies have already increased at about 2% per annum since 2005 (raising miles per gallon for an average ICE vehicle in the US from 26 in 2005 to 32 today). McKinsey anticipates they will continue to rise at more than 2.5% a year through 2025. Yet even as ICE-powered vehicles become more efficient and less predominant, global crude oil demand will continue to grow, all while EVs experience a significant increase as a proportion of vehicles on the road.

More EVs mean that more electricity will have to be produced. While coal will be part of the equation, approximately 80% of the forecast growth in US electricity demand is expected to be met with natural gas. If half of the automobiles on American roads were EVs, daily US natural gas demand would be expected to increase by more than 20%.

Also, only 40% of European and 30% of Chinese EV owners have access to private parking and wall charging, versus 75% of US EV owners. Nor is the challenge merely a question of where to plug in or power up; generation and distribution are also factors. Today's power facilities can accommodate tomorrow's significant rise in the number of EVs, as long as the vehicles are charged off peak. Faster charging during peak demand, however, will have an impact.

Currently, battery costs are about $200-225 per kilowatt hour. McKinsey estimates that a battery cost of $100 per kilowatt hour will be required to achieve cost parity with ICE vehicles for most C-segment and D-segment vehicles and $75 per kilowatt hour for larger ones, unless government subsidies are continued – an unlikely proposition.

Higher EV sales will help reduce battery costs. At the same time, EV growth will put pressure on the costs of crucial battery inputs, including cobalt and lithium, for which demand will rise sharply. That dynamic has already begun to unfold, McKinsey said; the costs of cobalt and lithium have more than doubled since 2015, an effect that has resulted in a net increase in EV production costs over that time.

More is at www.mckinsey.com/industries/automotive-and-assembly/our-insights.

## RESEARCH SUMMARY

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# FORTHCOMING CONFERENCES

### Connectivity – Key to future emission and consumption reduction in vehicle and powertrain?

7-8 June 2018, Graz, Austria

www.avl.com/-/30th-international-avl-conference-engine-environment-2018

*On the one hand, connectivity enables predictive and adaptive management of energy and emissions with advantages regarding energy consumption, emissions, wear and durability thanks to the online monitoring of all relevant system parameters. On the other hand, the subject "Online Vehicle" necessitates stricter requirements being placed on data security and also causes a paradigm shift in the development and validation of vehicles. The questions "what does networking make possible, what is meaningful, and how do we control the corresponding risks" pose quite possibly the most intriguing range of topics in automotive development today.*

### 6th International Exhaust Emissions Symposium

14-15 June 2018, Bielsko-Biała, Poland

www.bosmal.com.pl/693-symposium_2018

*The main topics of the symposium are emissions legislation - for all jurisdictions; WLTP- and RDE-focused R&D test methods; fuel economy in light of Euro 6d, WLTP and RDE; new methods of PM testing; compounds which are potential candidates for emissions regulation; emissions test equipment (including PEMS); emissions reduction technology; aftertreatment systems, technologies and strategies; emissions simulation; powertrain development and electrification; IC Engine test method development; vehicular fuel development; alternative fuels, fuel additives and fuel blends; gaseous fuels CNG & LPG; engine oil development; commercial vehicles, discussion of other automotive sectors: synergies and shared challenges/solutions.*

### Cambridge Particle Meeting 2018

15 June 2018, Cambridge, UK

www.cambridgeparticlemeeting.org/2018

### 22nd ETH- Conference on Combustion Generated Nanoparticles

18-21 June 2018, Zurich, Switzerland

www.nanoparticles.ethz.ch

*The conference serves as an interdisciplinary platform for expert discussions on all aspects of nanoparticles, freshly emitted from various sources, aged in ambient air, technical mitigation aspects, impact of particles on health, environment and climate and particle legislation.*

### 7th International MinNOx Conference

19-20 June 2018, Berlin, Germany

www.iav.com/MinNOx

*Topics of the conference include: exhaust emission legislation, MinNOx systems in diesel, gasoline and hybrid powertrains from passenger car to heavy-duty as well as off-highway applications; global optimization of engine and MinNOx systems to reduce both NOx and $CO_2$ emissions; innovative ideas and methods for the development, modelling or control of component and overall systems; emission control technologies; boundary conditions for operating MinNOx systems monitoring and diagnostics of MinNOx systems; and potential for cost reduction of future concepts.*

The Future of Transportation World Conference

19-20 June 2018, Cologne, Germany

www.thefutureoftransportconference.com

*Conference streams include urban mobility & smart cities; mobility as a service; quantum shifts; sustainability in transportation; changing landscape for automotive industry; etc.*

Integer Emissions Summit & AdBlue® Forum Europe 2018

26-28 June 2018, Brussels, Belgium

www.integer-research.com/conferences/integer-emissions-summit-adblue-forum-europe-2018

*The summit will cover emissions control for heavy-duty commercial vehicles, non-road mobile machinery, light-duty vehicles and passenger cars, and the European AdBlue® market.*

***AECC will give a presentation on the evolution of advanced emissions control system to meet NOx and particulates regulations.***

FEV Conference Diesel Powertrain 3.0

3-4 July 2018, Coventry, UK

www.fev.com/events/fev-conferences/fev-conference-diesel-powertrains-30/introduction.html

*The international conference will highlight current developments in the Light-Duty Diesel Powertrain segment with a widespread list of topics, offering multiple interesting paths for best compliance with upcoming demands.*

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

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*

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.*

Automotive Sensors for Aftertreatment

25-27 September 2018, Berlin, Germany

https://automotive-sensors-for-aftertreatment.iqpc.de

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/

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,* $H_2$ *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 $CO_2$ 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

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.*

40th International Vienna Motor Symposium

16-17 May 2019, Vienna, Austria

https://wiener-motorensymposium.at