

NEWSLETTER

International Regulatory Developments

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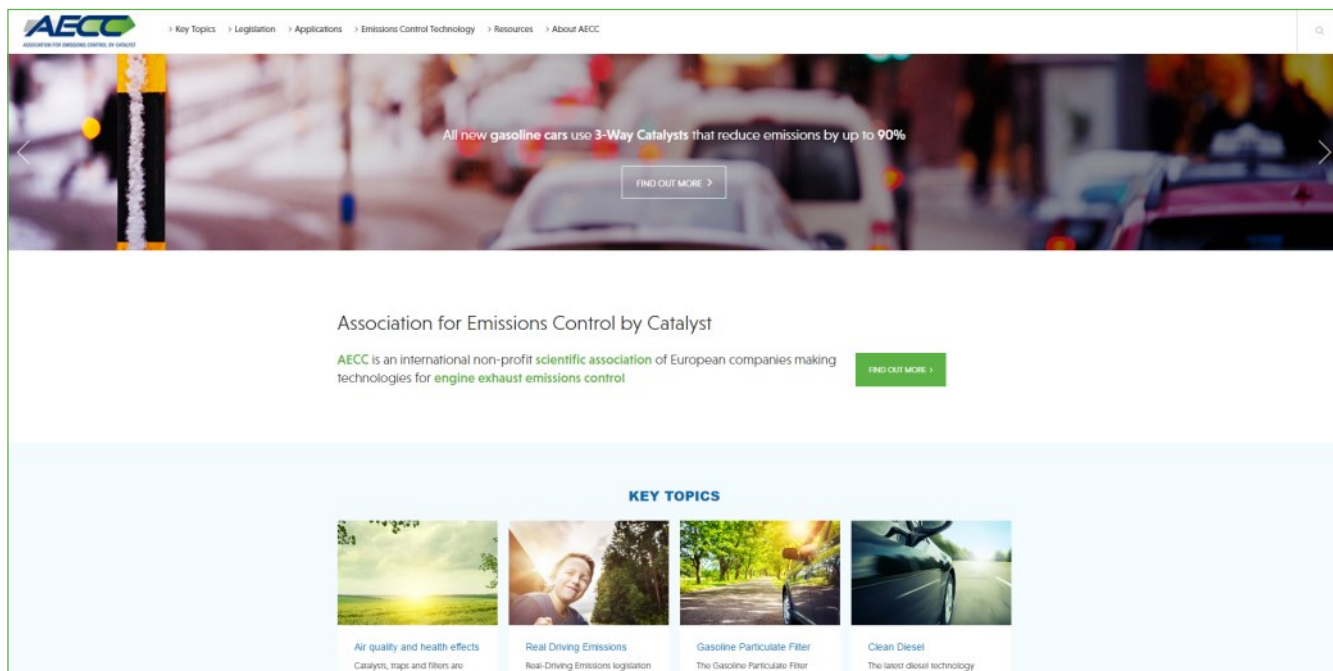
NEW AECC WEBSITE

On 26 October 2016 the Association for Emissions Control by Catalyst (AECC) adopted a new corporate identity and launched its new website.

Information on mobile source emissions legislation and control technologies are presented in a more modern and accessible format at www.aecc.eu.

Also AECC is now active on social media with a Twitter account ([@AECC_aisbl](https://twitter.com/AECC_aisbl)) and a LinkedIn [page](#).

In addition, from November 2016 on, this public AECC Newsletter will be issued monthly to bring information to you in a more timely fashion.



EUROPE

NRMM Stage V Regulation published

On 16 September 2016 the Non-Road Mobile Machinery (NRMM) Stage V Regulation was published in the Official Journal of the EU as Regulation (EU) 2016/1628.

The co-decision act contains the engine categories, emissions limit values, introduction timing, durability requirements, as well as a number of administrative provisions.

Engine categories are then divided into sub-categories, based on the power range of engines.

For most engine categories, implementation dates are 1/01/2018 for type-approval of engines and 1/01/2019 for placing on the market of engines. These dates are postponed by one year for NRE engines between 56 and 130 kW, for inland waterway vessel engines (both IWP and IWA) above 300 kW, and by two years for rail engines (both RLL and RLR categories).

Stage V introduces a Particle Number limit of $1 \times 10^{12}/\text{kWh}$ for NRE engines between 19 and 560 kW, for inland waterway (IWP and IWA) engines >300 kW, and railcar (RLR) engines. There is no more distinction between

constant- and variable-speed engines when it comes to emissions limits.

Emission durability periods (EDP) mean the number of hours used to determine the deterioration factors. They are defined for each engine sub-category. For the main variable speed NRE engines category, the EDP is 3000 hours for

Engine category	Description
NRE	Engines for NRMM neither covered by other categories nor excluded
NRG	Genset engines >560 kW
NRSh	hand-held SI engines <19 kW
NRS	SI engines <56 kW not included in NRSh
IWP	Inland waterway vessel engines for propulsion and ≥ 19 kW
IWA	Auxiliary engines for inland waterway vessel ≥ 19 kW
RLL	Locomotive engines
RLR	Railcar engines
SMB	SI engines for snowmobile
ATS	SI engines for All-Terrain Vehicle (ATV) and Side-by-Side (SbS)

engines <19 kW, 5000 hours for 19-37 kW engines, and 8000 hours for engines ≥37 kW.

Non-Road Steady-state test Cycles (NRSC) are defined for each engine sub-category; Non-Road Transient test Cycles (NRTC) are defined for NRE engines between 19-560 kW and for some NRS engines.

The detailed technical requirements and characteristics for the conduct of measurements and tests will be set out in a Delegated act. It will include detailed technical specifications and characteristics of the test cycles, the PN measurement procedure – based on the PMP procedure for Heavy-duty Euro VI – deterioration factors appropriate to the emission durability periods, but also detailed requirements applicable to the testing of dual-fuel engines or gaseous-fuelled single-fuel engines.

Reference fuels covered by the NRMM Stage V Regulation include diesel, petrol; petrol/oil mixture for two-stroke SI engines, natural gas/bio methane, liquid petroleum gas (LPG), and ethanol. The technical characteristics of reference fuels will be set out in the Delegated act.

CO₂ emissions measured during the type-approval test of the engine will have to be communicated to the end customer of the machinery – details are still to be defined in the Delegated act.

Parameters defining an engine type and an engine family will be laid down in the Implementing act, as well as anti-tampering measures.

The gaseous pollutant emissions will be monitored by testing in-service engines installed in NRMM and operated over their normal operating duty cycles.

Detailed arrangements with regard to the selection of engines, test procedures and reporting of results will be set out in the Delegated act.

The Stage V regulation also includes transitional measures, specific provisions for replacement engines, and a number of review clauses.

The Stage V Regulation is at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1628&from=EN>.

Heavy-duty Euro VI Amendment published

On 27 September 2016 a new amendment to the Euro VI comitology Regulation on Heavy-duty emissions (so-called '5th comitology package') was published in the Official Journal as Regulation (EU) 2016/1718.

The text amends the Euro VI implementing Regulation (EU) No 582/2011 and introduces a "Euro VI D" stage on 1 September 2018 for new types and 1 September 2019 for all new vehicles.

From these dates onwards the PEMS data analysis for In-Service Conformity checks is modified and the minimum

power threshold taken into account is lowered from 20 to 10% to better account for low load and urban operation.

The fifth comitology also defines a new accelerated aging procedure for replacement pollution control devices. It is based on a temperature data collection phase in the replacement system when fitted to the engine operated on WHTC or on the road, and a service accumulation schedule.

Regulation (EU) 2016/1718 is at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1718&from=EN>.

Amendments to Powered 2- and 3-Wheelers' Regulations published

On 15 October 2016 Commission Implementing Regulation (EU) 2016/1825 was published in the Official Journal (OJ) of the EU; it amends Implementing Regulation (EU) 901/2014 on administrative requirements for the approval and market surveillance of two- or three-wheel vehicles and quadricycles.

Amendments allow additional system type-approvals in order to reduce the administrative burden on manufacturers, in particular with regard to vehicles of categories L6e and L7e; include changes to the information document in particular on gear ratios for vehicles equipped with Continuous Valve Transmission; and changes to the templates for type-approval certificates so that further information is provided in the case of new technologies and new concepts. For the purposes of clarity and consistency, some explanatory notes are also amended or deleted.

Commission Implementing Regulation (EU) 2016/1825 is at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1825&from=EN>.

On the same day, Commission Delegated Regulation (EU) 2016/1824 was also published in the OJ; it amends delegated acts to Regulation (EU) No 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles; in particular the delegated acts on vehicle functional safety requirements, on vehicle construction and general requirements, and on environmental and propulsion unit performance requirements (REPPR).

Regarding the REPPR, certain equations are adapted in Annexes II and V; in Annex VI on durability of pollution control devices, the classification criteria of the SRC-LeCV distance accumulation cycle is modified; and Annex IX is amended to take into account some of the sound anti-tampering provisions set out in UNECE Regulations.

Commission Delegated Regulation (EU) 2016/1824 is at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1824&from=EN>.

Both Regulations entered force immediately.

Amendments to Tractors' Regulations published

On 13 October 2016 Commission Implementing Regulation (EU) 2016/1789 was published in the Official Journal (OJ) of the EU; it amends the Implementing Regulation (EU) 2015/504 on administrative requirements for the approval and market surveillance of agricultural and forestry vehicles.

A number of administrative provisions are amended for the purpose of clarity and comprehensiveness. For example, the certificate of conformity is simplified to reduce the burden on manufacturers; the maximum and minimum track width of each tyre combination is added to the information document to better identify a vehicle's category or subcategory, etc.

Commission Implementing Regulation (EU) 2016/1789 is at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1789&from=EN>.

On the same day, Commission Delegated Regulation (EU) 2016/1788 was also published in the OJ; it amends Regulation (EU) No 167/2013 on the approval and market surveillance of agricultural and forestry vehicles and its delegated acts on vehicle construction and general requirements, on environmental and propulsion unit performance requirements (REPPR), on vehicle braking requirements and on vehicle functional safety requirements.

Regarding the REPPR, definitions related to engine pollutant emissions are aligned with the definitions used for Non-Road Mobile Machinery.

The act also includes some editorial mistakes, contradictions and wrong references.

Commission Delegated Regulation (EU) 2016/1788 is at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1788&from=EN>.

Both Regulations entered force immediately.

EMIS Interim Report adopted

On 13 September 2016 the European Parliament adopted at its plenary session the interim report of the Committee of Inquiry into Emission Measurements in the Automotive Sector (EMIS).

Between its constituent meeting on 2 March 2016 and the adoption of the interim report, the EMIS Committee has held 12 meetings with close to 50 hours of hearings of 37 experts, who also replied to about 400 questions beforehand. It has also commissioned a study into discrepancies in emissions between type-approval tests and real-world driving.

The resolution, drafted by MEP Zalba Bidegain (EPP, Spain) and MEP Gerbrandy (ALDE, Netherlands), was passed by 618 votes to 26, with 7 abstentions.

Zalba Bidegain emphasized during the plenary debate that the EMIS Committee should not just "investigate and find the truth of what happened in the past but also make proposals to prevent something similar being repeated in the future. This crisis is also an opportunity to adapt the European automotive industry to the 21st century and ensure a better future for 12 million families of workers in the car manufacturing sector", he said.

Gerbrandy explained that cooperation with the EU Commission has improved since the summer, and that the future investigation will focus on the responsibility of national authorities, because "European democracy also means that national Ministers are accountable in Europe. Questions on the role of EU Member States remain since the implementation and enforcement of EU legislation on car emissions seem very weak." The Commission in particular should provide Committee members with all requested documentation relating to the measurements of vehicle emissions, including work done by the Joint Research Centre (JRC), as well as all records of the activities of various expert groups dealing with legislation on vehicle type-approval procedures, says the adopted text.

During the debate prior to the vote, MEPs expressed their hope that the Committee's final report would provide lessons for the future, and several MEPs underlined the importance for the political groups in the Committee to remain cooperative.

The EMIS Committee's final report should be presented by 2 March 2017 to the full House.

The EMIS interim report is at www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+TA+P8-TA-2016-0322+0+DOC+PDF+V0//EN.

Further EMIS Hearings

In September and October 2016 the European Parliament's Committee of Inquiry into Emission Measurements in the Automotive Sector (EMIS) held further witness hearings.

On 5 September 2016 the Committee heard former Commissioners for the Environment, Janez Potočnik, and for Industry and Entrepreneurship, Antonio Tajani.

During their term in office (2010-2014), the Euro 5&6 and Euro VI legislations for Light- and Heavy-duty vehicles (respectively Regulations (EC) 715/2007 and (EC) 595/2009) and the motor vehicles type-approval framework Directive 2007/46/EC were implemented, the CARS 21 High Level Group was re-launched, the RDE-LDV working group was set up to develop the Real-Driving Emissions (RDE) test procedure, the CARS 2020 Action Plan was adopted and two studies on on-road emissions were published by the Joint Research Centre (JRC).

Potočnik told MEPs that although he was aware that diesel vehicles emitted more emissions on the road than during

laboratory tests, he had not been aware of any manufacturer manipulating software. He felt that all legislative actors involved could have done more. He added that issues related to implementation of EU legislation were systematic, and not limited to vehicles rules.

Potočník explained that the objectives of the Commission at that time, as well as the collective attention of the EU, was on jobs and growth in order to recover from the financial crisis. He felt that with good will and readiness, the European Parliament, Council and Commission could have pushed manufacturers to already achieve emissions targets under real-world conditions. Vehicles sold on the US market showed the technical feasibility, while the extra costs for manufacturers would be set off against the reduced health care costs for citizens, he argued.

Most of the hearing of Tajani focused on the Commission's actions with regards to the differing measurements of emissions between road and laboratory tests. He explained that the Commission had asked the JRC to look into the differing measurements, and proposed measurements on the road with the use of PEMS, which went against industry wishes.

The timeline for RDE introduction was set out in the CARS 21 action plan, approved by Member States and the European Parliament. Nobody had asked the Commission to bring the legislation forward, Tajani said. He furthermore added that with the road tests, Europe was perceived to be ahead of the rest of the world, with regards to emissions testing legislation.

The discussion also focused on the use of defeat devices, and Tajani reaffirmed that the Commission had not been aware of its use. Like his predecessor, Günter Verheugen, Tajani also indicated that the Commission did not consider that the use of defeat devices was possible.

He furthermore suggested that having one single European type-approval authority might be beneficial over having 28 national agencies, although acknowledging that Member States might hold a different opinion on this.

The hearings of Mr Potočník and Mr Tajani can be viewed at www.europarl.europa.eu/EMIS_160905.

On 12 September 2016 the EMIS Committee held further hearings of the two current Commissioners for Internal Market, Industry, Entrepreneurship and SMEs, Elzbieta Bieńkowska, and for Environment, Maritime Affairs and Fisheries, Karmenu Vella.

Commissioner Bieńkowska felt that it was a total disgrace that defeat devices were designed, installed and used to cheat EU legislation, that defeat devices were not uncovered and sanctioned, and that EU consumers were not receiving compensation. The situation had to change,

she argued, and therefore the system was in need of dramatic improvement.

She said it was clear to her from the beginning of her term that the excessive NOx emissions and poorly functioning market surveillance should be addressed. However, only after the VW scandal had erupted was work on the issue easier and quicker, she explained, adding that discussing and finding good solutions on the issue with the Council had previously been difficult.

Bieńkowska indicated that she had not met any resistance within the Commission services on the issue, but felt dissatisfied with the timing of the work.

She reiterated that the definition of 'defeat device' and the exemptions were clear, and had not been questioned by manufacturers before. The goal of the Euro 5&6 legislation was to reduce emissions, and normal conditions are considered to be real-driving conditions, she said, not laboratory conditions.

The weak point was however the execution of the rules by Member States and non-uniform application throughout Europe. The Commission is therefore currently preparing guidelines on how to apply the current legislation, Bieńkowska informed MEPs.

The Commission had requested information from Member States on national investigations into the use of defeat devices and, once clear evidence has been gathered, the Commission will launch infringement procedures in the coming months.

With regards to the revision of the type-approval framework, Bieńkowska did not feel that a European agency for type-approval should be established.

She also indicated that she had been working on compensation for consumers with Commissioner for Justice and Consumers Jourova, but that she was not at all satisfied with the response from VW. The company had not shown any good will, and should pay more respect to European consumers, Bieńkowska said.

Commissioner for Environment Vella said he was not aware of the use of defeat devices before the VW scandal. The differences between measurements from cars on the road and in a laboratory were however already known, he explained, adding that the RDE test procedure was considered to be the right solution to address those differences. He would have liked a more ambitious RDE proposal, but it is better to have the agreed requirements than none.

When asked how future scandals could be avoided, Vella answered that, in addition to the introduction of the RDE test procedure, Member States should put high penalties on the illegal use of defeat devices.

While agreeing that he needed to fight hard on environmental issues, Vella assured MEPs that there was good cooperation between Commissioners. He furthermore added that the Commission usually had a common stance, and that the biggest obstacles were not within the Commission, but that struggles started when facing the Council.

When asked whether the emissions limits apply during lab tests or on the road, the Commissioner replied that legislation was intended for vehicle performance on the road; he hopes that lab testing would one day be history.

Vella did not exclude that the diesel engine can be part of the future of the car industry, as long as it is clean. He also expressed his interest in low- or zero-emission vehicles. Industrial progress and environment protection could go together, he said.

The hearings of Bieńkowska and Vella can be watched at www.europarl.europa.eu/EMIS160912.

On 15 September 2016 the EMIS Committee then heard representatives from automotive supplier Bosch: Dr Krüger, Senior Vice President Diesel System Engineering, and Dr Biesenbach, Head of Corporate Department External Affairs, Governmental and Political Relations.

Bosch stated that vehicle manufacturers were responsible for the emission results of a vehicle, as they were the only ones to be aware of all details. Suppliers only provided components and technical assistance, and did not therefore have a complete overview. They explained that manufacturers could choose from a wide range of products provided by different suppliers, and that therefore only the manufacturers were aware of the interplay of all components that would lead to the emission strategy of a vehicle.

They also confirmed previous statements by VW that test recognition needed to be included in the software, in order for a vehicle to detect that it was tested on a roller bench and therefore able to switch off other non-emission related systems. Portable Emissions Measurement Systems (PEMS) should be carefully devised in order not to alert the vehicle that it was tested, they advised.

Responding to a question on differences between engine control units produced for the EU and US markets, Bosch said that tailor-made solutions were made for every vehicle and brand. They also informed MEPs that recalibration of engine software resulting in lower emissions had to be done by the vehicle manufacturers, and not by the supplier.

When asked how future scandals could be prevented, Bosch replied that the introduction of the RDE test procedure and the obligation for manufacturers to provide information on their emission strategies were the right decisions.

The hearing of Bosch can be watched at www.europarl.europa.eu/EMIS_160915.

On 26 September 2016 the EMIS Committee heard Mr Grundler, Director of the Office of Transportation and Air Quality (OTAQ) in the US Environmental Protection Agency (EPA).

Mr Grundler first listed five important lessons learned by EPA: test procedures matter; oversight and testing are needed throughout a vehicle's lifecycle; enforcement is essential; there is a need to be unpredictable; and staff's technical competence is important.

Grundler also commented that, unlike the EU, the EPA had chosen not to focus on the reduction of either CO₂ or NO_x emissions, as it was convinced that technology was available which allowed for the reduction of both types of emissions at the same time. He stressed that US emissions standards are technology-neutral; it is up to manufacturers to choose between the different technologies available.

While developing standards, EPA has an open and transparent process, and works together with NGOs, technology firms, state governments and the automotive industry. They regularly visit individual OEMs as it is a competitive matter, Grundler said.

Instead of using the NEDC, which he regarded as undemanding, Grundler explained to MEPs that the US uses five test cycles covering different driving styles and different temperatures (-7, 24 and 35°C).

The reason why the US abandoned the development of the Worldwide harmonized Light vehicles Test Procedure (WLTP) was twofold, Grundler explained. On the one hand, resources had been shifted to develop the first greenhouse gas standards, while on the other hand WLTP was not believed to be as good as the five tests already used in the US.

With regards to EU legislation, Grundler felt that revising the type-approval framework and the RDE legislation were steps in the right direction. However, market surveillance and surprise tests during the whole lifetime of vehicles are equally important.

With regards to the future of diesel vehicles, Grundler indicated that its reputation had suffered in the US. He however disagreed that the US was trying to move diesel vehicles out of the market. The EPA only insists on clean vehicles regardless of the technology used, and several manufacturers have recently registered new diesel models, he said.

The hearing of US EPA's Grundler can be watched at www.europarl.europa.eu/EMIS26092016.

On 10 October 2016 the EMIS Committee heard Dr Antonio Erario, Head of Division International Regulatory Affairs of

the Department for Transport in the Italian Ministry of Infrastructure and Transport, and of Mr Alex Burns, CEO of UK-based Millbrook Group, an independent testing service provider which also conducts tests for vehicle certification.

Dr Erario disagreed that there were discrepancies in the implementation of EU legislation amongst Member States; EU type-approval rules and procedures are uniform.

Withdrawing type-approvals based on Real-Driving Emissions test measurements would however be illegal, he said.

When asked about on-road emissions measured on Fiat vehicles, Erario explained that the vehicles were considered legal as they behaved in a similar manner on the road and in the lab. The vehicles do not switch off their Exhaust Gas Recirculation (EGR) systems completely after 22 minutes, he added, but only switch off one of the two available circuits. Vehicles' emissions were not 13 times higher as suggested by the German authorities, but 6 times.

Italy has submitted a partial report on their investigations to the EMIS Committee but it has not yet been published. Differences in emissions between on-road and lab tests conducted by the Italian authority were justified by engine strategies designed to protect the engine from damage, as permitted by the Euro 5&6 Regulation (EC) No 715/2007, Erario stated.

On the development of the RDE legislation, MEPs claimed that Italy was responsible for slowing and watering down the legislative process, but Erario denied. The long leadtime was caused by the need for the Commission to develop the whole RDE testing procedure. Italy furthermore wanted to assure that the necessary PEMS equipment was available. Introducing RDE in a single stage was also found not to be feasible, so a two-stage approach was agreed upon.

When asked why Italy had used Fiat's test facilities for type-approvals, Erario acknowledged that these laboratories did indeed certify Fiat vehicles, but that they were also leased out to third parties and other manufacturers as independent laboratories.

On market surveillance, Erario stressed the need for available resources at Member State level. He did however express doubts over an EU agency for market surveillance.

With regards to the future of diesel technology, Erario still regarded diesel as the solution for reducing CO₂ emissions but acknowledged that the development of emissions control technology will have consequences for the use of diesel engines in smaller vehicles.

Later Mr Burns indicated that Millbrook had been aware of the differences between on-road and lab emissions and had contributed to several studies on the subject. Nevertheless, he said he was shocked when he learned about the use of a defeat device by VW, as in his experience vehicle

manufacturers usually work hard to comply with demanding regulations.

Burns said that manufacturers develop vehicles for the regulatory environment, vehicles type-approved using the outdated NEDC are therefore legal. If results are undesirable, it is the legislation that needs to be updated. Burns welcomed the adoption of the RDE legislation as well as the new laboratory test procedure (WLTP). He furthermore felt that market surveillance should be strengthened, as this would dissuade those who had illegal intentions.

Answering to questions on the use of 'golden cars' during type-approval tests, Burns denied any evidence of their use. For instance, the high tyre pressures are needed for the tyres to survive the roller bench test, he said. If this implies better environmental performance, then legislation should take this into account. Proper market surveillance would furthermore dissuade the use of such 'golden' vehicles, he added.

MEPs also questioned the fact that manufacturers can perform type-approval emissions tests in their own laboratories, but Burns was of the opinion that it does not pose a conflict of interest, as long as the laboratories and tests are overseen by a technical service and that there is sufficient independence between the two.

The hearings of Italy and Millbrook can be watched at www.europarl.europa.eu/EMIS_161010.

On 11 October 2016 the EMIS Committee then heard representatives of Germany, namely Mr Ekhard Zinke, President of the German Type-Approval Authority (TAA) Kraftfahrt Bundesamt (KBA), and Mr Leif-Erik Schulte, Head of Technical Service at TÜV Nord; of Luxembourg, Mr Claude Liesch, Director of the Société nationale de certification et d'homologation (SNCH), the Luxembourgish TAA; of France, namely Mr Laurent Benoit and Ms Béatrice Lopez de Rodas, respectively CEO and Director of UTAC CERAM, the French technical service; and of the Netherlands, Mr Andre Rijnders, Senior Engineer Emissions and Fuels at RDW, the Dutch TAA.

Witnesses clarified that their job was to perform the type-approval procedure as laid down in EU rules, which meant using the NEDC test cycle. They underlined that it was not within their remit to test for the possible use of illegal defeat devices during the type-approval procedure. Without tests, it remains the manufacturer's legal responsibility not to use defeat devices. The KBA underlined that the US EPA had not found the VW defeat device, the OEM admitted its use.

The KBA had no knowledge of the existence of illegal defeat devices before September 2015 but was aware of discrepancies between on-road and lab emissions performance.

With regards to Fiat's emissions control strategy that includes a drastic reduction of the EGR rate after 22 minutes and a reduced NOx trap regeneration frequency after a specific amount of driving cycles, the KBA said that the German and Italian authorities disagree and are therefore currently in a mediation procedure overseen by the Commission.

TÜV-Nord's Mr Schulte noted that there are possible technical explanations to higher NOx emissions in a hot-start NEDC than in a cold-start, for instance due to the state of catalytic or trap devices in the absence of preconditioning.

When asked about withdrawing type-approval of relevant VW cars, the KBA said they asked VW to remove the software instead, so that conformity is re-established.

SNCH's Mr Liesch was challenged by several MEPs on the high number of type-approvals delivered by Luxembourg in spite of limited resources but Liesch replied that their average workload compares to that of other TAA in the EU.

To improve the system, Liesch suggested clearer and uniform requirements for Type-Approvals, clearer rules for market surveillance at EU level to avoid differences in interpretation by the Member States, and an audit of financial relations between technical services and car manufacturers by TAAs.

The hearings of Germany and Luxembourg can be watched at www.europarl.europa.eu/EMIS161011AM.

Though UTAC and RDW are both listed on the European Commission website as responsible for market surveillance, respectively in France and the Netherlands, both clarified that they are not.

UTAC became aware of defeat devices when they had access to in-service test results with PEMS. In their tests for the "Commission Royal", UTAC had no conclusive evidence of use of defeat devices. When deviations were observed, car manufacturers provided justifications.

UTAC's Ms Lopez indicated that, in the past, most tests were conducted by technical services but nowadays almost all are done on OEM sites, under the supervision of technical services.

Lopez admitted that defining 'normal use' is extremely difficult but UTAC has never requested a clarification; it is only an issue for RDE tests. She said they are in favour of a European-wide authority to avoid interpretation differences amongst the TAAs.

RDW's Mr Rijnders underlined the importance of a common approach on what should be considered as a defeat strategy, and felt that the Commission should furthermore facilitate dialogue on this issue between the national authorities and technical services. The modulation of the

engine for its protection is legal and justifiable but limits are unclear. The role of the JRC in providing guidelines was noted as they guarantee an EU-wide level playing field. The JRC also played a key role in developing the PEMS equipment and related test cycles, Rijnders said.

The Dutch government commissioned research projects to TNO who has measured emissions, including NOx. The reports are published and have been made available to national and European stakeholders and the Netherlands House of Parliament; there was however no follow-up due to a lack of political interest.

On the issue of the Opel Zafira, type-approved by RDW, it appears that the emissions certificate was issued by the German KBA. RDW is now waiting for an answer from KBA. Exchanges of information exist between TAAs but not between technical services.

The hearings of France and the Netherlands can be watched at www.europarl.europa.eu/EMIS161011PM.

On 17 October 2016 the EMIS Committee heard Mr Harald Wester, Chief Technical Officer at Fiat Chrysler Automobiles.

In his introductory statement, Mr Wester said that he would not discuss the ongoing mediation process of the Italian authorities and the German KBA, on the possible use of a defeat device in several of its models. Nevertheless he indicated later that according to their interpretation of the legislation, they had not installed a defeat device nor software that could recognise that a vehicle was undergoing a laboratory test. He repeated many times that emissions abatement technology was not switched off in the concerned vehicles, but 'modulated' in order to protect the engine. However, Wester could not explain the effect of the modulation on vehicle's emissions, as it depends on the model and several parameters.

When asked why Fiat had updated engine calibrations after the VW scandal, Wester clarified that this was not in response to the scandal, but instead the result of the data gathering process of their eco-drive programme.

Regarding emissions of a Fiat 500X 2l diesel which were 15 times higher in the French investigations than claimed by the manufacturer, Wester could not comment as he said he had no information on the tested vehicle nor on the test protocol. Wester considered Fiat vehicles to be state-of-the-art. He rejected an MEP's suggestion that Fiat had deliberately used emissions control technology of lesser quality. Wester noted that Fiat had been in favour of the RDE test procedure, and felt that both the RDE and WLTP would provide for greater transparency for consumers and the industry. Compliance with RDE legislation requires the use of SCR technology with urea injection, he added.

With regards to the future, Wester felt that diesel remains a viable technology for the higher vehicle classes. He stressed the importance of diesel for meeting CO₂ targets, and stated that he was not aware of any other technology that could substitute diesel. He was sceptical about the benefits of electric vehicles, as the majority of global electricity was produced from non-renewable sources.

After the hearing, MEPs shortly discussed the EMIS Committee's visits to the JRC in July 2016, to a Umicore catalyst plant in France, and relevant institutions in Luxembourg and Germany in September 2016.

Both EMIS Rapporteurs highlighted that during the visit to Umicore, they had been informed that Euro 6c technology was ready for introduction in mid-2017; that Umicore regarded the emissions legislation as a success despite several shortcomings, and that they requested more ethics in engineering. Umicore had underlined that innovation in the industry was only driven forward by emissions legislation – noting that China legislation will become more stringent than in Europe and may shift innovation from Europe to China in the future.

The hearing of Fiat and debriefing on missions can be watched at www.europarl.europa.eu/EMIS_161017.

Finally, on 20 October 2016 the EMIS Committee heard the German Federal Minister of Transport and Digital Infrastructure, Mr Alexander Dobrindt, and the Lower Saxony Minister for Economy, Labour and Transport, Mr Olaf Lies.

After the VW emissions scandal broke in September 2015, the Ministry of Transport established an investigation Committee which re-checked whether VW and other diesel models complied with emissions limits, Mr Dobrindt explained. The Ministry ordered a recall of more than 2.4 million VW cars to have revised engine software retrofitted, while an additional 630 000 vehicles from other manufacturers which were “optimised” for type-approval tests will eventually also have their emission control systems overhauled.

Dobrindt noted that the EU legislation is too vague about “defeat devices”, especially regarding possible exceptions. When accused of treating the use of defeat devices by Fiat and Opel differently, Dobrindt replied that the difference was in the response by Member States; Germany had initiated voluntary recalls for the vehicles on which there was doubt, while other Member States still authorised such vehicles.

With regards to fining VW, Dobrindt felt that there was no infringement, and that the necessary retrofitting already constituted a sanction. He also rejected the possibility of a class action by consumers to demand compensation from VW because, he said, there is no legal basis for it.

Dobrindt nonetheless agreed that type-approval emissions tests should be made more realistic and checks on cars already on the road should be stricter, including random tests. He added that technology already exists to meet the RDE requirements and some cars using this technology are already on the market; so why should it not be used by all manufacturers, he wondered.

Then, Mr Lies explained VW's importance as the biggest employer and strategic partner in Lower Saxony, where it has its headquarters. Lower Saxony is also VW's second biggest shareholder, and Lies is a member of the company's supervisory board. He emphasised that neither the board nor the regional authorities had any prior knowledge of cheating in emissions tests, but said that since September 2015 a thorough investigation has been under way, the results of which should be published by end 2016.

With regards to the future, Lies felt that the target of reducing emissions to zero by 2030 was ambitious, but unrealistic with regards to implementation. Instead, he argued that there will be a transitional phase with hybrid vehicles, in order to convert the industry and work force from fossil fuel powered vehicles to electric vehicles. He furthermore considered diesel as a viable solution for achieving climate policy targets during the transition to zero emission vehicles.

The hearing of German Ministers can be watched at www.europarl.europa.eu/EMIS_161020.

Parliamentary Debate on Type-Approval Framework

On 29 September 2016 the Committee on the Internal Market and Consumer Protection (IMCO) of the European parliament debated on the draft Report on the proposal revising the type-approval framework for motor vehicles prepared by Rapporteur MEP Dalton (UK, ECR).

The Rapporteur felt that the Commission's proposal was a good start for the reform of the current type-approval framework, which he felt lacked a shared approach to testing procedures and supervision of technical services, as well as market surveillance and the ability to respond to cases of non-compliance.

The Rapporteur subsequently set out the main amendments proposed in his draft Report, including the strengthening of the Forum for Exchange of Information on Enforcement; that technical services would be responsible for the preparation of tests; that engine management strategies should be fully disclosed; that national market surveillance authorities should consider information from third parties; that the Commission would be able to force Member States to levy sanctions in cases of non-compliance; and that the validity of a type-approval would be extended from 5 to 8 years.

He elaborated on the controversial proposed deletion of Commission's market surveillance activities. He acknowledged that there should be Commission oversight on the system of mutual recognition, but proposed that the Commission should not conduct independent surveillance activities and should not establish national fee structures, as the Commission does not have enough capacity and resources to carry out these activities.

MEP Štefanec (Slovakia, EPP) welcomed the Commission's proposal, and felt that it was a step in the right direction. He supported the idea of the Forum, and the increased role of market surveillance.

MEP Schaldemose (Denmark, S&D) though did not agree with the changes proposed by the Rapporteur, and indicated that she would only support a couple of amendments, including the enhanced access to vehicle data for market surveillance activities, and the extension of manufacturer's obligations to importers. She however felt that the draft Report would delete all parts of the proposal that would build a new and better system, and that it would instead keep the status quo.

MEP Løkkegaard (Denmark, ALDE) questioned whether the Commission would require more resources to carry out the proposed new responsibilities, and cautioned that the proposed financing structure could pose practical problems. He also expressed the ALDE group's concern on the termination of the type approval validity after 5 years.

MEP Durand (France, Greens/EFA) expressed his discontent with the Rapporteur's draft Report, and felt that the Commission's proposal was revolutionary in comparison. Given the automotive sector jobs implications, governments should not be put in the position to pressure manufacturers. Instead, it should be the EU that put pressure on manufacturers. The link between Member States and manufacturers should be cut, and competences should be transferred from Member States to an EU authority supervised by the Commission.

MEP Thun und Hohenstein (EPP, Poland) was concerned about the draft Report's direction, as it suggested maintaining the status quo, while she felt that changes were needed. The Commission's proposal should be strengthened, she added.

MEP Pospíšil (Czech Republic, EPP) however agreed with the Rapporteur's draft Report, and felt that there should be a balance between consumer protection and maintaining the automotive industry.

Ms Szychowska, head of the automotive unit in the Commission's DG-Growth, expressed concern over the draft Report as it would not aim to revolutionise the current system. Instead, it would undermine the Commission's proposal to have the 28 different type-approval authorities working as one.

With regards to financing market surveillance, she indicated that the Commission would accept and understand if a different system was chosen than the Commission's proposed levy on manufacturers. However, the finance mechanism should be able to raise sufficient funds, in order to not to end up with the current underfinanced system.

With regards to oversight by the Commission, Szychowska clarified that it would not replace Member States, as the two would have different competences and objectives. The Commission would ensure that Member States did their job, and would not be doing the job for them, she said.

With regards to recalls and safeguards, the draft Report would make it impossible to act on the EU level in cases of non-conformity, and would also not allow for EU-wide recalls. The current problems would therefore remain, Szychowska cautioned.

MEP Dalton, the Rapporteur, concluded the debate by indicating that he was open to all suggestions and would work towards a compromise that would satisfy everyone. IMCO Committee MEPs had until 13 October 2016 to submit amendments.

"Pot-pourri" Proposal Negotiations

On 8 September 2016, during a presentation of the Slovak Council Presidency's programme to the Environment Committee of the European Parliament, the Slovak Minister for Environment, Mr Solymos, said the Council Presidency was willing to cooperate with the Parliament on solving the outstanding differences on the so-called "pot-pourri" proposal amending the Euro 5&6 and Euro VI Regulations.

The trilogue negotiations on the proposal between the co-legislators are currently halted due to differences over the delegated powers to be given to the European Commission. The Parliament is currently considering whether there is sufficient ground to resume trilogue negotiations with the Council.

Commission's 2017 Work Programme

On 25 October 2016 the European Commission published its draft Work Programme for 2017.

This Work Programme proposes 21 key initiatives, as well as a further 18 REFIT (Regulatory Fitness and Performance Progress) proposals to improve the quality of existing EU legislation and ensure our rules are fit for purpose.

To ensure a focus on delivery, the Commission Work Programme identifies 34 priority pending proposals they have made in the past two years where swift adoption by the Parliament and Council can make a tangible impact on the ground. The proposal to revise the vehicle type-approval framework and market surveillance is one of these priorities.

The Work programme includes REFIT revisions of several key pieces of legislation highlighted in the low-emission mobility action plan: post-2020 strategies on cars/vans and on trucks, buses and coaches (a proposal is expected in the second quarter of 2017); the Clean Vehicles Directive; and the Eurovignette and European Electronic Toll Service (EETS) Directives.

The Commission's 2017 Work Programme is at http://ec.europa.eu/atwork/key-documents/index_en.htm.

Public Consultation on Interim Evaluation of Horizon 2020

On 20 October 2016 the European Commission launched a public stakeholder consultation on the interim evaluation of Horizon 2020, the EU research and innovation framework programme.

Horizon 2020 promotes Europe's scientific and technological excellence to extend the frontiers of human knowledge, boosts the EU's economic competitiveness and addresses societal challenges.

The questionnaire is focused on Horizon 2020 in general. There are separate online consultations on the Euratom Programme, the European Institute of Innovation and Technology (EIT), and public-public and public-private partnerships.

The consultation is open until 15 January 2017 and is at <https://ec.europa.eu/eusurvey/runner/Public-stakeholder-consultation-interim-evaluation-H2020>.

EU Ratification of Paris Agreement

On 30 September 2016 the Council of the EU agreed to speed up the process of ratification of the Paris Agreement (COP21). This agreement sets the framework for global action on climate change.

The Council decided to go ahead with ratification at EU level. Member states will ratify either together with the EU if they have completed their national procedures, or as soon as possible thereafter.

The Paris Agreement is a mixed agreement, which means that some of the issues it covers are the responsibility of the EU and others of Member States. It therefore has to be ratified by both the EU and all 28 Member States. At that stage seven EU Member States had completed their national domestic processes: Hungary, France, Slovakia, Austria, Malta, Portugal and Germany. These account for some 5% of global CO₂ emissions.

The European Parliament followed suite and gave its green light to ratification in a plenary vote on 4 October 2016, with 610 votes in favour, 38 against, and 31 abstentions.

The Council finally adopted the decision by written procedure on 4 October 2016.

The Paris Agreement will enter force in November 2016 (see below under 'United Nations').

EEA Evaluation of Environment and Climate Policy

On 5 September 2016 the European Environment Agency (EEA) published a new report "Environment and climate policy evaluation".

The EEA is looking to strengthen its approach to EU policy evaluation to address increasingly complex environmental and related health problems. In particular, the EEA is seeking to explore what it calls systemic evaluation, i.e. the role and effectiveness of environment and climate policies that influence ecosystems, production and consumption, as well as food, energy and transport systems.

According to the EEA, while there is increased awareness of the systemic causes of environmental change, designing and evaluating policies that reflect this remains a challenge.

At national level, some countries are developing and adopting transition policies that target different systems. France's Energy Transition Act, for example, is looking to create a more diversified and adaptable energy model. However the EEA argues that the notion of systemic evaluation is difficult to apply in practice.

Some progress is being made in the field of low carbon transition and renewable energy. Researchers are starting to analyse the role of policies in transformational changes, and debate approaches for systemic policy instruments.

But the report also stresses the challenges of evaluating policy frameworks with multiple objectives, such as the 7th Environment Action Programme or the 2020 Climate & Energy Package, which are further complicated by the transboundary nature of environmental issues as well as policies being implemented at different levels of governance.

EEA report No 18/2016 is at www.eea.europa.eu/publications/environment-and-climate-policy-evaluation.

EEA Report on Electric Vehicles and EU Green Transport Future

On 26 September 2016 the European Environment Agency (EEA) released a briefing titled 'Electric vehicles and the energy sector – impacts on Europe's future emissions'.

The report looks at the impact of the increased use of electric cars and their effect on the EU's energy system, and on emissions of greenhouse gases and air pollutants.

Until 2030, the additional energy demand by electric vehicles will be limited and will not significantly influence the electricity system but, in the longer term, with high market shares of electric vehicles assumed in 2050, the required electricity demand will have more significant impact on power systems in Europe. In the scenario with 80% electric

cars in the EU's total car fleet in 2050, additional electricity generation will be required in the EU to meet the higher energy demand. Under that scenario, the electric vehicles' share in Europe's total electricity consumption will increase from approximately 0.03% in 2014 to around 4-5% by 2030 and 9.5% by 2050. This is much more than the 1.3% assumed in the European Commission's projection.

Overall, the resulting CO₂ emission reductions in the road transport sector would outweigh the higher emissions caused by the continued use of fossil fuels in the power-generating sector. In the EU, a net reduction of 255 million tonnes of CO₂ could be delivered in 2050. This amount is equivalent to around 10% of the total emissions estimated for that year. However in countries with a high share of fossil power plants, environmental benefits would be lower. This would also lower the benefits of using electric vehicles in these countries.

An 80 % share of electric vehicles would also significantly reduce overall emissions of certain air pollutants like nitrogen oxides (NO_x) and particulate matter (PM). For other pollutants such as sulfur dioxide (SO₂), emissions could increase due to the continued use of coal for electricity generation.

The EEA briefing on electric vehicles is at www.eea.europa.eu/themes/transport/electric-vehicles/electric-vehicles-and-energy.

2016 Air Pollutant Emission Inventory Guidebook

On 30 September 2016 the European Environment Agency (EEA) and the European Monitoring and Evaluation Programme (EMEP) published their 2016 guidebook on air pollutant emission inventory.

The guidebook aims to provide procedures to enable users to compile emissions inventories that meet quality criteria for Transparency, Consistency, Completeness, Comparability and Accuracy (TCCCA criteria), and to provide estimation methods and emissions factors for inventory compilers at various levels of sophistication.

The guidebook does not provide guidance on the estimation and reporting of emissions of the direct gases responsible for global warming and climate change. These are included in the separate Intergovernmental Panel on Climate Change (IPCC) guidelines. If substances are implicated in both climate change and regional pollution then cross-referencing is provided in the most appropriate specific guidance.

The EMEP/EEA guidebook is at www.eea.europa.eu/publications/emep-eea-guidebook-2016.

New CEN Standard for Graphic Symbols for Liquid and Gaseous Fuels

The European Committee for Standardization (CEN) has approved a new European Standard providing harmonized graphic symbols for liquid and gaseous fuels.

The standard EN 16942, which will be published by end of April 2017, was developed following a request from the European Commission in 2015. This EN standard will provide consumers, inside and outside their countries, with information on the compatibility between their vehicles and the fuels available in filling stations as established in Directive 2014/94/EU on the deployment of alternative fuels infrastructure.

Examples of EN 16942 graphic symbols are at [ftp://ftp.cencenelec.eu/EN/News/PR/PR-2016-07.pdf](http://ftp.cencenelec.eu/EN/News/PR/PR-2016-07.pdf).

Dutch Report on On-Road Diesel Emissions

On 14 October 2016 RDW, the Netherlands Vehicle Authority, released a report on on-road emissions performance of 30 vehicles.

Vehicles tested were diesel Euro 5 and Euro 6 cars, type-approved by RDW.

Merk	Type	NOx (mg/km)	Conformiteit-factor (-)	Rollenbanktest noodzakelijk?
Jeep	Wrangler Unlimited Van	385-916	2.1-5.1	Ja
Jeep	Grand Cherokee Van	1249-2195	6.9-12.2	Ja
Hyundai	I40	306-1104	1.7-6.1	Ja
Kia	CEE D	244-1184	1.4-6.6	Ja
Kia	Optima	266-951	1.5-5.3	Ja
Suzuki	Swift	338-491	1.9-2.7	Nee
Volvo	V50	411-842	2.3-4.7	Nee
Volvo	XC90	231-690	2.9-8.6	Ja
Volvo	V40	296-475	1.6-2.6	Nee
Volvo	V40	267-516	1.5-2.9	Nee
Chevrolet	Aveo	293-1209	1.6-6.7	Ja
Suzuki	SX4	457-1059	2.5-5.9	Ja
Isuzu	Isuzu D-Max	514-774	1.8-2.8	Nee
Opel	Mokka	159-451	2.0-5.6	Ja
Chevrolet	Orlando	479-1772	2.7-9.8	Ja
Chevrolet	Captiva	353-766	2.0-4.3	Nee
Chevrolet	Cruze	678-1652	3.8-9.2	Ja
Hyundai	H-1	569-1066	2.0-3.8	Nee
Hyundai	IX20	250-845	1.4-4.7	Nee
Isuzu	D-max	460-794	1.6-2.8	Nee
Jeep	Wrangler Unlimited Van	461-909	2.6-5.1	Ja
Kia	Sorento	175-499	2.2-6.2	Ja
Kia	Venga	333-817	1.9-4.5	Nee
Opel	Mokka	465-1378	2.6-7.7	Ja
Opel	Antara	279-774	1.6-4.3	Nee
Suzuki	Vitara	145-517	1.8-6.5	Ja
Volvo	XC90	289-1157	3.6-14.5	Ja
Volvo	V40	146-367	1.8-4.6	Nee
Volvo	V40 Cross Country	256-440	1.4-2.5	Nee
Volvo	V40	449-716	2.5-4.0	Nee

Emissions tests were conducted with support from TNO and under a protocol based on German and French investigations into the use of illegal defeat devices. They included variations around the regulatory NEDC but also Real-Driving Emissions (RDE) tests.

The on-road emissions of half of the vehicles tested seem to be significantly higher than during the type-approval test. The differences relate to speed, time, distance, and outside temperature. However, such differences are basically forbidden unless one can demonstrate they are necessary to prevent engine damage for example.

No abnormal behaviour was observed on emissions from the other half of vehicles tested.

The RDW will examine more closely vehicles with high on-road emissions and will test them on a chassis dynamometer to further investigate the deviations observed. Manufacturers will have to demonstrate that the defeat device falls under the authorized exceptions. If it appears not to be the case, this may lead to a recall and in extreme cases to the withdrawal of the type-approval.

The RDW report (in Dutch) is at www.rdw.nl/Particulier/Paginas/RDW-constateert-afwijkend-emissiegedrag.aspx.

French Parliament Report on Automotive Sector

On 12 October 2016 the Lower House of Parliament's information mission on the French automotive supply chain in industrial, energy and fiscal terms adopted its report, drafted by the Rapporteur Ms Delphine Batho.

The report was drafted after a year of work that included 30 hearings and meetings with consumers; automotive suppliers; European trade associations; European Commission's Directorate Generals; Ministries; etc.

The report includes 120 proposals the first of which is to formalize before the end of 2016, the founding act of the "French alliance ecology-automotive", with reciprocal and voluntary commitments taken by the French government and the automotive industry.

Government's commitments should include:

- A strong commitment of France for a complete revision of the European regulatory framework, with the development of a fuel-neutral Euro 7 standard, integrating all pollutant elements.
- A minimum leadtime of 5 years before the entry into force of a new standard, and announcement of objectives to be achieved ten years ahead.
- Drastic controls, including the creation of an independent investigation body conducting random tests on in-use vehicles in France, without waiting for a European agency.
- Fuel-neutral taxation within 5 years, including for company vehicles, and rise of the CO₂ tax to support the deployment of zero-emission vehicles.
- Support for fleet renewal, for the control of in-use vehicles' emissions, and doubling of the scrappage bonus for low-income households.

- Secure €500 million and develop a road map on autonomous driving to facilitate experiments, remove regulatory roadblocks and foster innovation.

- Accelerate the deployment of electric and bioNGV infrastructures for Heavy-duty vehicles.

- Sustainable stability of the State's participation in PSA and the Renault-Nissan Alliance, as long-term shareholder with an industrial strategy more than for just dividends.

On the other hand, industry's commitments should include:

- A leading role in the European car industry promoting an environmentally-demanding regulatory framework.

- An increase in R&D budgets and investments in zero-emission vehicles, autonomous vehicles, and eco-design.

- An exemplary character of the French brands by their transparency, speeded up compliance programmes, optimum aftertreatment technology choice, and early implementation of Real-Driving Emissions (RDE).

- Accelerate plant modernization and diversification of production to maintain industrial bases despite the reduction in the diesel share in new vehicle sales.

- Develop a 'made in France' label and increase production volumes in France.

- Review and simplify strategic bodies of the automotive industry to integrate services development and new usage revolution.

- Seek partnerships to develop a European battery industry.

- A solidarity pact to stop the deterioration of relationships within the supply chain.

The French report is at [www2.assemblee-nationale.fr/documents/notice/14/rap-info/i4109/\(index\)/rapports-information](http://www2.assemblee-nationale.fr/documents/notice/14/rap-info/i4109/(index)/rapports-information).

Paris' App on Air Pollution Exposure

On 21 September 2016 Airparif, the air quality monitoring agency of the Paris region, launched a new App for citizens Itiner'AIR which provides information on air pollution exposure in the Ile-de-France region.

The exposure index (from very low to very high) is based on nitrogen dioxide (NO₂), particulates (PM₁₀), and ozone (O₃). Exposure can be calculated manually or recorded live during trips and using the GPS function of smartphones.

The Airparif Itiner'AIR App can be found at www.airparif.asso.fr/actualite/detail/id/175.

German Federal Council's Resolution to end ICE Vehicles by 2030

On 23 September 2016 Germany's Bundesrat (the Federal Council, a legislative body representing the sixteen states of Germany) adopted a resolution supporting the Commission's communication on a European strategy for low-emission mobility.

The Bundesrat however felt that the proposal did not go far enough and therefore it is calling on the European Commission to adopt legislation that would ban the approval of internal combustion engine vehicles by 2030.

The non-binding resolution also calls on the European Commission to review the current practices of taxation and dues with regard to a stimulation of emission-free mobility.

German Transport Minister Dobrindt nevertheless spoke of "nonsense" and rejected the plans. He said that electric mobility should indeed be promoted, but combustion engines will remain in parallel for a long time.

UK Ultra-Low Emission Taxi Scheme

On 18 October 2016 the UK notified the European Commission of their Ultra-Low Emission Vehicle (ULEV) Taxi Scheme.

The ULEV taxi scheme will provide up to £15 million (€ 16.6 million) of grant funding over 2 years (from February 2017 to March 2018) to 15 UK local authorities. The 15 authorities will compete for funding to support the needs for Electric Vehicle charging infrastructure for their local taxi fleets to transition to ULEVs. The funding will provide up to 75% of the funding for the required local infrastructure.

The ULEV taxi scheme is designed to promote uptake of ultra-low emission vehicles in the UK through enabling local taxi fleets to transition from using conventional vehicles by supporting the necessary charge point infrastructure, a key barrier to ULEV uptake. Expansion of the ULEV market is a key area for the UK to meet its greenhouse gas (GHG) aspirations as set out in the UK document '2050 Pathways' and the European Document 'EU Transport GHG Routes to 2050'.

A separate notification will follow in early 2017 for a scheme to support the purchase of ULEV taxis.

UK Grant Scheme for Plug-In Motorcycles

On 24 October 2016 the UK notified the European Commission of a new grant scheme that provides funding to support the uptake of zero emission motorcycles and scooters in the UK.

The Plug-in Motorcycle Grant (PiMG) scheme is designed to promote the uptake of zero emission motorcycles and scooters in the UK and aligns with current UK Government strategies that seek to create a path to a sustainable mass market for Ultra-Low Emission Vehicles (ULEVs). The scheme will provide up to £3.75 million (€4.2 million) in grant funding over the next four years (from August 2016 to March 2020).

The grant offer is a 20% reduction off the purchase price of an eligible motorcycle or scooter, up to a maximum of £1500 (€1685) per vehicle.

As a core requirement motorcycles and scooters must be of a type that requires vehicle registration with UK authorities, driver licensing, the provision of insurance, and the wearing of a protective helmet to be ridden legally on UK roads. In addition, qualifying motorcycles and scooters must hold European Community Whole Vehicle Type-Approval for specific categories of vehicle (L1e or L3e to Directive 2002/24/EC or L1e-B, L3e-A1, L3e-A2, L3e-A3 to Regulation (EC) 168/2013/EC), and meet further requirements with regard to vehicle mass, minimum speed (≥ 40 km/h), minimum range (≥ 30 km for mopeds and ≥ 50 km for motorcycles), vehicle and battery warranty, battery degradation and electrical safety.

The vehicle must be zero carbon emissions, i.e. tailpipe emissions of 0 g CO₂/km.

Second Phase of Air Quality Consultation in London

On 10 October 2016 the London Mayor, Mr Sadiq Khan, launched the second phase of the air quality consultation led by Transport for London (TfL).

Proposals include the introduction of the central London Ultra-Low Emission Zone (ULEZ) in 2019, a year ahead of schedule, extending the ULEZ to the North and South Circular in 2019 or later, and the introduction of an Emissions Surcharge ("T-charge") for older polluting vehicles entering the congestion charge zone in October 2017.

The T-charge would be in addition to the congestion charge and would apply to vehicles that do not meet the Euro 4/IV emissions standard for NO_x and PM emissions. The charge, costing £10 per day for non-compliant vehicles, would operate at the same times as the congestion charge (Monday to Friday, 07:00 – 18:00).

The London Mayor has also called on the UK government to put in place a national diesel scrappage scheme to help people replace vehicles affected by the proposals. There was overwhelming support for this in the first round of his consultation, the Mayor indicated. He also wants fiscal incentives, like vehicle excise duty, to be reformed so that they encourage people to own and use the cleanest vehicles.

To further support the ULEZ, the London Mayor said that TfL is leading by example and will ensure all double-decker buses operating in the ULEZ will be hybrid and all single-decker buses will be fully electric or hydrogen.

The consultation is open until 18 December 2016 and is at <https://consultations.tfl.gov.uk/environment/air-quality-consultation-phase-2?cid=airquality-consultation>.

Interactive Map of Air Quality in Denmark

The Danish Centre for Environment and Energy (DCE) has released a new interactive map that shows the air quality

across Denmark as part of its new 'Air on your street' project.

The map allows the user to gain an insight into the nitrogen dioxide (NO₂) and particulate matter levels where they work and live – all the way down to streets and even individual addresses.

"The goal with the map is to illustrate the geographic variation in air quality across Denmark by showing the average amounts for the individual substances," said Steen Solvang Jensen, a senior researcher with DCE. "It is the calculated mean concentrations of the individual substances over the course of a year."

DCE however said that the air quality levels were taken during 2012 and the air has become cleaner across Denmark since that time.

The map is at <http://lpdv.spatialsuite.dk/spatialmap>.

Spanish Cities to cut by 50% Transport Greenhouse Gas Emissions by 2030

On 14 September 2016 twelve Spanish cities signed an agreement with Greenpeace Spain to cut their greenhouse gas emissions from transport by half in their metropolitan area by 2030.

Madrid, Barcelona, Valencia, Sevilla, Zaragoza, Málaga, Murcia, Bilbao, La Coruna, Oviedo, Leon and Santiago de Compostela signed the agreement which stems from a Greenpeace Spain report released in May 2016, and that listed 10 measures to achieve a 50% reduction in urban transport CO₂ emissions. These include reducing the physical space available to cars, widely applying 30 km/h speed limits, centralising goods distribution points, promoting electric vehicles and increasing charges on the most polluting forms of transport.

NORTH AMERICA

US EPA Staff Draft Assessment of NO₂ Air Quality Standard

On 27 September 2016 the US Environmental Protection Agency (EPA) released a draft policy assessment for the review of the primary National Ambient Air Quality Standards (NAAQS) for NO₂.

The NAAQS for NO₂ was initially promulgated in 1971. At that time, the standard was set with an annual averaging time and a level of 53 ppb to protect against respiratory disease in children that had been reported in the available studies. The last review of the primary NO₂ NAAQS was completed in 2010. In that review, the EPA supplemented the primary annual NO₂ standard by establishing a new 1-hour standard set at 100 ppb.

The new EPA Staff review indicates little potential for exposures to ambient NO₂ concentrations that would be of public health concern in locations meeting the current 1-

hour standard. In particular, based on recent ambient measurements, all of which meet the current standards, analyses indicate almost no potential for 1-hour exposures to NO₂ concentrations at or above any of the benchmarks examined, even the lowest benchmark (i.e., 100 ppb). When air quality is adjusted upwards to simulate just meeting the current 1-hour NO₂ standard, there is also virtually no potential for exposures to the NO₂ concentrations that have been shown most consistently to increase airway responsiveness in people with asthma (i.e., greater than 200 ppb), even under worst-case conditions across a variety of study areas with among the highest NOx emissions in the US.

The EPA Staff has therefore reached the preliminary conclusion that the available scientific evidence, in combination with the available information from quantitative analyses, supports the adequacy of the public health protection provided by the current primary NO₂. It is then appropriate to consider retaining the current standards, the draft assessment concludes.

The EPA Staff draft assessment is at www3.epa.gov/ttn/naaqs/standards/nox/data/20160927-no2-pa-external-review-draft.pdf.

US EPA Settlement with Detroit Diesel on Clean Air Act Violation

On 6 October 2016 the US Environmental Protection Agency (EPA) and the US Department of Justice (DOJ) announced a settlement with Detroit Diesel Corp., a subsidiary of Daimler Trucks North America, that resolves alleged violations of the Clean Air Act for selling Heavy-duty diesel engines that were not certified by EPA and did not meet applicable emission standards.

The US government's complaint alleges that Detroit Diesel sold 7786 Heavy-duty diesel engines for use in trucks and buses in model year 2010 without a valid EPA certificate of conformity for NOx emissions. Engines manufacturing started in 2009 but ended in 2010. The complaint alleges that the engines did not conform to emission standards applicable to model year 2010 engines.

Under the settlement, Detroit Diesel will spend \$14.5 million (€12.9 million) on projects to reduce NOx and other pollutants, including replacing high-polluting diesel school buses and locomotive engines with models that meet current emissions standards. Detroit Diesel will also pay a \$14 million (€12.5 million) civil penalty and is required to post data and information about the clean diesel projects on a public website.

ASIA PACIFIC

Bharat Stage VI published

On 16 September 2016 the Bharat Stage VI (BS VI) emissions standards were published in the Gazette of India as G.S.R. 889 (E).

BS VI standards cover Light-duty vehicles below 3.5 tons, Heavy-duty vehicles above 3.5 tons, 2- and 3-wheelers and apply to new vehicles from 1 April 2020.

Limit Values for M and N Category vehicles fitted with PI & CI Engines: BS VI																
Category	Class	Reference Mass (RM) (kg)	Mass of Carbon Monoxide (CO)		Mass of Total Hydrocarbons (THC)		Mass of Non-Methane Hydrocarbons (NMHC)		Mass of Oxides of Nitrogen (NOx)		Combined Mass of Hydrocarbons and Oxides of Nitrogen (THC + NOx)		Mass of Particulate Matter (PM)		Number of Particles (PN)	
			L1 (mg/km)	L2 (mg/km)	L3 (mg/km)	L4 (mg/km)	L5 = L3 (mg/km)	L6 (mg/km)	L7 (mg/km)	L8 (mg/km)	L9 (mg/km)	L10 (mg/km)	L11 (mg/km)	L12 (mg/km)	L13 (mg/km)	L14 (mg/km)
M1 & M2	All		1000	500	100	-	68	-	60	80	-	170	4.5	4.5	6.0 X 10 ¹¹	6.0 X 10 ¹¹
N1	I	RM ≤ 1305	1000	500	100	-	68	-	60	80	-	170	4.5	4.5	6.0 X 10 ¹¹	6.0 X 10 ¹¹
	II	1305 < RM ≤ 1760	1110	630	130	-	90	-	75	105	-	195	4.5	4.5	6.0 X 10 ¹¹	6.0 X 10 ¹¹
	III	1760 < RM	2270	740	160	-	108	-	82	125	-	215	4.5	4.5	6.0 X 10 ¹¹	6.0 X 10 ¹¹
N2	All		2270	740	160	-	108	-	82	125	-	215	4.5	4.5	6.0 X 10 ¹¹	6.0 X 10 ¹¹

PI = Positive Ignition, CI = Compression Ignition

(3) For positive ignition, particulate mass and number of particles limit shall apply only to vehicles with direct injection engines.

(4) Until three years after date of implementation for new type approvals and new vehicles, particle number emission limit of 6.0 X 10¹¹ #/km shall apply to BS VI gasoline direct injection vehicles upon choice of the manufacturer.

Note: This Regulation shall apply to vehicles of categories M1, M2, N1 and N2 with a reference mass not exceeding 2,610 kg.

At the manufacturer's request, type approval granted under this Regulation may be extended from vehicles mentioned above to M1, M2, N1 and N2 vehicles with a reference mass not exceeding 2,840 kg and which meet the conditions laid down in this notification.

Light-duty emissions standards have to be met also during real-world driving from 1 April 2023. Further details on conformity assessments are still to be published in AIS-137.

The BS VI standards are at <http://egazette.nic.in/WriteReadData/2016/171776.pdf>. Note that the English version starts from page 24.

China IV Emission Standards for Motorcycles and Mopeds published

On 30 August 2016 the China Ministry of Environment (MEP) issued their final China IV emission standards for motorcycles and mopeds.

These China IV standards for motorcycles and mopeds are equivalent to Euro 4 standards for motorcycles and moped (engines with displacements of 50 cm³ or less). For motorcycles, China IV standards use the Worldwide harmonized Motorcycle emissions Test Cycle (WMTC), while mopeds use the ECE R47 test cycle. The China IV standards include more stringent exhaust emission limits, standards for diesel three-wheelers, evaporative emission requirements for gasoline motorcycles and mopeds, more stringent durability requirements, and OBD requirements.

The new China IV standards will apply to all new motorcycles and mopeds sold and registered from 1 July 2019. In the EU, the Euro 4 requirements were introduced in 2016 for motorcycles and will be introduced in 2017 for mopeds.

By the end of 2015, China's motorcycle population had reached 95.14 million, according to MEP. It is estimated that in 2015 motorcycles contributed 12.7% of CO, 13.5% of HC, and 1.6% of NOx emissions from vehicles throughout the country. MEP estimates that in three years after China

IV standards take effect, all of the new motorcycles and mopeds will emit around 6.5 million tons less CO, about 2 million tons less HC, and about 300 000 tons less NOx in their life cycles, compared with motorcycles and moped that comply with current China III emission standards.

The final China IV regulation for motorcycles is at http://english.sepa.gov.cn/Resources/standards/Air_Environment/emission_mobile/201609/t20160902_363507.shtml and for mopeds is at http://english.sepa.gov.cn/Resources/standards/Air_Environment/emission_mobile/201609/t20160902_363509.shtml.

AFRICA

OECD Report on Cost of Air Pollution in Africa

On 29 September 2016 the Organisation for Economic Cooperation and Development (OECD) published a report on the cost of pollution in Africa.

The paper estimates the economic cost of premature deaths attributable to air pollution in Africa, per country and for Africa as a whole. It draws on the epidemiological evidence base assembled in the 2013 Global Burden of Disease Study and on the economic analyses in recent OECD work on the value of statistical life.

Since 1990 the death toll from air pollution in Africa has risen together with the continuous growth of the urban population of Africa. The total of annual deaths from ambient particulate matter pollution across the African continent increased by 36% from 1990 to 2013, from around 180 000 in 1990 to around 250 000 in 2013. Over the period, deaths from household air pollution also continued to increase, by 18%, from around 400 000 in 1990 to well over 450 000 in 2013.

For Africa as a whole the estimated economic cost of premature deaths from ambient particulate matter pollution was around \$215 billion (€160 billion) in 2013. The estimated economic cost of premature deaths from household air pollution was around \$232 billion (€170 billion).

The OECD report is at www.oecd-ilibrary.org/development/the-cost-of-air-pollution-in-africa_5jlqzq77x6f8-en;jsessionid=1e2sgpejpiuum.x-oecd-live-02.

UNITED NATIONS

WHO Report on PM_{2.5} Global Exposure

On 27 September 2016 the World Health Organization (WHO) released a new global report presenting detailed outdoor air pollution and health impact data by country.

The report presents methods and data for two Sustainable Development Goals (SDG) indicators: the annual mean levels of fine particulate matter (PM_{2.5}) in cities (population-weighted), and the mortality rate attributed to household and ambient air pollution.

The global exposure assessment to air pollution consists of modelled data of population-weighted annual mean PM_{2.5} concentrations. Data are modelled through combining remote satellite sensing data with ground measurements from the 2016 WHO ambient (outdoor) air quality database, which serves for calibration of the satellite data.

The WHO air quality model confirms that 92% of the world's population lives in places where annual mean PM_{2.5} concentrations exceed the WHO guideline of 10 µg/m³.

From a global perspective, the WHO Western Pacific and South East Asian regions bear most of the burden, with 1.1 million and 799 000 deaths, respectively. Nevertheless, European populations have a higher life expectancy than in many other parts of the world, and older populations can be more vulnerable to the cumulative effects of air pollution on health, which is reflected in the crude burden of disease figures. In 2012, 479 000 Europeans died prematurely due to ambient air pollution.

The report provides several indicators of the burden of disease from air pollution, with global estimates revealing that 94% of air pollution-related deaths are due to non-communicable diseases (ischaemic heart diseases, stroke, chronic obstructive pulmonary disease and lung cancer).

WHO notes that the actual impact of air pollution on health presented in the report is a conservative figure, as it does not include the separate impacts of health from other air pollutants such as nitrogen oxides (NO_x) or ozone (O₃), and excludes health impacts where evidence is still limited (e.g. pre-term birth or low birth weight).

The WHO report is at www.who.int/phe/publications/air-pollution-global-assessment/en/.

Together with the launch of the report, an interactive map is also available to provide information on population-weighted exposure to PM_{2.5} for all countries. The map also indicates data on monitoring stations for PM₁₀ and PM_{2.5} for about 3000 cities and towns globally. Monitoring capacity varies greatly throughout the WHO European Region: the map highlights where the data gaps are and raises the opportunity to improve air quality monitoring in the Region.



The WHO interactive map is at <http://maps.who.int/airpollution/>.

“BreatheLife: Clean Air. A Healthy Future” Awareness Campaign

On 20 October 2016 the United Nations World Health Organization (WHO) in partnership with the Climate and Clean Air Coalition (CCAC) and the Government of Norway launched a global awareness campaign on the dangers of air pollution – especially ‘invisible killers’ such as black carbon, ground-level ozone and methane – for the health of individuals and the planet.

Titled “BreatheLife: Clean air. A healthy future”, the campaign aims to mobilize cities and their inhabitants on issues of health and protecting the planet from the effects of air pollution. The campaign seeks to cut in half the number of deaths from air pollution (from currently nearly 7 million each year) by 2030 – the target year for the achievement of the UN Sustainable Development Goals, adopted by the UN General Assembly in September 2015.

The campaign highlights the practical policies that cities can implement to improve the air quality through better housing, transport infrastructure, managements of waste and energy systems. Improved vehicle standards and prioritization of clean public transport are also part of the actions put forward by the campaign.

The “BreatheLife: clean air. A healthy future” campaign is at <http://breathelife2030.org>.

UNICEF Report “Clear the Air for Children”

On 30 October 2016 UNICEF, the UN agency working for the protection of children, issued a report titled ‘Clear the air for children’.

The report looks at how children, particularly the most disadvantaged, are affected by air pollution. It points out that around 300 million children live in areas where the air is toxic – exceeding international limits by at least six times – and that children are uniquely vulnerable to air pollution, breathing faster than adults on average and taking in more air relative to their body weight.

The report also notes that air pollution is a major contributing factor in the deaths of around 600 000 children under age 5 every year and threatens the health, lives and futures of millions more.

It concludes with a set of concrete steps to take so that children can breathe clean, safe air.

The UNICEF report is at www.unicef.org/publications/files/UNICEF_Clear_the_Air_for_Children_30_Oct_2016.pdf.

IMO to cap Sulfur in Marine Fuel in 2020

On 27 October 2016 the International Maritime Organization (IMO)’s Marine Environment Protection Committee (MEPC) decided to cap sulfur content in fuel used by the shipping industry from 1 January 2020.

The global limit for sulfur content in marine fuel oil has been 3.5% since 2012. The new global cap will be just 0.50%.

All EU countries were in support of 2020. Some big shipping countries supported delaying the measure until 2025, but support was eventually overwhelming for 2020 as a starting year for the new rules.

The implementation of the new cap will be discussed at the next MEPC meeting in spring 2017.

Paris Agreement on Climate Change enters Force on 4 November 2016

On 5 October 2016 the UN Secretary-General Ban Ki-moon announced that the Paris Agreement had crossed the final threshold and would enter into force on 4 November 2016.

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) adopted the Paris Agreement at the COP21 in December 2015. The Paris Agreement was to enter into force on the 30th day after the date on which at least 55 Parties to the UNFCCC accounting for at least 55% of the total global greenhouse gas emissions would have deposited their instruments of ratification, acceptance, approval or accession.

On 5 October 2016, 72 countries had ratified the Paris Agreement, representing close to 57% of global greenhouse gas emissions.

GENERAL

AECC Position Paper on Type-Approval Framework Proposal

On 19 September 2016 the AECC position paper on the type-approval framework Regulation proposal was released.

AECC generally supports the proposal to establish a sound and ambitious emissions legislative framework for future vehicles and to re-establish and ensure the credibility of European vehicles emissions legislation.

Concerns regarding quality, performance and durability of replacement components are raised as well as issues related to commercial offers for removing, tampering and tuning measures of the emissions control technologies.

The need to improve market surveillance is stressed; so is a call for improved Periodic Technical Inspection (PTI) of vehicles.

The AECC position paper is at www.aecc.eu/wp-content/uploads/2016/10/160919-AECC-position-on-new-TA-Framework.pdf.

PSA publishes Real-World Fuel Consumption Test Protocol

On 10 October 2016 the PSA Group, NGOs Transport & Environment (T&E) and France Nature Environnement (FNE), and Bureau Veritas published the protocol for measuring real-world fuel consumption.

This follows the official release of real-world fuel consumption figures for 30 Peugeot, Citroën and DS models in July 2016.

The protocol for measuring real-world fuel consumption defines the means (necessary equipment) and methods (measurement and processing) that should be systematically applied to calculate the average real-life fuel consumption of the average customer. The protocol breaks down into three steps: selecting and checking the vehicle; driving the vehicle (by a non-professional driver on public roads open to traffic and under real-life driving conditions, with normal use of air-conditioning systems, passenger and luggage loads and road gradients) and performing the measurement; and processing the measurement results.

By the end of 2016, real-world fuel consumption figures for 50 models will be published by PSA. A simulator to enable customers to predict their vehicles' fuel consumption based on driving style and conditions will also be released online.

In 2017, the same procedure will be extended to the measurement of real-world NOx emissions.

The measurement protocol is at http://media.groupe-psa.com/sites/default/files/attached_files/7/20161010_Protocol%20realworld_fuelconsumption_EN.pdf.

DUH Report on NOx and CO₂ Real-Driving Emissions

On 7 September 2016 the Deutsche Umwelthilfe (DUH) published a report on NOx and CO₂ emissions of 39 Euro 6 vehicles (36 diesel, 1 gasoline, and 2 gasoline hybrids) tested on the road.

Real-driving emissions test were carried out by the DUH Emissions Control Institute (EKI) between May and early September 2016.

A number of cars emitted more NOx on the road than the Euro 6 limit of 80 mg/km. The worst performers include a Ford Mondeo 2.0 Duratorq TDCi (9.2 times the limit), a Nissan Qashqai 1.6 dCi (8.5 times), and a Renault Scenic 1.6 dCi (8.2 times).

However, 8 diesel cars already met the Euro 6d-TEMP target (Conformity Factor of 2.1) that will be introduced in September 2017/19. Amongst them 6 also already met the Euro 6d limit (Conformity Factor of 1.5) that will apply from 2020/21. They are an Audi A4 2.0 TDI Avant, a VW Passat 2.0 TDI Variant, a BMW 318 d Touring (schwarz), an Opel Zafira 1.6 CDTi (new engine control), an Audi Q3 2.0 TDI Quattro, and a Mercedes E 220d Limousine (new engine generation).

One van was tested, a VW T6 Transporter 2.0 TDI, which also performed well on the road, emitting 118 mg/km NOx – 0.9 times the limit of 125 mg/km that applies to such light commercial vehicles.

The gasoline and hybrid cars tested emitted between 5 and 15 mg/km of NO_x on the road, which corresponds to 0.1 to 0.3 times the Euro 6 limit of 60 mg/km.

The DUH report is at www.duh.de/uploads/media/EKI-Bericht_NOx_und_CO2-PEMS-Messungen_20160913.pdf.

T&E Report on Euro 5 and 6 Diesel Car Emissions Performance

On 19 September 2016 Transport & Environment (T&E) released a new report titled "Dieselgate: Who? What? How?"

Transport & Environment has analysed NO_x emissions data from the national investigation reports prepared in France, Germany and the UK, and complemented this with additional information from Emissions Analytics (EA) EQUA Air Quality index that grades the NO_x emissions from road tests EA has performed. In total, T&E has assembled a database of 541 tests of vehicle NO_x emissions.

The report exposes the number of dirty diesel cars on the EU's roads and the weaknesses of car regulations by national authorities. T&E estimates that 29 million modern diesel cars now in use are grossly polluting, a number that is still growing. Over four in five cars that meet the Euro 5 standard for NO_x in the laboratory (180 mg/km), and were sold between 2010 and 2014, actually produce more than three times this level when driven on the road. Two-thirds of Euro 6 cars (most on sale since 2015) still produce more than three times the 80 mg/km NO_x limit when driven on the road. 69% of the 'dirty diesel' cars were sold in France, Germany, Italy and the UK. These Member States also approved most of the polluting diesel cars for sale, T&E said.

In addition, the report identifies which are the worst manufacturers in terms of the level of emissions. For Euro 5 vehicles, the five worst performing companies were Renault (including Dacia), Land Rover, Hyundai, Opel/Vauxhall (including Chevrolet) and Nissan. For current Euro 6 cars, the worst performers are Fiat (including Alfa Romeo and Suzuki to whom Fiat supplies engines), Renault (including Nissan, Dacia and Infiniti), Opel/Vauxhall, Hyundai, and Mercedes. The companies producing the cleanest Euro 6 cars are VW Group, BMW (including Mini) and Mazda.

According to T&E, the European Commission should, without delay, start to work on the next set of Euro 7 standards for cars and vans to apply from 2025. The future emissions standards must be technologically neutral with the same NO_x limit for all fuels. The level of the Euro 7 limits should be fixed with the aim of the World Health Organization (WHO) air quality guidelines finally being met in all urban areas across Europe.

T&E also wants Europe to discourage dieselisation as they believe that Diesel engines are an expensive way to save

carbon, typically costing €2000 more than a gasoline engine for modest carbon savings.

The T&E report is at www.transportenvironment.org/publications/dieselgate-who-what-how.

ICCT Report on Technologies for Non-Road Diesel Engines

On 16 September 2016 the International Council on Clean Transportation (ICCT) published a white paper on technology pathways for diesel engines used in non-road vehicles and equipment.

The report aims to investigate several aspects of the evolution of diesel engines used in non-road vehicles and equipment in the US and EU. First, the historical progression of regulatory programs controlling emissions from non-road diesel engines in the two regions is examined, beginning with the initial promulgation of emission standards for these engines in the mid-1990s and continuing through proposed European Stage V regulations to be implemented in 2018. Second, the development and application of engine emission control strategies and technologies in response to these increasingly stringent regulatory programs is considered. The paper outlines the steps taken by engine manufacturers to go from low-technology diesel engines to modern technology engine systems that incorporate advanced emission control technologies and emit 95% less pollution than their predecessors.

These regions were amongst the first to regulate emissions from non-road diesel engines, and US and EU regulations have generally served as models for non-road diesel emission control programs in other areas of the world. By tracing the development of non-road diesel engines in these regions, the ICCT analysis will inform the potential for advancement towards cleaner engines in countries and regions with no or less stringent emission standards in place, such as India and China. The progression of non-road diesel engine technologies in the US and the EU presented here will provide insight into potential pathways and timelines for the introduction of lower-emitting engines in these emerging markets.

The relative importance of non-road diesel engines as sources of pollutant emissions in the two regions is stressed in the report, as well as the regulatory history of these engine types, and engine and emissions control technology pathways followed in response to increasingly stringent regulatory standards.

The ICCT report is at www.theicct.org/sites/default/files/publications/Non-Road%20Tech%20Pathways%20White%20Paper%20vF_ICCT_20160915.pdf.

DUH Report on Lack of Durability of Replacement Catalytic Converter

On 13 September 2016 the Deutsche Umwelthilfe (DUH) released a report prepared by TÜV-Nord investigating the durability of a replacement catalytic converter from the company EEC.

A catalytic converter was tested fresh, then aged in an oven and retested after aging. NEDC emissions tests were performed with a Euro 4 gasoline VW Passat 1.6L 75 kW for which the replacement converter is certified. The car had already driven a little bit over 80 000 km.

UN Regulation No 103 on replacement catalytic converters allows for the use of a Deterioration Factor of 1.2 and in that case the emissions requirements with the replacement part were only met for HC, not for CO and NOx. After oven aging, all three pollutant limits were exceeded.

DUH is calling once more on the German Federal Ministry of Transport to introduce effective control measures to prevent the distribution of replacement catalytic converters that do not comply.

The DUH report is at www.duh.de/uploads/media/DUH_Bericht_TUEV_Nord_Untersuchung_AT-Katalysator_2016.pdf.

World Bank Report on Air Pollution Costs

On 8 September 2016 the World Bank published a report on "The cost of air pollution: strengthening the economic case for action".

Air pollution is not just a health risk but also a drag on development. By causing illness and premature death, air pollution reduces the quality of life. By causing a loss of productive labour, it also reduces incomes in these countries. Air pollution can have a lasting effect on productivity in other ways as well – for example, by stunting plant growth and reducing the productivity of agriculture, and by making cities less attractive to talented workers, thereby reducing cities' competitiveness, the report says.

The World Bank study sets out to calculate the economic costs of premature mortality from air pollution to strengthen the business case for governments to act ambitiously in reducing pollution.

The number of deaths each year attributable to air pollution makes a compelling case for reducing pollution. Valuing the costs of premature deaths associated with pollution helps to further highlight the severity of the problem. Governments face a wide array of competing development challenges, and monetizing the costs of pollution can help them decide how to allocate scarce resources to better the lives of their citizens. Monetary values can also help them measure the benefits of policies to tackle pollution and, when compared with costs of implementation, to devise cost-effective air quality management plans.

The report found that in 2013 exposure to ambient and household air pollution cost the world's economy some \$5.11 trillion (€4.5 trillion) in welfare losses. In terms of magnitude, welfare losses in South Asia and East Asia & Pacific were the equivalent of 7.4% and 7.5% of the regional gross domestic product (GDP), respectively. At the low end, losses were still equal to 2.2% of GDP in the Middle East & North Africa. Household air pollution from cooking with solid fuels was the biggest cause of losses in South Asia and Sub-Saharan Africa. In all other regions, losses were largely caused by ambient air pollution from fine particulate matter (PM_{2.5}). Labour income losses, while expectedly lower than welfare losses, were nonetheless substantial in regions with younger populations. Lost income for countries in South Asia totalled more than \$66 billion (€59 billion) in 2013, the equivalent of nearly 1% of GDP. Globally, the labour income losses totalled \$225 billion (€200 billion) in 2013.

Moreover, air pollution costs have grown since 1990. From 1990 to 2013, welfare losses nearly doubled and labour income losses increased by 40%, despite countries having made great gains in economic development and health outcomes.

By 2013 about 87% of the world's population was living in areas that exceeded the Air Quality Guideline of the World Health Organization (WHO), which is an annual average of 10 µg/m³ of PM_{2.5}. From 1990 to 2013, premature mortality attributable to ambient PM_{2.5} increased by 30%, from 2.2 million deaths to 2.9 million deaths per year. Global welfare losses from exposure to ambient PM_{2.5} rose 63% over the same period, reaching \$3.55 trillion (€3.1 trillion). Labour income losses due to ambient PM_{2.5} climbed from \$103 billion (€91 billion) to \$144 billion (€128 billion) per year.

The fact that global welfare losses from fatal illness attributable to air pollution are in the trillions of dollars, is a call to action, the report concludes.

The World Bank report is at <https://openknowledge.worldbank.org/handle/10986/25013>.

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FORTHCOMING CONFERENCES

Advanced Fuels for Sustainable Mobility

9-10 November 2016, Aachen, Germany

www.fev.com/fev-conferences/fev-conference-advanced-fuels-for-sustainable-mobility.html

The FEV conference will discuss future-oriented developments in engine technology, fuels and fuel system components.

Annual Aerosol Science Conference 2016: Aerosol – From Formation to Exposure

10 November 2016, Birmingham, UK

<http://aerosol-soc.com/?q=annual-aerosol-science-conference-2016>

The annual conference provides a forum for like-minded aerosol scientists to network & share knowledge through a programme of talks from leading experts, poster presentations and equipment demonstrations from industry exhibitors.

2nd Annual Automotive Exhaust Systems Summit

10-11 November 2016, Berlin, Germany

<http://automotivesummits.com/exhaust-systems/>

The summit will address the latest trends and developments in automotive exhaust systems, with a focus on best practices and latest innovative technologies on exhaust systems, sensors and control concepts and exhaust gas aftertreatment.

Horiba TechDays 2016

10-24 November 2016, various locations, Germany

www.horiba.com/de/automotive-test-systems/news-events/events/techdays-2016/

The Horiba TechDays 2016 will address RDE legislation updates, PEMS trends, challenges with on-road PN measurement, and customer satisfaction.

10th Conference Diesel and Gasoline Direct Injection

24-25 November 2016, Berlin, Germany

www.hdt.de/dub2016

The purpose of this conference is to discuss fuel injection, fuel preparation and mixture formation in the combustion chamber of an ICE.

SAE 2017 Light Duty Emissions Control Symposium

23-24 January 2017, Washington DC, USA

www.sae.org/events/ldc

Topics include discussion CARB and EC emission regulations, CAFE standards and EPA Tier 3 emissions and fuel regulations. The symposium will focus on how mandated vehicle emissions are being reduced via vehicle design, powertrain design, aftertreatment, and fuel content and development.

12th CONCAWE Symposium

20-21 March 2017, Antwerp, Belgium

More info available from symposium@concawe.org

The symposium will explore scientific and technical challenges for the production and use of petroleum refined products in the EU in the 21st century.

NGV Global 2017 Conference

20-23 March 2017, Rotterdam, Netherlands

www.ngv2017.com

SAE 2017 World Congress

4-6 April 2017, Detroit, USA

www.sae.org/congress

Real-Driving Emissions Forum

19-20 April 2017, Paris, France

www.bisgrp.com/portfolio/conferences/automotive/real-driving-emissions

38th International Vienna Motor Symposium

27-28 April 2017, Vienna, Austria

<https://wiener-motorensymposium.at/en/home/>

Topics for the symposium include latest findings in engine development, on new engines, fuel cells, hybrid technology, exhaust gas treatment and real-driving emissions (RDE).

29th International AVL Conference "Engine & Environment"

1-2 June 2017, Graz, Austria

www.avl.com/engine-environment-2017

Competition of powertrain systems to reduce CO₂ and emissions 2020/2025.

International Conference SIA Powertrain

7-8 June 2017, Versailles, France

www.sia.fr/evenements/66-sia-powertrain-versailles-2017

The conference will focus on the low CO₂ spark ignition engine of the future and its hybridization.

Seminar RDE (Real Driving Emissions) und PEMS (mobile Abgasmesstechnik)

5-6 July 2017, Freising bei München, Germany

25-26 October 2017, Mannheim, Germany

www.vdi-wissensforum.de/weiterbildung-automobil/rde-und-pems/

The VDI/AVL seminar "RDE (Real Driving Emissions) and PEMS (mobile exhaust emission measurement)" conveys the RDE legislation and the associated framework conditions. It shows the challenges associated with the introduction of RDE and the possible solutions for engine development and optimization.

Emissions 2017

12-13 September 2017, Frankfurt, Germany

<https://gamcinc.com/conferences/emissions/?id=1>

The forum will address key topics and issues on advances in emission technology and management systems related to OEMs, suppliers (all tiers), component manufacturers, governmental and non-governmental agencies.

2017 Aachen Colloquium Automobile and Engine Technology

9-11 October 2017, Aachen, Germany

www.aachener-kolloquium.de