FEBRUARY 2020

NEWSLETTER

International Regulatory Developments

TABLE OF CONTENTS

AECC AISBL | bd. Auguste Reyers, 80 | B-1030 Brussels | Belgium | Tel: +32 2 7068160 | info@aecc.eu | www.aecc.eu

EUROPE

Transport Commissioner Vălean Speech to European Parliament

On 3 February 2020, Ms Adina Vălean, Commissioner for Transport, gave a speech to the European Parliament in which she set out her vision for the Strategy on Sustainable and Smart Mobility.

Ms Vălean said that at the heart of the strategy will be the objectives of the European Green Deal and a Europe that is fit for the digital age. It will guide the EU towards a transport sector that is fit for a clean, digital and modern economy.

She went on to say that the Commission will adopt the strategy later this year, once it has completed its preparatory work, including a public consultation, and received feedback from stakeholders. The Commissioner stated that the strategy must include ambitious measures aimed at significantly reducing CO_2 and pollutant emissions across all modes. It will also exploit digitalisation and automation, enhancing connectivity and will ensure safety and accessibility.

Ms Vălean said that the strategy will have to be unprecedented in ambition to achieve the 90% reduction in emissions by 2050. She sees four principles that will guide transport's contribution to the European Green Deal: making the transport system as a whole more sustainable; making sustainable alternative solutions available to EU citizens and businesses; respecting the polluter-pays principle in all transport modes; and fostering connectivity and access to transport for all.

She is therefore planning to put forward measures to boost the uptake of clean vehicles and alternative fuels for road, maritime and aviation, and to Increase the share of more sustainable transport modes such as rail and inland waterways, thereby improving efficiency across the whole transport system. There will also be measures to incentivise the 'right' consumer choices and low-emission practices and to invest in low- and zero-emissions solutions, including infrastructure.

The transcript of Commissioner Vălean's speech is at ec.europa.eu/transport/2020-02-03-commissioner-valeans-speech-eu-strategy-mobility-and-transport_en.

JRC Assessment of PEMS Measurement Uncertainty

On 18 February 2020, the European Commission's Joint Research Centre (JRC) published its 2018-2019 assessment of the measurement uncertainty of Portable Emissions Measurement Systems (PEMS) compared to standard laboratory equipment in the context of Real Driving Emissions (RDE).

The report describes an experimental campaign carried out by the JRC during 2018 and 2019 to assess zero drift of PEMS gas analysers under real life operation. The instruments considered in the analysis, from four large manufacturers, cover probably the whole PEMS market in Europe. The tested instruments belong to the generation of PEMS currently available in the market.

The results of the testing campaign (measuring zero every 10-20 min on the road) showed that there is not a systematic positive or negative drift, neither a systematic step nor linear drift for any of the pollutants considered (NO, NO_2, CO_2, CO) for all PEMS manufacturers tested. On most of the tests performed, the zero drift for NOx is lower than 3 ppm under a variety of ambient temperature and humidity conditions. Additional tests done on more stringent environmental conditions (high altitude mountain driving) show a similar pattern for zero drifts of all pollutants. Vehicle technology (spark ignition or compression ignition), PEMS installation location (cabin or trailer hook), ambient temperature and humidity, and altitude do not appear to be critical elements affecting the zero drift as results are similar for all of these conditions.

In general, the evidence gathered during the campaign does not verify the worst-case drift scenario used to define the 0.43 NOx margin, and it can be used to justify a further reduction of the margin value. Based on the worst case scenario for zero drift of the JRC testing campaign and considering the effect on a vehicle with large engine displacement (largest effect in terms of NOx mass), JRC is proposing 0.32 as the updated NOx measurement margin to add to the 1.0 conformity factor.

The full JRC report is available at publications.jrc.ec.europa.eu/repository/bitstream/JRC114416/jrc_pems_margin_review_nox_final_-_online_version.pdf.

EEA Briefing on Transport Greenhouse Gas Emissions

On 3 February 2020, the European Environment Agency (EEA) published a briefing stating that increasing oil consumption and greenhouse gas (GHG) emissions in the transport sector are hampering EU progress towards its environment and climate objectives.

The report says that GHG emissions from transport have increased every year since 2014. Estimates put them at 29% above 1990 levels in 2018. Achieving climate neutrality will need a 90% reduction in transport emissions by 2050. GHG emissions from aviation increased the most rapidly of the transport modes by an average of over 3% each year since 2013. After a significant decrease between 2008 and 2015, GHG emissions from international shipping increased by 5% in 2 years (2015-2017). In 2018, average CO_2 emissions of new passenger cars increased for the second consecutive year. Average CO_2 emissions of new vans started to follow a similar upward trend in 2018.


Transport

Transport: increasing oil consumption and greenhouse gas emissions hamper EU progress towards environment and climate objectives

Petrol cars are overtaking diesel ones in sales of new passenger cars, but the report says that total consumption of diesel fuel keeps increasing. EU suppliers of fuel for road transport and non-road mobile machinery are also said to be making insufficient progress in reducing the life-cycle GHG emissions of this type of fuel.

The share of renewable energy used for transport in the EU rose from 7.4% in 2017 to 8.1% in 2018 but remains well below the 2020 EU target of 10%. Finland and Sweden are the only two Member States that have already reached the goal of a 10% share of energy from renewable sources in transport.

Air pollutant emissions from transport were however significantly reduced between 1990 and 2017, despite increases in passenger and freight volumes. The report says that although emissions from road transport are mostly exhaust emissions arising from fuel combustion, non-exhaust releases contribute to both non-methane volatile organic compounds (NMVOCs) (from fuel evaporation) and primary particulate matter (PM) (from tyre and brake wear and road abrasion). Emissions of PM from road transport have declined by more than half since 2000. However, the relative importance of non-exhaust emissions has increased since the introduction of vehicle particulate abatement technologies reduced exhaust emissions.

The full EEA report is available to read at www.eea.europa.eu/publications/transport-increasing-oil-consumption-and.

German Minister's Letter to Commission on Vehicle CO_2 Emissions

On 7 February 2020, Die Zeit newspaper reported that the German Economy Minister Peter Altmaier has written to European Commissioners saying that there should be no more changes to vehicle CO_2 emissions limits until 2030. He said that the limits already proposed have practically exhausted any scope for further tightening.

The report can be read at www.zeit.de/wirtschaft/2020-02/green-deal-peter-altmaier-autoindustrie-abgasregeln-klimaschutz with a version in English at www.cleanenergywire.org/news/german-government-urges-eu-not-tighten-vehicle-emissions-limits.

Consultation on Draft Delegated Regulation on Heavy-Duty CO_2 Emissions

On 17 February 2020, the European Commission published a consultation on a draft delegated regulation regarding additional data requirements on CO_2 emissions from lorries and buses.

The delegated act is intended to facilitate the matching of data reported by Member States and vehicle manufacturers, by requiring Member States to report additional technical information from the certificate of conformity. It will also improve verifiability of reported data and allow Member States to match data entry reported by manufacturers, will ensure uniform reporting about information on component manufacturers and will allow the Commission to identify the type-approval certificate of the engine for the verification of the engine data reported by manufacturers, through requiring the manufacturers to report the engine type-approval number.

The consultation is open until 16 March 2020 and the draft act is available to read at ec.europa.eu/info/law/better-regulation/initiatives/ares-2019-6841449_en.

Type-Approval Procedures for Two- and Three-Wheel Vehicles and Quadricycles

On 20 February 2020, Implementing Regulation (EU) 2020/239 was published in the Official Journal of the European Union.

This amends Implementing Regulation (EU) 901/2014. Regarding the application of Euro 5 for L-category vehicles, certain sub-categories of vehicles will have to comply with additional technical requirements as from certain dates. Other sub-categories are exempted or are required to comply with certain requirements later than originally set out in Regulation (EU) No 168/2013.

The administrative type-approval templates laid down in Commission Implementing Regulation (EU) 901/2014 should be adapted in light of the amendments provided for in Regulation (EU) 2019/129 to facilitate the type-approval process and to enable national authorities to verify compliance with the requirements of Euro 5 and Euro 5+ applicable at a given date.

The full document is available to read at eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2020.048.01.0006.01.

IMCO and TRAN Committee Opinions on Amended Euro 5/6 Regulation

On 19 February 2020, following publication on 16 January of its Draft Opinion, the European Parliament's Committee on Transport and Tourism (TRAN) published its Opinion on amendments to the regulation amending Regulation (EC) 715/2007 on emissions type approval for Euro 5 and 6.

There have been some text changes since the Draft Opinion, but the intention remains to separate the conformity factor and error margin in the Regulation.

The TRAN Opinion is available to read at www.europarl.europa.eu/doceo/document/TRAN-PA-644889_EN.pdf.

On 19 February 2020, the Committee on the Internal Market and Consumer Protection (IMCO) also published its Opinion on amendments to the regulation amending Regulation (EC) 715/2007 on emissions type approval for Euro 5 and 6.

Its amendments, also revised from the Draft Opinion published on 6 January, are focused on the rights of consumers and can be found at www.europarl.europa.eu/doceo/document/IMCO-AM-644807_EN.pdf.

ENVI Committee elects Vice-Chairs

On 18 February 2020, the Environment (ENVI) Committee of the European Parliament elected new Vice-Chairs to replace former MEP Seb Dance following Brexit and to replace 3rd Vice-Chair Cristian Busoi after his election as Chair of the ITRE committee.

Mr César Luena (ES/S&D) and Mr Dan-Stefan MOTREANU (RO/EPP) have been elected 2nd and 3rd Vice-Chairs respectively.

The full ENVI announcement can be found at www.europarl.europa.eu/committees/en/envi/home.html.

European Committee of the Regions elects Policy Commission Chairs

On 13 February 2020, the chairs of the six policy commissions of the European Committee of the Regions were elected. The new chair of the Environment, Climate Change and Energy (ENVE) Commission is Mr Juan Espadas Ceja, Mayor of Seville, Spain.

The upcoming Circular Economy Action Plan and Climate Pact, the 8th Environmental Action Programme, biodiversity protection, air quality and water management are currently under discussion. Mr Espadas will lead the works of the newly created Green Deal Working Group, which is to ensure the voice of cities and regions is at the heart of the EU's path towards climate-neutrality.

Mr Espadas has been a top manager at the environmental agency and at the regional ministry for the environment of the Andalucía government. He then became secretary general of EGMASA, an environmental management public company of the Andalucía regional government. He has acted as director general for environmental quality and preservation of Andalucía, becoming deputy regional minister for the environment and then regional minister for housing and urban planning. Prior to being elected Mayor of Spain's fourth largest city, Mr Espadas was vice-president of the commission for the environment and climate change of the Spanish senate.

The ENVE Commission has also elected Rastislav Trnka (SK/EPP) as 1st Vice-Chair and Emmanual Disabato (BE/Greens) as 2nd Vice-Chair.

Further details of the appointments are available at cor.europa.eu/en/news/Pages/Mayor-of-Seville-Juan-Espadas-elected-new-ENVE-Chair.aspx.

Isabelle Boudineau, Vice-President of the Nouvelle-Aquitaine Region of France has been re-elected President of the Commission for Territorial Cohesion Policy and EU Budget (COTER), which covers issues relating to transport.

Also elected were Ivan Žagar (SL/EPP) as 1st Vice-President and Marie-Antoinette Maupertuis (FR/EA) as 2nd Vice-President.

Details of the COTER appointments are at cor.europa.eu/en/news/Pages/Isabelle-Boudinea-re-elected-as-President-of-the-COTER-commission.aspx.

ITRE Committee Resolution on Priority Energy Projects

On 18 February 2020, the Industry, Research and Energy (ITRE) Committee of the European Parliament passed a non-binding resolution stating that the Commission should update its guidelines to select priority energy projects so that the next EU list is in line with its climate policy.

The committee says that the revision of the TEN-E (Trans-European Network-Energy) guidelines, to be proposed by the European Commission later this year, should be consistent with EU energy and climate targets for 2030, its long-term commitment on decarbonisation and the energy efficiency first principle. In order to ensure that the projects selected for the next PCI (projects of common interest) list are in line with the EU's climate commitments, MEPs called on the Commission to also propose transitional guidance before the end of 2020. To be granted PCI status, projects must contribute to keep the energy supply affordable - one of the five dimensions of the Energy union, with which projects must be aligned.

The resolution will be put to a vote in Parliament in March.

More detail on the resolution can be found at www.europarl.europa.eu/news/en/press-room/energy-eu-priority-projects-should-be-aligned-with-2050-climate-objectives.

Dublin Commitment to WHO Air Quality Guidelines

On 17 February 2020, Dublin became the first Irish city to commit to meet World Health Organization (WHO) air quality guideline values by 2030.

The Irish capital joins 76 cities, regions and countries around the world in demonstrating a commitment to bring air quality to safe levels by 2030 and collaborate on the clean air solutions to help get there faster.

This is part of the BreatheLife campaign, an initiative of the WHO, UN Environment and the Climate & Clean Air Coalition.

The Dublin announcement is at www.dublincity.ie/dublin-hosts-major-'climate-brave'-conference.

AECC Vision Document Launch

On 3 February 2020, AECC launched its Vision for sustainable mobility for the next five years to 2025.

This new AECC publication calls for the implementation of policies to further address real-world pollutant emissions from vehicles and to quantify the full environmental impact of vehicles to enable a fair comparison of options for sustainable mobility.

Policy decisions must also be technology- and fuel- neutral, ensuring that EU citizens have a choice of clean and efficient vehicles to buy.

Clean, efficient, convenient and affordable vehicles are necessary for future mobility and to reduce individual exposure to harmful pollutant emissions, to continue to address greenhouse gas emissions and to provide a variety of options which suit every use case and every budget.

The next five years will be critical in determining the future of sustainable mobility. As the European Union moves towards its goal of zero pollution and to become climate neutral in 2050, AECC's robust scientific data continues to inform decision-making on local air quality improvements through the application of modern emission control technologies.

As forecasts show that vehicles with an internal combustion engine will remain a major element in the powertrain mix in 2030, with predictions varying from 50 to 90% of new car sales, it is important these vehicles continue becoming less polluting and remain accessible and affordable.

Making road transport cleaner will require inspiring policies to keep the internal combustion engine vehicle as a key mobility option while other new technologies are further developed and commercialised.

The document can be found at www.aecc.eu/wp-content/uploads/2020/02/200203-AECC-Vision-Document-Web.pdf.

Article on "What Car should I buy?" published on Diesel Information Hub

On 13 February 2020, AECC published its latest article "*The key question is…what car should I buy?*" on the Diesel Information Hub. This looks at the increasing range of cars available to buy, from 'conventional' petrol and diesel to mild, full or plug-in hybrid and cars powered by batteries.

The article says that when it comes to buying a new car, the purchasing decision depends on a mix of considerations: cost, practical aspects (e.g. convenience), and, often, an emotional element. When choosing from one of the many available cars on the market, buyers should make their decision based on how and how far they are planning on driving their new car. It concludes that new diesel and petrol cars remain the most convenient and affordable options for long distance and urban mobility.

The article is available to read at dieselinformation.aecc.eu/the-key-question-is-what-car-should-i-buy.

NORTH AMERICA

MECA Technology Feasibility Report for HDD Truck NOx Standards

On 4 February 2020, the Manufacturers of Emission Controls Association (MECA) released a report that presents test results from emission control and fuel efficiency technologies installed on heavy-duty diesel on-road engines offering several cost-effective compliance pathways to reduce NOx emissions by 90% below today's certification levels. MECA says this can be achieved with simultaneous CO_2 emission reductions in the 2027 timeframe.

One of the main conclusions of the report is that commercially available engine efficiency technologies and advanced aftertreatment system designs can achieve a certification emission limit of 0.02 g/bhp-hr NOx and a low-load cycle limit below 0.075 g/bhp-hr NOx by 2027. It also says that engine efficiency and powertrain emission control technologies being commercialised by component suppliers can enable simultaneous reductions in CO_2 and NOx.

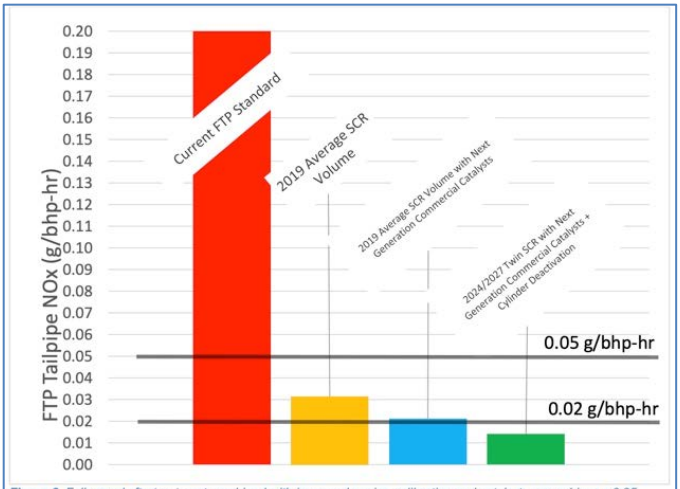


Figure 2. Fully-aged aftertreatment combined with improved engine calibration and catalysts can achieve a 0.05 g/bhp-hr NOx limit with no major hardware changes. By 2027, a twin SCR design with cylinder deactivation can achieve a limit of 0.02 g/bhp-hr NOx, which is 90% below today's standards, with better fuel economy.

Testing has shown the ability of several advanced engine technologies to be optimised to improve fuel efficiency while increasing exhaust temperature in diesel engine exhaust, which improves NOx reduction performance. During cold-start and low-load operation, engine technologies can be combined with calibration and thermal management to reduce engine-out NOx emissions and provide additional heat to emission control systems. New aftertreatment architectures, employing a close-coupled selective catalytic reduction (SCR) catalyst before the diesel oxidation catalyst and diesel particulate filter (DOC+DPF) in a twin SCR system arrangement with dual urea dosing, can meet future NOx limits proposed to phase in from 2024 to 2027.

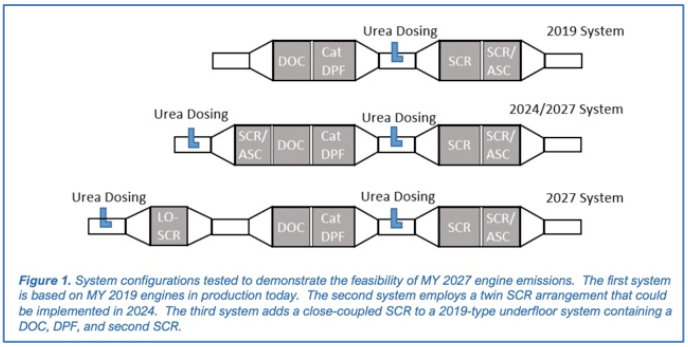


Figure 1. System configurations tested to demonstrate the feasibility of MY 2027 engine emissions. The first system is based on MY 2019 engines in production today. The second system employs a twin SCR arrangement that could be implemented in 2024. The third system adds a close-coupled SCR to a 2019-type underfloor system containing a DOC, DPF, and second SCR.

MECA presented dynamometer test results and emission models from fully aged emission control systems installed on heavy-duty on-road engines to offer several compliance paths that are technologically and economically achievable by Model Year 2027. The following assessment was based on the implementation timeline and regulatory provisions presented by the California Air Resources Board (CARB) in September 2019.

The estimated cost of engine efficiency and emission controls for a Class 8 tractor meeting these future NOx limits is estimated to add $1,500 (€1 380) to $2,000 (€1 840), or about 1%, to the cost of a model year 2027 truck.

The MECA report is available to read at www.meca.org/resources/MECA_2027_Low_NOx_White_Paper_FINAL.pdf.

with a report fact sheet at www.meca.org/resources/MECA_2027_Low_NOx_Fact_Sheet_020420_FINAL.pdf.

ASIA PACIFIC

ICCT Cost-benefit Analysis on Soot-free Road Transport in Indonesia

On 18 February 2020, the International Council on Clean Transportation published a working paper showing a cost-benefit analysis of moving to soot-free road transport in Indonesia. The country is said to have the world's fourth highest mortality rate due to air pollution.

The authors compare two Euro 6/VI scenarios - one that takes effect by 2030 and another that takes effect earlier, in 2023 - against a baseline without changes to already adopted Euro 4/IV standards. The results show substantial benefits: The Euro 6/VI scenarios would reduce the societal damages of 2050 emissions by approximately 60%.

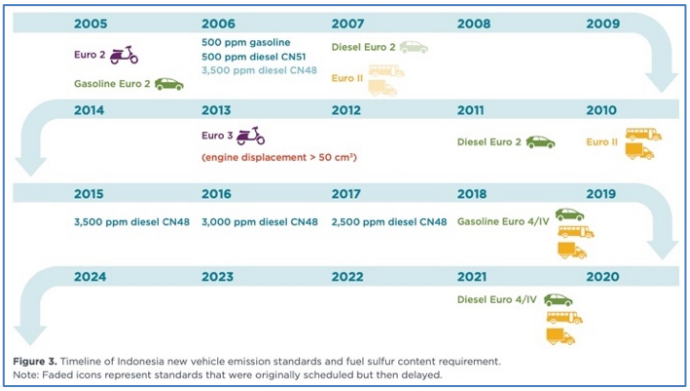
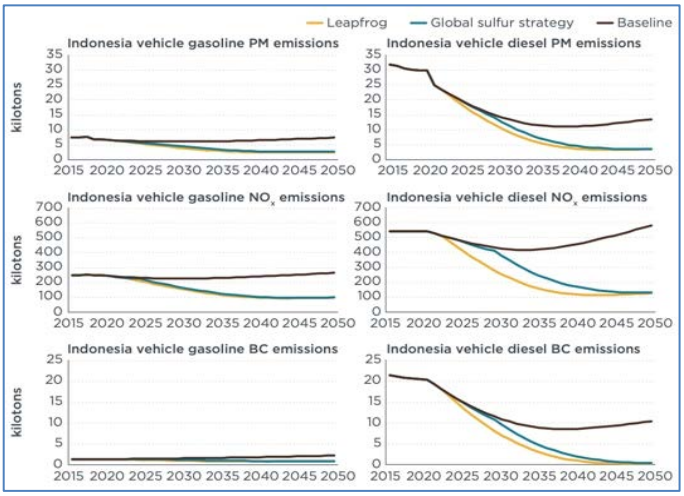


Figure 3. Timeline of Indonesia new vehicle emission standards and fuel sulfur content requirement.
Note: Faded icons represent standards that were originally scheduled but then delayed.

The report says that implementation of Euro 6/VI vehicle standards with aligned fuel standards by 2030, under the 'Global Sulfur Strategy', would result in net societal benefits of approximately $81 (€75) billion from 2020–2050. In a 'Leapfrog' scenario, where these standards are implemented by 2023, early implementation would produce an additional $24 (€22) billion in net societal benefits from 2020–2050, with a benefit-to-cost ratio of 9.2:1 when compared with the baseline scenario. This study also demonstrates the importance and the cost-effectiveness of implementing a 10ppm fuel sulfur limit along with the advanced vehicle standards.



The analysis is set against a scenario of a rapidly growing market for four- and two-wheeled vehicles. It also expresses concern that historically fuel quality requirements and improvements in Indonesia have not kept pace with the stringency of vehicle emission standards. For example, the 50ppm sulfur standard needed to work effectively with emission control technologies is only targeted to be implemented in 2025.

The ICCT working paper can be found at theicct.org/sites/default/files/publications/Indonesia-sootfree-CBA-02182020.pdf.

AFRICA

West African Ministers adopt Cleaner Fuels and Vehicles Standards

On 11 February 2020, environment and energy ministers of the 15 countries of the Economic Community of West African States met in Ouagadougou, Burkina Faso. They adopted a comprehensive set of regulations for introducing cleaner fuels and vehicles in the region.

A fuel standard of 50 parts per million (ppm) sulfur for petrol and diesel for all imported fuels will be implemented from 1 January 2021. This is a significant step for the region as some of the countries still have fuel standards that allow import of up to 10,000 ppm diesel fuels. Local refineries will have until 1 January 2025 to upgrade their operations to meet the new requirements. Currently only about 20% of fuel needs in the region is locally refined while 80% is imported.

All vehicles that are imported, both new and used, will need to comply to a minimum of Euro 4/IV vehicle emissions standard from 1 January 2021. An age limit for used vehicles of 10 years was also agreed to, with a recommendation of a five-year age limit for light-duty vehicles.

A plan to improve the fuel efficiency of imported vehicles was also adopted, with a target to double the efficiency of the fleet from an average of 8 litres per 100 kilometres today to 4.2 litres per 100 kilometres by 2030. An intermediate target of 5 litres per 100 kilometres by 2025 was also agreed. The vehicle fuel efficiency plan or roadmap includes proposals to introduce fiscal incentives to attract low and zero emissions vehicles to the region, measures to promote electric vehicles, and a new harmonised label for newly imported vehicles showing the vehicle fuel efficiency and CO_2 emissions to support consumer awareness.

These decisions will now go to a Council of Ministers meeting taking place in June 2020, for formal adoption.

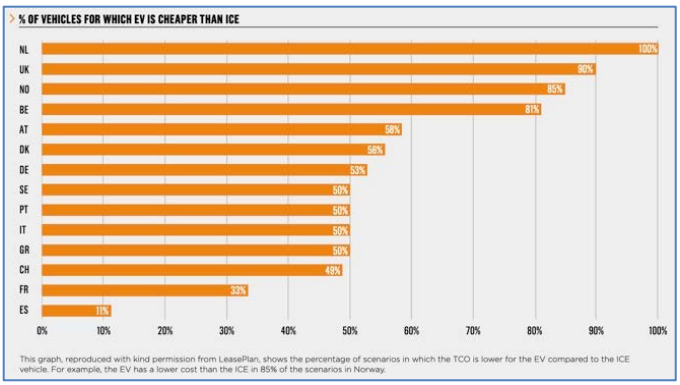
More details of the announcement are available at www.unenvironment.org/news-and-stories/story/west-african-ministers-adopt-cleaner-fuels-and-vehicles-standards.

GENERAL

Climate Group Report on Progress to Electric Mobility

On 5 February 2020, The Climate Group published a report titled *Charging Ahead on Electric Vehicles: Will Automakers Keep Pace with Corporate Demand?*. This claims to show that corporate and leasing commitments will see the rollout of more than 2.5 million zero emission vehicles (from two-wheelers to electric vehicles) by 2030. It also shows that a lack of electric vehicle (EV) supply is the biggest barrier to faster progress. Commercial vans and heavy-duty vehicles are said to be the vehicles where demand is not matched by supply.

The report says that, based on evidence from The Climate Group's 'EV100' members, EVs are already overall cheaper than internal combustion engine (ICE) vehicles in many instances. As well as electricity being cheaper than diesel or gasoline, they save on maintenance costs as fewer moving parts need servicing.



The report says that the price of EV batteries is expected to fall to around $100/kWh (€92/kWh) by 2023, making EVs competitive with ICEs on purchase price as well as total cost of ownership.

The full report can be found at www.theclimategroup.org/sites/default/files/downloads/ev100_annual_progress_and_insights_report_2020.pdf.

RESEARCH SUMMARY

Effects of Emissions and Pollution

The Effects of Fine Dust, Ozone, and Nitrogen Dioxide on Health, B. Ritz, et al.; *Dtsch Arztebl Int* (2019), Vol. 116: 881-6, doi: 10.3238/arztebl.2019.0881.

Long-Term Exposure to Fine Particulate Matter and Cardiovascular Disease in China, Fengchao Liang, et al.; *Journal of the American College of Cardiology* (February 2020), Vol. 75, Issue 7, pp. 707-717, doi: 10.1016/j.jacc.2019.12.031.

Short term association between ozone and mortality: global two stage time series study in 406 locations in 20 countries, Ana Vicedo-Cabrera, et al.; *BMJ* (2020), Vol. 368:m108, doi: 10.1136/bmj.m108.

Relationship of chronic kidney disease with major air pollutants - a systematic review and meta-analysis of observational studies, Bo Liu, et al.; *Environmental Toxicology and Pharmacology* (in press), doi: 10.1016/j.etap.2020.103355.

What is the Role of Air Pollution in Chronic Rhinosinusitis? Hannah Schwarzbach, et al.; *Immunology and Allergy Clinics of North America* (in press), doi: 10.1016/j.iac.2019.12.011.

Bayesian analysis of the short-term association of NO_2 exposure with local burden of asthmatic symptoms in children, Veravan Zoest, et al.; *Science of The Total Environment* (in press), doi: 10.1016/j.scitotenv.2020.137544.

Air Quality, Sources and Exposure

Near-road vehicle emissions air quality monitoring for exposure modelling, Jennifer Moutinho, et al.; *Atmospheric Environment* (in press), doi: 10.1016/j.atmosenv.2020.117318.

Variability of air pollutants, and PM composition and sources at a regional background site in the Balearic Islands: Review of western Mediterranean phenomenology from a 3-year study, José Cerro, et al.; *Science of The Total Environment* (in press), doi: 10.1016/j.scitotenv.2020.137177.

Systematically Evaluating and Integrating Evidence in National Ambient Air Quality Standards Reviews, Julie Goodman, et al.; *Global Epidemiology* (in press), doi: 10.1016/j.gloepi.2020.100019.

Emissions Measurements and Modelling

Vehicle emissions in a middle-sized city of China: Current status and future trends, Shida Sun, et al.; *Environment International* (April 2020), Vol. 137: 105514, doi: 10.1016/j.envint.2020.105514.

Aerosol gas exchange system (AGeS) for nanoparticle sampling at elevated temperatures: Modeling and experimental characterization, Markus Bainschab, et al.; *Nature Scientific Reports* (2019), Vol. 9: 17149, doi: 10.1038/s41598-019-53113-5.

Particulate emissions from gasoline direct injection engines: A review of how current emission regulations are being met by automobile manufacturers, Omar Awad, et al.; *Science of The Total Environment* (in press), doi: 10.1016/j.scitotenv.2020.137302.

Emissions Control, Catalysis, Filtration

Doped barium cerate perovskite catalysts for simultaneous NOx storage and soot oxidation, N. Maffei, et al.; *Applied Catalysis A: General* (in press), doi: 10.1016/j.apcata.2020.117465.

Structure-activity relationship in Pd/CeO_2 methane oxidation catalysts, Sara Colussi, et al.; *Chinese Journal of Catalysis* (June 2020), Vol. 41, Issue 6, pp. 938-950, doi: 10.1016/S1872-2067(19)63510-2.

A Laboratory Study of Low-Temperature CO Removal from Mobile Exhaust Gas Using In-Plasma Catalysis, Rasoul Yarahmadi and Somayeh Soleimani-Alyar; *Emiss. Control Sci. Technol.* (2020), doi: 10.1007/s40825-020-00154-2.

Performance of Broken Particulate Filters—a 1D and 3D Simulation Study, T. Chittipotula, et al.; *Emiss. Control Sci. Technol.* (2020), doi: 10.1007/s40825-020-00160-4.

Deposit Formation from Urea Injection: a Comprehensive Modeling Approach, U. Budziankou, et al.; *Emiss. Control Sci. Technol.* (2020), doi: 10.1007/s40825-020-00159-x.

Titania–Samarium–Manganese Composite Oxide for the Low-Temperature Selective Catalytic Reduction of NO with NH_3, Qian Xu, et al.; *Environ. Sci. Technol.* (in press), doi: 10.1021/acs.est.9b06701.

A Holistic View on Urea Injection for NOx Emission Control: Impingement, Re-atomization, and Deposit Formation, J. Dörnhöfer, et al.; *Emiss. Control Sci. Technol.* (2020), doi: 10.1007/s40825-019-00151-0.

Transport, Climate Change & Emissions

Action areas and the need for research in biofuels, Martin Unglert, et al.; *Fuel* (May 2020), Vol. 268: 117227, doi: 10.1016/j.fuel.2020.117227.

Road to zero or road to nowhere? Disrupting transport and energy in a zero carbon world, Christian Brand, et al.; *Energy Policy* (April 2020), Vol. 139, 111334, doi: 10.1016/j.enpol.2020.111334.

FORTHCOMING CONFERENCES

11th VERT Forum

18 March 2020, Dübendorf, Switzerland
www.vert-certification.eu

CLEPA 2020 Aftermarket Conference

25-26 March 2020, Brussels
clepa.eu/events/clepa-2020-aftermarket-conference

VDA Technischer Kongress

25-26 March 2020, Berlin, Germany
www.technischer-kongress.de/

FVV 2020 Spring Conference

26-27 March 2020, Würzburg, Germany
www.fvv-net.de/en/events/fvv-2020-spring-conference

SAE World Congress Experience (WCX)

21-23 April 2020, Detroit, USA
www.sae.org/attend/wcx

41st International Vienna Motor Symposium

22-24 April 2020, Vienna, Austria
wiener-motorensymposium.at/en

TRA2020 Rethinking Transport towards Clean and Inclusive Mobility

27-30 April 2020, Helsinki, Finland
traconference.eu
TRA, The Transport Research Arena is the biggest European Research and Technology Conference on transport and mobility. In 2020 TRA is themed "Rethinking transport - towards clean and inclusive mobility" and brings together the experts from around the world to discuss the newest innovations and the future of mobility and transport.

9th AVL Large Engines Techdays

28-29 April 2020, Graz, Austria
www.avl.com/large-engines-techdays

Integer Emissions Summit & AdBlue Forum Europe

27-29 May 2020, Frankfurt, Germany
www.argusmedia.com/en/conferences-events-listing/integer-emissions-summit-europe

32nd International AVL Conference "Engine & Environment" - Zero-impact Mobility

28-29 May 2020, Graz, Austria
www.avl.com/engine-environment

SIA Powertrain & Energy

3-4 June 2020, Rouen, France
www.sia.fr/evenements/193-sia-powertrain-energy-rouen-2020

Sustainable Internal Combustion Engine Symposium

16-18 June 2020, Stuttgart, Germany
www.sustainable-ic-engine.com/en
The Sustainable Internal Combustion Engine Symposium discusses and debates the future of gasoline, diesel and alternative-fuel IC engines. This conference is about how the traditional automotive powertrain has a long future ahead of it when it is developed and advanced beyond its current brief and design constraints.

Cambridge Particle Meeting

19 June 2020, Cambridge, England
www.cambridgeparticlemeeting.org
Deadline for abstract: 1 April 2020

24th ETH-Conference on Combustion Generated Nanoparticles

22-25 June 2020, Zürich, Switzerland
www.nanoparticles.ch
The ETH Conference on Combustion-Generated Nanoparticles serves as an interdisciplinary platform for expert discussions on all aspects of nanoparticles, freshly emitted from various sources, aged in ambient air, technical mitigation aspects, impact of particles on health, environment and climate and particle legislation. The conference brings together representatives from research, industry and legislation.

8th International Conference of the Fuel Science Center

23-25 June 2020, Aachen, Germany
www.fuelcenter.rwth-aachen.de/cms/Fuelcenter/Austausch/Internationale-Konferenz/~dcsks/8-Internationale-Konferenz/lidx/1/

4th Real Driving Emissions Forum

30 June-1 July 2020, Prague, Czech Republic
bisgrp.com/event/real-driving-emissions-conference-berlin-2/.

CO_2 Reduction for Transport Systems Conference

7-8 July, Turin, Italy
conferences.ata.it

6th International Conference Diesel Powertrains 3.0

8-9 July 2020, Turin, Italy
www.fev.com/en/coming-up/fev-conferences/fev-conference-diesel-powertrains-30/introduction.html.
Despite the ongoing public discussion, the modern Diesel engine represents a highly attractive powertrain. The latest developments demonstrate, that Diesel-powered vehicles are among the cleanest vehicles available in the marketplace, while maintaining their superior fuel economy compared to other propulsion systems. Its high efficiency positions the Diesel engine as an attractive element for future powertrain line-ups, even under more tightened regulatory boundary conditions and simultaneously altering market conditions. The conference is for the first time integrating heavy-duty On-/Off-Highway themes into the programme.

International Transport and Air Pollution Conference

15-16 September 2020, Graz, Austria
www.tapconference.org
The main topics of the 24th TAP Conference include energy consumption and GHG emissions from vehicles, open issues for pollutant emissions, such as tampering, retrofits of software and hardware and non-regulated pollutants, emissions from non-road mobile machinery and other transport modes and measurements and simulation of traffic related environmental impacts and air quality.
Deadline for abstract: 30 March 2020

8th International MinNOx Conference

22-23 September 2020, Berlin, Germany
www.iav.com/en/events/minnox
Deadline for abstract: 27 March 2020

SAE Powertrains, Fuels and Lubricants

22-24 September 2020, Krakow, Poland
www.sae.org/pfl

FVV 2020 Autumn Conference

24-25 September 2020, Würzburg, Germany
www.fvv-net.de/en/events

29th Aachen Colloquium

5-7 October 2020, Aachen, Germany
www.aachener-kolloquium.de/en

SAE Heavy-Duty Diesel Emissions Control Symposium

13-14 October 2020, Gothenburg, Sweden
www.sae.org/attend/heavy-duty-diesel-emissions-control-symposium

IRU World Congress

19-21 October 2020, Berlin, Germany

www.iruworldcongress.com

4th International FEV Conference: Zero CO_2 Mobility

10-11 November 2020, Aachen, Germany
www.fev.com/en/coming-up/fev-conferences/fev-conference-zero-co2-mobility/introduction.html
Deadline for abstract: 20 April 2020.

2020 Annual POLIS Conference

2-3 December 2020
www.polisnetwork.eu/2020-annual-polis-conference
The Polis Annual Conference provides an opportunity for cities and regions to showcase their transport achievement to large audience of mobility experts, practitioners and decision makers.
Call for speakers opens in March 2020