JANUARY 2019

NEWSLETTER

International Regulatory Developments

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

What Role does Diesel play in the 2030 Vehicle Mix?

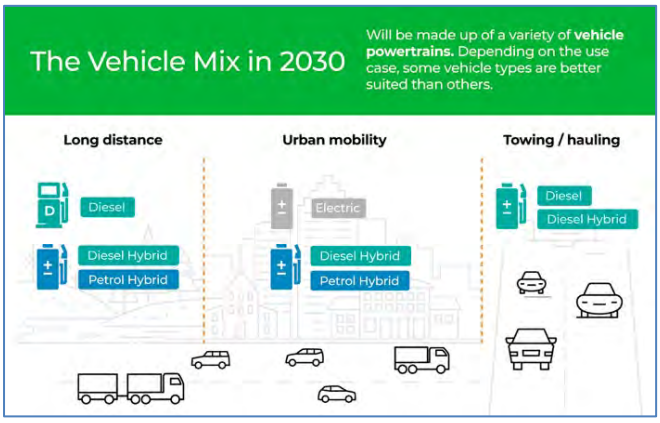
The AECC's Diesel Information Hub has been complemented with a new article addressing the role diesel will play in the 2030 European vehicle mix.

The Paris Agreement and the EU's 2030 Climate & Energy Framework will require steep cuts in CO_2 emissions from transport. Currently, 25% of all EU greenhouse gas emissions come from transport, and 40% of this comes from passenger vehicles; making a switch to cleaner powertrains inevitable.

Electric vehicles offer clear benefits in urban areas as they do not emit pollutant emissions at the point of use and therefore do not affect local air quality. Electrified vehicles, such as hybrids, are also zero-emission capable in urban areas.

As a result of climate change mitigation and air quality policies, the vehicle mix of 2030 will be markedly different from the one we have today. The most likely dominant powertrain in new cars sold in 2030 will be hybrid vehicles that offer lower CO_2 emissions than conventional diesel and petrol vehicles. These vehicles typically combine a diesel or petrol engine with an electric motor. At low speeds, they often use only the electric motor, and their regenerative brakes convert kinetic energy to electric power, making them highly economical and climate- and air quality-friendly for the typical 'stop-start' driving in urban areas.

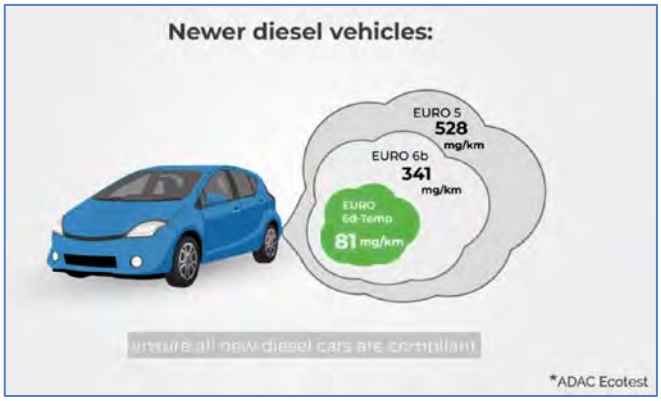
Ultimately, the 2030 vehicle mix will be far more diverse than it is today, and be made up of fully electric vehicles, as well as hybrid and plug-in hybrid petrol and diesel engines. Each will have its own advantages based on the different use-cases and geographical location.



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

New Animated Video: How Much is Diesel really Polluting?

The AECC's Diesel Information Hub has also been complemented with a new animated video explaining how emissions from modern, Euro 6d-temp diesels have been substantially reduced.



Visit the #dieselinformationhub at www.dieselinformation.aecc.eu.

EUROPE

Further Developments on Post-2020 CO_2 Standards for Cars and Vans

On 16 January 2019, Member States meeting in the Committee of Permanent Representatives (COREPER) confirmed the trilogue agreement struck in December 2018 between the EU Presidency and the European Parliament on a post-2020 CO_2 regulation for cars and light commercial vehicles.

On 22 January 2019, the agreement was approved by the Environment Committee (ENVI) of the European Parliament; it was adopted by 41 votes in favour, 2 against, and 1 abstention.

The new rules will ensure that from 2030 onwards new cars will emit on average 37.5% less CO_2 and new vans will emit on average 31% less CO_2 compared to 2021 levels. Between 2025 and 2029, both cars and vans will be required to emit 15% less CO_2. The CO_2 reduction effort will be distributed among manufacturers on the basis of the average mass of their vehicle fleet.

A review clause provides for a possible revision of the 2030 targets and for the introduction of binding reduction targets for 2035 and 2040 onwards.

A mechanism is introduced to encourage the sale of more zero- and low-emission vehicles (ZLEV), vehicles with CO_2 emission values from zero up to 50 g/km such as fully electric cars or plug-in hybrid vehicles. ZLEV sales targets are set at 15% for 2025 and 35% for 2030, while manufacturers are given some flexibility in how they reach

those targets. In fact, newly registered ZLEVs in EU Member States whose share of ZLEVs in their national fleet is less than 60% of the EU average in 2017, and which have fewer than 1000 new ZLEV registrations in 2017, will be counted as 1.85 vehicles against the target until 2030, or until the ZLEV share in that Member State exceeds 5%. In 2017, the EU average share of new ZLEV registrations was 1.27%, ranging from 0.05% in Croatia to 5.2% in Sweden; the 60% threshold is therefore 0.76%. In 2017, 14 Member States met these criteria: Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Croatia, Ireland, Lithuania, Latvia, Malta, Poland, Romania, Slovenia, and Slovakia. Together they accounted for 9% of new car registrations in the EU in 2017.

To ensure the robustness and representativeness of emissions data reported, stricter rules have been agreed for the transition from the old NEDC test procedure to the more accurate WLTP test procedure as the basis for calculating the specific emission targets for manufacturers, the Council said.

There will also be an increased focus on monitoring "real-drive emissions". The Commission will monitor the real-world representativeness of the CO_2 emission values based on data from the fuel consumption meters installed in new cars and vans. In order to prevent an increase in the emissions gap, the Commission is to assess the feasibility of developing a mechanism for the adjustment of the manufacturers' specific targets as of 2030 and if appropriate submit a legislative proposal to this effect. The Commission must also assess by 2023 the feasibility of developing real-world emission test procedures.

There are also specific provisions on in-service conformity testing and on detecting strategies which may artificially improve the CO_2 performance of cars and vans.

Finally, the Commission will evaluate the possibility of developing a common EU methodology for the assessment and reporting of lifecycle emissions (life-cycle analysis) of vehicles and prepare follow-up measures including legislative proposals, if appropriate.

The Commission will review the existing European Directive on car labelling by 2020 in order to improve information to consumers, including evaluating options for introducing a fuel economy and CO_2 emission label for vans.

The next step is now a Parliament vote at the plenary session of 25-28 March 2019. If approved by the European Parliament, the Council will then adopt the text without debate at a future meeting. The new Regulation will then be published in the EU Official Journal and enter into force.

The text of the post-2020 CO_2 agreement is at www.europarl.europa.eu/meetdocs/2014_2019/plmrep/COMMITTEES/ENVI/AG/2019/01-21/CO2Cars_ConsolidatedText_EN.pdf.

Amendment to Motorcycle Euro 5 Regulation published

On 31 January 2019, Regulation (EU) 2019/129 was published in the Official Journal, amending the Euro 5 step for two- or three-wheel vehicles and quadricycles (L-category vehicles), Regulation (EU) No 168/2013.

The amendments result from the Euro 5 comprehensive effects study conducted by the European Commission.

The date of application of the Euro 5 emission limits for microcars (L6e-B), three-wheel mopeds designed for utility purposes (L2e-U), trial (L3e-AxT) and enduro (L3e-AxE) motorcycles is postponed from 1 January 2020 to 1 January 2024. For all other L-categories, the date of introduction of the Euro 5 step remains unchanged: 1 January 2020 for new types and 1 January 2021 for all new vehicles.

The current mathematical durability procedure, whereby vehicles are tested after 100 km of use and a fixed Deterioration Factor is applied, is phased out by 2025. The running-in period for the vehicle is also raised to add a safeguard during the transitional period until 2024 (2500 km for vehicles with max speed of ≤ 130 km/h and 3500 km with max speed > 130 km/h).

The requirement to install an On-Board Diagnostic system (OBD) of stage II, which ensures the monitoring and reporting on the emission control system failures and degradation, is postponed to 2024 for L3e (motorcycles), L4e (motorcycles with side car), L5e-A (tricycles) and L7e-A (heavy-on-road quads) category vehicles. Other L sub-category vehicles (mopeds, trial and enduro bikes) are exempted from OBD II requirements.

The new Regulation (EU) 2019/129 is at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0129&from=EN.

Amendment to Directive on Occupational Exposure published

On 31 January 2019, Directive (EU) 2019/130 was published in the Official Journal, amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work.

Eight additional cancer-causing chemicals are now covered by the Directive, including exhaust emissions from all types of diesel engine.

A limit of exposure to diesel exhaust (measured as elemental carbon) is set at 0.05 mg/m³ for 8 hours. The limit value will apply from 21 February 2023. For underground mining and tunnel construction the limit value will apply on 21 February 2026.

Directive (EU) 2019/130 is at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0130&from=EN.

Post-Brexit Regulation on Vehicle Type-Approvals granted by the UK

On 10 January 2019, Regulation (EU) 2019/26 was published in the Official Journal, complementing EU type-approval legislation regarding the withdrawal of the United Kingdom from the European Union.

The withdrawal of the UK from the EU would, in the absence of any special provisions, have the effect that EU type-approvals previously granted by the UK type-approval authority could no longer ensure access to the EU market. Such type-approvals are also held by manufacturers established within Member States other than the UK.

Currently, it is not possible to re-approve types already approved elsewhere in the EU. However, manufacturers should be able to continue the production of vehicles previously based on type-approvals granted by the UK, and to continue to place such vehicles on the EU market. The regulation therefore allows manufacturers to obtain new type-approvals from type-approval authorities of Member States other than the UK.

Regulation (EU) 2019/26 is at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0026&from=EN.

Commission Statement on European Air Quality Standards

On 24 January 2019, Environment Commissioner Karmenu Vella published a short statement on behalf of the European Commission on EU air quality standards to protect the health of citizens.

"We should all be concerned with the quality of the air that Europeans breathe. The protection of our citizens' health is therefore very important for us also when it comes to the European legislation on air quality. The European limit values, approved by the governments of all Member States and the European Parliament, are based on solid scientific evidence provided by the World Health Organisation (WHO), which is the world's leading authority on health matters.

This evidence is backed up by countless scientific papers, which have been peer-reviewed.

The fact is that unfortunately, we can see the impact in the everyday reality of hundreds of thousands of old and young alike, in cities across Europe, who are struggling with health issues due to poor air quality.

There is therefore an urgent need to accelerate measures to improve air quality in order to protect the health of our citizens."

This statement was issued in reaction to on-going debate amongst German lung medical experts; former German Head of the Pneumological Society Dr Dieter Köhler and several German pulmonary physicians are questioning the current nitrogen oxide and particulate matter limits. They say these are inadequate and mainly based on questionable epidemiological studies.

Commissioner Vella's statement is at https://ec.europa.eu/commission/commissioners/2014-2019/vella/announcements/statement-commissioner-karmenu-vella-eu-air-quality-standards-protecting-health-our-citizens_en.

A letter on this topic was later sent by the Transport Ministry of Germany to the European Commissioner for Transport Violeta Bulc (*see below*).

Council Position on Revision of Clean Vehicle Directive

On 25 January 2019, the Council of the EU agreed on its negotiating stance on the revision of the Clean Vehicle Directive.

Updating the green public procurement directive will help reduce overall transport emissions, contribute to market certainty and stimulate the competitiveness and growth of Europe's industry, the Council said.

The current clean vehicles directive from 2009 covers only direct purchase by public bodies, and no other procurement practices. And the only transport service contracts included are those for public passenger transport. The Council's mandate extends the scope of the rules to cover all relevant procurement practices such as lease and rental vehicles and hire-purchase. A wider range of services, such as public road transport services, special-purpose passenger services and refuse collection services, are also covered.

The reform will introduce a definition of a 'clean vehicle', taking into account reduction requirements for greenhouse gases and air pollutant emissions from light-duty vehicles. Clean heavy-duty vehicles are defined through the use of alternative fuels in line with existing EU legislation.

The text sets separate minimum procurement targets for clean light-duty vehicles, trucks and buses for 2025 and 2030. The targets are expressed as minimum percentages

of clean vehicles in the total number of road transport vehicles covered by the aggregate of all procurement contracts and public service contracts.

The mandate, which was agreed in the Permanent Representatives Committee (COREPER), allows the EU Presidency (Romania) to start trilogue negotiations with the European Parliament who adopted its position on 25 October 2018.

More info is at www.consilium.europa.eu/en/press/press-releases/2019/01/25/stimulating-the-market-for-clean-vehicles-council-ready-to-start-talks-with-parliament.

CO_2 Standards for Heavy-duty Vehicles and Post-Euro VI

On 31 January 2019, the European Commission replied to a written question from MEP Ulrike Müller (ALDE, Germany) on reducing CO_2 and pollutants from heavy-duty vehicles (HDVs) in the context of post-Euro VI.

Industry Commissioner Elżbieta Bieńkowska replied that "in modern diesel engines, pollutant emissions (primarily NOx) are mainly reduced by aftertreatment systems. As a result, fuel consumption, which determines CO_2 emissions, and pollutant emissions are decoupled. This increases the possibility to optimise engines for both fuel consumption and pollutant emissions.

Due to this effect and the projected increase of Liquefied Natural Gas (LNG) vehicles, the Commission's impact assessment accompanying the proposal for a Regulation on CO_2 standards for new heavy-duty vehicles evaluated that the CO_2 reduction target of 30% in 2030 proposed by the Commission is expected to lead to 3.2% less NOx emissions of heavy-duty vehicles. A more ambitious CO_2 reduction target of 35% in 2030 would reduce NOx emissions by 4.7%. The introduction of low- and zero-emission vehicles incentivised by that proposal will further enhance pollutant emission reductions."

On post-Euro 6/VI, Ms Bieńkowska commented that the Commission services started preliminary work on the topic in autumn 2018.

More info at www.europarl.europa.eu/doceo/document/E-8-2018-005794_EN.html.

Transport Commissioner Statement on 2018 Achievements

On 24 January 2019, EU Transport Commissioner Violeta Bulc issued a statement titled '2018: a good year for EU Transport'.

The achievements by EU institutions came together in 2018 thanks to excellent cooperation at EU level, and the continuation of work over more than one mandate. These results are improving the lives of Europeans, Ms Bulc said.

On the topic of road transport and its environmental impact, the Commissioner stressed the "Vision Zero – no pollution in action" and the deployment of charging infrastructure for Electric Vehicles. There were 140 466 new charging points (an increase of 10% vs. 2017) of which 7 387 were fast charging (an increase of 26% vs. 2017). The installed recharging points/stations are located a maximum distance of 80 km apart and are publicly accessible 24/7. There are 241 multi-standard fast chargers in Germany, 37 in Belgium.

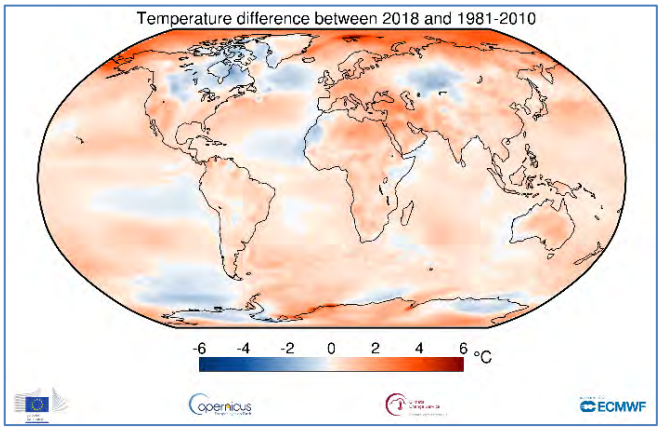
General statistics on transport in the EU economy (in 2016) are also listed. Transport represents 9% of the EU Gross Value Added; it is responsible for 20 million direct jobs (9% of total EU employment); 2.1 million companies are involved in transport. The EU exported motor vehicles, rail rolling stock, planes and ships of a total value of €295 billion. This represents 17% of the EU's total goods exports in 2016. The EU exported transport services worth €146 billion, which represents 17% of the EU's total service exports. The number of passengers in the EU increased by 3.2% (2016 vs. 2015), reaching 423 million passengers travelling by rail, 973 million by air, and 397 million by sea. Freight transport increased by 4.5% (2016 vs. 2015) reaching 3 661 billion tonnes-km.

EU Transport total investment amounted to €20.3 billion in 2018.

Commissioner Bulc's statement is at https://ec.europa.eu/commission/commissioners/2014-2019/bulc/announcements/2018-good-year-eu-transport_en.

2018 Global Temperatures and CO_2 Data from EU Observation Programme

On 7 January 2019, the EU observation programme Copernicus Climate Change Service released the first global picture of 2018 temperatures and CO_2 levels.



The data shows that the global average surface air temperature was 14.7°C, 0.2°C lower than in 2016, the warmest year on record. The data reveal that the last four years have been the warmest four on record, with 2018

being the fourth warmest, not far short of the temperature of the third warmest year 2015. 2018 was more than 0.4°C warmer than the 1981-2010 average.

The average temperature of the last 5 years was 1.1°C higher than the pre-industrial average (as defined by the IPCC).

Furthermore, according to satellite measurements of global atmospheric CO_2 concentrations, CO_2 continued to rise in 2018 and increased by 2.5 +/- 0.8 ppm/year.

More info is at https://climate.copernicus.eu/last-four-years-have-been-warmest-record-and-co2-continues-rise.

JRC highlights Report on Global Anthropogenic CO_2 Emissions

On 28 January 2019, the Joint Research Centre (JRC) of the European Commission published a summary of a recent report on CO_2 emissions trends for all countries across the globe from 1970 until 2017.

Global anthropogenic fossil CO_2 emissions increased by 1.2% in 2017 compared to the previous year, reaching 37.1 gigatonnes (Gt) CO_2. The 0.43 Gt increase corresponds to the total yearly CO_2 emissions of Poland and Czech Republic put together.

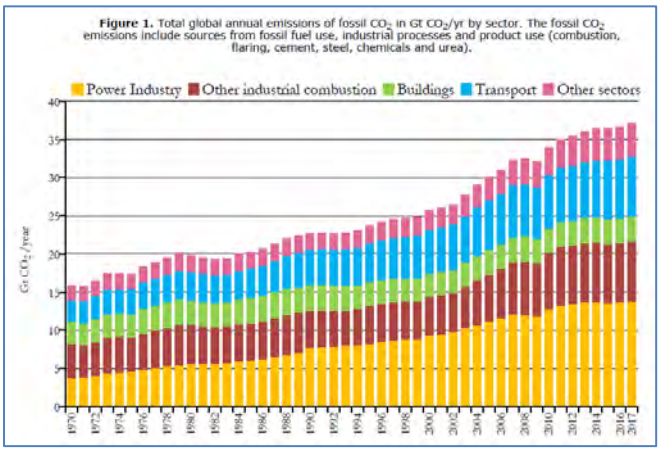


Figure 1. Total global annual emissions of fossil CO_2 in Gt CO_2/yr by sector. The fossil CO_2 emissions include sources from fossil fuel use, industrial processes and product use (combustion, flaring, cement, steel, chemicals and urea).

In the EU, strong economic performance resulted in a slight increase of CO_2 emissions (1.1%). This increase of 38 megatonnes (Mt) corresponds approximately to the total CO_2 emissions of Slovakia in 2017. In 2017, the EU's CO_2 emissions were 19.5% lower than in 1990, and 16.5% lower than in 2005. There have been strong reductions in the industry, power and buildings sectors, but an increase in the transport sector.

Per capita emissions in the EU are now below those of China and half of those in the US. The CO_2 intensity of the EU economy is around a third below the US and around two thirds below China.

In 2017, emissions in China increased by 0.9%. The 100 Mt increase corresponds approximately to the total CO_2 emissions of Belgium in 2017. China's emission growth has been very strong since 2000, although they have stabilised since 2014. In 2017, China's total CO_2 emissions amounted to 10.9 Gt.

In the US, emissions have been stable since 1990, but fell by 0.8% from 2016 to 2017, amounting to a total of 5.1 Gt. This was mainly due to a 2.5% decrease in coal power and a 1.4% decrease in natural gas consumption.

Russia's CO_2 emissions increased by 1.1% to a total of about 1.8 Gt in 2017.

The JRC report is at https://publications.europa.eu/en/publication-detail/-/publication/41811494-f131-11e8-9982-01aa75ed71a1.

Greece requested by European Commission to act on Air Pollution

On 24 January 2019, the European Commission urged Greece to comply with the requirements of the EU ambient air quality Directive and to take action to ensure good air quality and safeguard public health.

According to the January 2019 infringement package of the European Commission, Greece has failed to ensure compliance with the annual limit value for NO_2 in Athens for the period 2010-2014 and to establish an Air Quality Plan identifying the necessary measures that would keep the exceedance period as short as possible. In addition, Greece has also failed to put in place adequate sampling points in the zone of Thessaloniki to ensure proper monitoring of NO_2 concentrations. Finally, Greece also failed to make available a complete air quality report.

As Greece has not complied yet with all these obligations, the Commission has sent a letter of formal notice. Greece has two months to reply to the concerns raised by the Commission; otherwise, the Commission may decide to send a reasoned opinion.

France and Sweden requested to take Measures against Air Pollution

On 24 January 2019, the European Commission called on France and Sweden to bring their national air quality legislation in line with rules of the European ambient air quality Directive 2008/50/EC.

The Directive specifies ways of assessing air quality standards and of taking corrective action if these are not met. France and Sweden, however, have shortcomings with the enactment of several provisions of the EU directive into domestic legislation, including the obligation to take appropriate measures to keep periods of pollutant exceedance as short as possible. The Commission, therefore, sent letters of formal notice, giving France and Sweden two months to reply to the arguments raised by

the Commission; otherwise, the Commission may decide to send a reasoned opinion.

UK Draft Environment Bill 2018

On 19 December 2018, the UK Government released its draft Environment (Principles and Governance) Bill which sets out how the UK will maintain environmental standards after leaving the EU and builds on the vision of the 25 Year Environment Plan.

This includes creating an independent body - the Office for Environmental Protection (OEP) – which will scrutinise environmental law and the government's environmental improvement plan (EIP); investigate complaints on environmental law and take enforcement action on environmental law.

The draft Bill commits the government to publishing a policy statement which will set out how Ministers should interpret and apply environmental principles. It also commits government to have a plan for environmental improvement.

The broader Environment Bill will also include measures on air quality, nature recovery, waste and resource efficiency and water management.

More info is at www.gov.uk/government/publications/draft-environment-principles-and-governance-bill-2018.

UK Clean Air Strategy 2019

On 14 January 2019, UK Environment Secretary Michael Gove launched an ambitious new strategy to clean up the air and save lives.

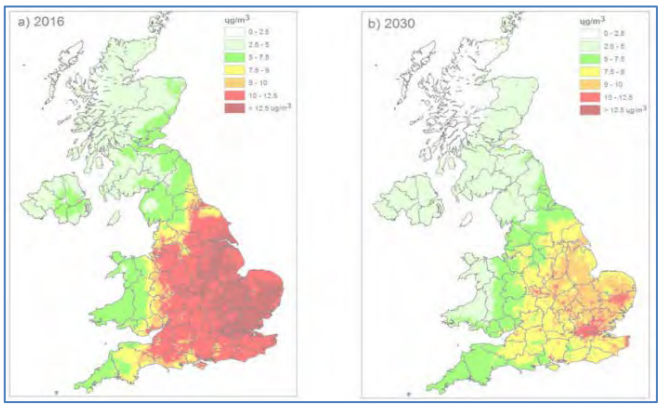
The document says that clean air is essential for life, health, the environment and the economy. Government must act to tackle air pollution which shortens lives. They have already acted to reduce concentrations of NO_2 around roads from cars. But vehicles are not the only source of harmful emissions. Air pollution is a result of the way we currently generate power, heat our homes, produce food, manufacture consumer goods and power transport. Better, cleaner technologies and simple changes in behaviour will tackle the pollution that claims lives.

In the past, the priority was to tackle the biggest individual sources of pollution. As these major sources of emissions have decreased, the relative contribution of smaller and more diffuse sources of air pollution, like smaller industrial sites, product use, open fires in homes and spreading manure on farms, has increased. That requires new action.

The measures set out in the Clean Air Strategy will cut the costs of air pollution to society by £1.7 billion (€1.9 billion) every year by 2020, rising to £5.3 billion (€5.9 billion) every year from 2030.

The UK will progressively cut public exposure to particulate matter pollution as suggested by the World Health Organization (WHO), far beyond EU requirements. A new, ambitious, long-term target will be set to reduce people's exposure to $PM_{2.5}$ and evidence will be published early in 2019 to examine what action would be needed to meet the WHO annual mean guideline limit of 10 µg/m³.

By implementing the policies in this strategy, the UK will reduce $PM_{2.5}$ concentrations so that the number of people living in locations above the WHO guideline level of 10 µg/m³ is reduced by 50% by 2025.



Actions will be taken to reduce emissions from vehicles and transport but also from domestic heating (stoves and open fires), agriculture and industry.

The UK Clean Air Strategy is at www.gov.uk/government/publications/clean-air-strategy-2019.

Leeds, UK approves Clean Air Charging Zone

On 21 January 2019, the city Council of Leeds, UK approved a Clean Air Charging Zone in the city and more than £29 million (€32.8 million) funding from government for its implementation.

The Clean Air Charging Zone will reduce air pollution in Leeds by encouraging businesses to transition to cleaner, less polluting vehicles that are not subject to charges for driving within the zone boundary.

Only owners of the worst polluting heavy goods vehicles, coaches, buses, taxis and private hire vehicles will be subject to charges. Private cars, vans or motorcycles will not be charged.

Charge revenue will only be used to cover the costs of operating the Clean Air Zone, to support owners of affected vehicles, and for other schemes to improve air quality in the city.

To help businesses based within the zone boundary transition to cleaner vehicles and avoid daily charges, the government has confirmed that £23 million of the £29 million total funding will be available to support affected businesses.

More info is at https://news.leeds.gov.uk/clean-air-charging-zone-plans-approved-by-government.

German Transport Minister asks for a Review of NO_2 Air Quality Standards

On 29 January 2019, German Transport Minister Andreas Scheuer sent a letter to Transport Commissioner Violeta Bulc, calling on the EU to review its legal NO_2 air pollution limit.

The letter, published by *news media Politico*, sets out Mr Scheuer's intention to push for an EU-wide review at an informal meeting of EU transport Ministers in March 2019. The German Minister notes that the German health community has raised doubts over the EU's legal limit for the concentration of NO_2 in ambient air, set at 40 µg/m³ since 1999 in line with World Health Organization (WHO) guideline.

The letter (in German) published by Politico is at www.politico.eu/wp-content/uploads/2019/01/Scheuerletter.pdf.

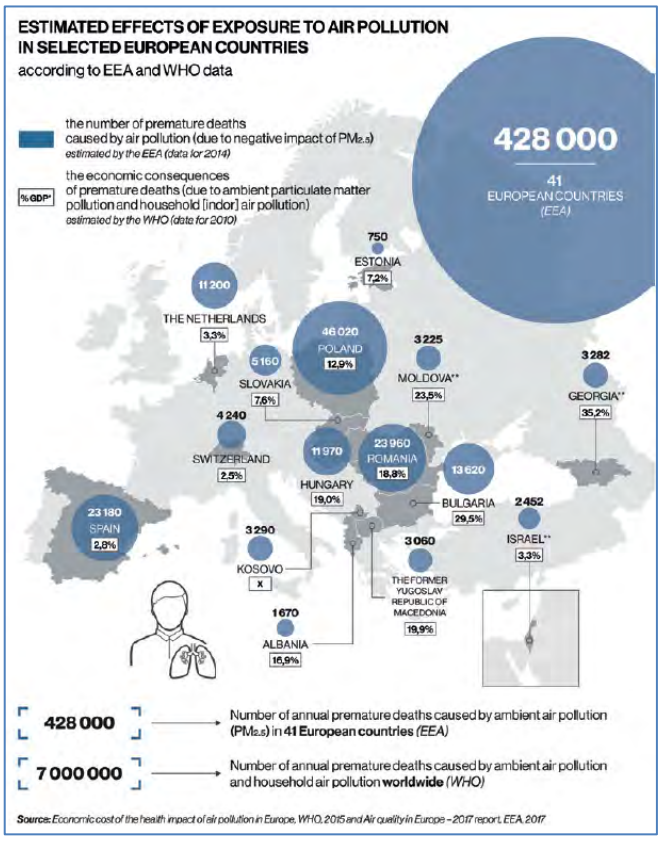
Joint Audit Report on Air Quality

On 30 January 2019, a joint audit was published, assessing how air quality policies and actions are implemented in the participating countries and generating shared conclusions and recommendations.

This joint report is a comprehensive summary of 16 audits on air quality performed by the European Court of Auditors and by 15 Supreme audit institutions in Albania, Bulgaria, Estonia, Georgia, Hungary, Israel, Kosovo, Moldova, Poland, Romania, Slovakia, Spain, Switzerland, the Former Yugoslav Republic of Macedonia and the Netherlands.

The auditors identified six major issues as being relevant to government action on improving air quality: identification of the main problem in the country, the governance system, statutory rules and regulations, policy, funding and monitoring.

The joint audit uncovered wide discrepancies between the 15 countries covered by the audit. At one end of the scale was Estonia, which was found to comply with all the relevant standards. At the other end were Poland and Bulgaria, two countries that the European Commission recently brought before the European Court of Justice on account of their continued failure to meet the limit values.



The Joint Audit Report on Air Quality is at https://english.rekenkamer.nl/publications/reports/2019/01/30/joint-report-air-quality.

NORTH-AMERICA

CARB's Workshop on NOx Emissions Reduction of Heavy-Duty Vehicles

On 23 January 2019, the California Air Resources Board (CARB) hosted a public workshop on proposed regulatory concepts to reduce NOx emissions from on-road heavy-duty vehicles.

At this workshop, CARB solicited input on proposals for revised durability demonstration requirements; a supplemental test cycle for certification to demonstrate emissions are controlled during low load operations, i.e., a low load cycle; zero-emission technology credit provisions; amendments to the Heavy-duty In-Use Testing program to more effectively assess in-use compliance under all operating conditions, via use of a protocol similar to the European in-service conformity-testing program, moving average window method; lengthened useful life for heavy-duty engines; further lengthened warranty requirements (called Warranty Step 2); and warranty corrective action amendments to strengthen and enhance the current Emission Warranty and Information Reporting requirements.

Presentations given at the workshop are at www.arb.ca.gov/msprog/hdlownox/hdlownox.htm.

CARB adopts $PM_{2.5}$ Clean Air Plan for San Joaquin Valley

On 24 January 2019, the California Air Resources Board (CARB) adopted a plan that demonstrates to the U.S. Environmental Protection Agency (EPA) how the San Joaquin Valley air basin will attain each of four federal standards for fine particulate matter ($PM_{2.5}$) by regulatory deadlines.

Currently, the San Joaquin Valley is designated nonattainment for the following federal health-based standards for $PM_{2.5}$: the 24-hour (65 µg/m³) and annual (15 µg/m³) standards to be met by 2020, the 24-hour standard (35 µg/m³) to be met by 2024 and the annual standard (12 µg/m³) to be attained by 2025.

Benefits from the plan are expected to be significant. For example, the city of Fresno is predicted to see a 40% improvement in air quality between 2013 (the base year of the plan) and 2024, when the Valley is expected to attain the 35 µg/m³ standard).

The clean air plan relies on both regulations and financial incentives to accelerate emissions reductions. Securing approximately $5 billion (€4.4 billion) in incentive funding by 2024 will be critical for implementing the plan. Measures for reducing emissions include:

- New regulations targeting emissions from heavy-duty trucks, including an inspection and maintenance programme, a low-NOx engine standard and a low-emission diesel fuel requirement;
- Tightened controls on residential wood-burning stoves and fireplaces, and enhanced incentives for cleaner-burning alternatives;
- Enhanced incentives for purchase of cleaner agricultural equipment and commercial underfired charbroilers;
- A suite of measures to reduce emissions of NOx from flares (including flares at refineries, oil fields and landfills), internal combustion engines and boilers, among other sources.

More info is at www.arb.ca.gov/planning/sip/sjvpm25/2018plan/2018pm25staffreport.pdf.

US and California settle with Fiat Chrysler on Defeat Devices

On 10 January 2019, the US Department of Justice, the US Environmental Protection Agency (EPA), and the State of California announced a settlement with Fiat Chrysler Automobiles (FCA) for alleged violations of the Clean Air Act and California law.

Fiat Chrysler has agreed to implement a recall programme to repair more than 100 000 non-compliant diesel vehicles sold or leased in the US, offer an extended warranty on repaired vehicles, and pay a civil penalty of $305 million (€ 265 million) to settle claims of cheating emission tests and failing to disclose unlawful defeat devices. The affected vehicles are 2014-2016 diesel Jeep Grand Cherokees and Dodge Ram 1500s.

Fiat Chrysler also will implement a programme to mitigate excess pollution from these vehicles. The mitigation programme requires FCA to improve the efficiency of 200 000 aftermarket catalytic converters sold for use on light-duty vehicles by 1 July 2020. The State of California will implement a separate mitigation programme.

The settlements are subject to court approval.

More info is at www.epa.gov/enforcement/fiat-chrysler-automobiles-clean-air-act-civil-settlement-information-sheet.

ASIA PACIFIC

India launches National Clean Air Programme

On 10 January 2019, the Indian Union Minister of Environment, Forest and Climate Change Dr Harsh Vardhan launched the National Clean Air Programme (NCAP) aiming to reduce by 2024 toxic particulate matter by 20 to 30% compared with 2017.

With 2019 as its first year, the NCAP is a five-year action plan that includes collaborative, multi-scale and cross-sectoral coordination between relevant Central ministries, state governments and local bodies. The programme may be further extended after reviewing mid-term results. The goal of NCAP is to meet the prescribed annual average ambient air quality standards at all locations in the country in a stipulated timeframe.

The Environment Ministry has announced a 2-year budget of Rs 300 crore (€37 million) to tackle air pollution across 102 cities, which have been identified by the Central Pollution Control Board (CPCB) as not meeting the pollution standards. The Smart Cities programme will be used to launch the NCAP in the 43 smart cities falling into the list of the 102 non-attainment cities.

More info, including the list of 102 cities, is at http://pib.nic.in/newsite/pmreleases.aspx?mincode=30.

China VI Fuel Standards apply Nationwide

In early January 2019, China's National Development and Reform Commission said in a joint statement with six central government bodies that China adopted its latest National Phase VI/VIA vehicle fuel standards starting 1 January 2019, nationwide.

The China VI fuel standards are equivalent to the Euro 6 ones (10 ppm sulfur max. for both gasoline and diesel).

The adoption was in line with the deadline set by the State Council in late June 2018 in an accelerated push against heavy air pollution. The National Phase VI/VIA standards were first set in December 2016 with a limited rollout in major Chinese cities and its country wide implementation has been fast-tracked. Beijing was the first city in China to adopt the new standards from 1 January 2017 when the deadline for the rest of China to fully implement National Phase 5 standards was set. The National Phase VI/VIA standards were then expanded to 28 cities from September 2017, which included two municipalities - Beijing and Tianjin, and 26 cities in the neighboring Hebei, Shanxi, Shandong and Henan provinces. Guangzhou city, Shanghai city and Guangdong province followed.

The sale of motor fuels, which do not meet the National VIA gasoline standard (including E10 ethanol gasoline) or National VI gasoil standard (including B5 biodiesel), will not be allowed, the country's top planner said.

The National Phase VI specification for gasoline is divided into two grades – National Phase VIA and National Phase VIB – due to the different olefins content. Beijing plans to adopt the National Phase VIB gasoline standard, which has even tighter specifications, within five years from the implementation of National Phase VIA, expected around 2024. Olefins content will be capped at 18% under National Phase VIA and 15% under National Phase VIB. Aromatics content under both VIA and VIB standards for gasoline will fall to 35% from National Phase V's 40%, while additives containing methanol, lead, iron and manganese, such as MMT, will no longer be allowed. Benzene will be limited to 0.8% from 1% under National Phase V. With respect to gasoil, the content of polycyclic aromatic hydrocarbons will be limited to 7% under National Phase VI standard from the current 11%.

China to reduce Emissions from Transport of Goods

According to *Reuters*, on 4 January 2019, China's Ministry of Ecology and Environment said in a policy document that China will take action against highly polluting diesel trucks by imposing tougher fuel and engine standards, raising rail freight volumes and strengthening its monitoring capabilities.

The number of diesel trucks meeting the China VI emission standards will be significantly increased by 2020, targeting a compliance rate of at least 90% by next year.

The guidelines also promised to improve the quality of diesel fuel, crack down on low-grade fuel, and reduce overall nitrogen oxide and particulate matter emissions from fuel combustion. New trucks that fail to comply with state requirements will not be allowed to enter the market, and some regions will be ordered to implement advanced China VI fuel standards starting from July 2019, the document said.

China is in the fifth year of a "war on pollution" but average emission levels in many smog-prone northern cities remain significantly higher than the levels recommended by the government. Northern regions near the capital Beijing will eliminate more than 1 million outdated diesel trucks by the end of 2020. Tougher controls on diesel freight will also be imposed during smog build-ups, it said. National rail freight rates will be increased by 30% compared with 2017, and authorities will work to ensure that long-distance bulk commodity deliveries are done via rail or ships, it said.

Tackling truck emissions has become a major part of China's efforts to curb pollution. Though trucks produce 13 times more pollution per unit of cargo than trains, the share of rail in total freight amounted to just 7.7% in 2017. The environment ministry said last year that while diesel trucks accounted for just 7.8% of China's total vehicles, they contributed more than 57% of total NO_2 emissions and more than three quarters of airborne particulate matter. The ministry plans to charge higher fees and introduce more stringent monitoring procedures to try to persuade firms to shift some of the freight to rail.

Air Quality improves in Beijing in 2018

On 4 January 2019, *Xinhua news media* reported that Beijing Municipal Ecological Environment Bureau recorded less heavily polluted days and reduced the average concentration of hazardous gas and particles in 2018.

The city had 15 heavily polluted days last year, compared to 58 in 2013. Also, the city's average $PM_{2.5}$ concentration dropped to 51 μg/m³ in 2018, down 12.1% year on year.

Average ambient air concentration of SO_2, $PM_{2.5}$, PM_{10} and NO_2 in the city dropped by 77.8, 42.7, 27.8 and 25% respectively from 2013 to 2018.

Beijing Municipal Ecological Environment Bureau said that "currently, the city is focusing on the control of heavy diesel vehicles, dust and volatile organic compounds, and has been cooperating with neighbouring areas to ease air pollution."

ICCT Report on Japanese Fuel Economy Standards for Heavy-Duty Vehicles

On 28 January 2019, the International Council on Clean Transportation (ICCT) released a policy update report on the 2nd phase of fuel economy standards for on-road Heavy-duty vehicles in Japan.

Japan's Ministry of Land, Infrastructure, and Transportation adopted in December 2017 new fuel economy standards for new on-road heavy-duty vehicles as part of the government's ongoing effort to reduce the

country's petroleum usage and greenhouse gas emissions. The Phase 2 regulation applies to model year 2025 diesel commercial vehicles with a gross vehicle weight (GVW) of 3.5 tonnes or more and buses that can transport 10 or more passengers.

Table 1: Summary of 2025 fuel efficiency targets and percentage improvements by vehicle type and class

Vehicle type	Class	Fuel economy (liters / 100 km)		Improvement
		2015 baseline	2025 target	
Trucks	Tractor trucks	35.2	34.0	3.4%
	Other trucks	14.1	12.3	12.7%
	Total average	14.9	13.1	11.9%
Buses	Urban buses	21.0	20.0	4.8%
	Highway buses	16.5	13.9	15.5%
	Total average	17.5	15.3	12.4%

For tractor trucks, Japan's requirements in 2015 and 2025 – starting from a 2002 baseline – translate to annual improvements of around 1%. According to the ICCT, this is well below the annual efficiency gains in the US, China, and the EU, which range from 3% to 5% per year. If Japan aims to be a leader in heavy-duty vehicle efficiency technology, it is likely that it will need to transition away from the Top Runner approach to a method for setting regulatory stringency that is more technology-forcing and requires manufacturers to push beyond current commercially available technologies.

While Japan deserves credit as the first country in the world to implement fuel efficiency standards for heavy-duty vehicles, the stringency of its first and second phase standards has lagged behind regulations in other major markets, the ICCT said.

The ICCT policy update is at www.theicct.org/sites/default/files/publications/Japan_HDV_FE_Phase_2_20190129.pdf.

AFRICA

Kenya's Vehicle Importation Requirements

On 17 January 2019, Kenya's Industry and Trade Cabinet Secretary, Mr Peter Munya, said in an interview with Kenya's Citizen TV that the government softened its stance on the proposed rule to tighten vehicle importation requirements.

Starting in July 2019 cars with engine capacities of 1.5-liter and below will be spared from Kenya's plan to reduce the age limit of vehicle imports from eight to five years.

The change in the proposed policy will ensure that the middle class is not priced out of the car market. In the long-term, the age limit and emissions control are intended to boost the nascent Kenyan vehicle assembly industry by encouraging purchase of locally-made cars.

The age restriction on imports of vehicles with engine capacities above 1.5-liter will continue to tighten in the coming years, with plans to cap it at three years by 2021, according to Kenya's Draft National Automotive Policy.

GENERAL

ICCT Policy Update on EU Post-2020 CO_2 Standards for Cars and Vans

On 3 January 2019, the International Council on Clean Transportation (ICCT) released a policy update on the trilogue agreement reached on 17 December 2018 on the EU post-2020 CO_2 standards for cars and vans.

The document concisely surveys the policy background, summarizes the key elements of the regulation and the expected effects, and puts the new rule in international context.

According to the agreement, new car CO_2 emissions have to reduce, on average, by 15% by 2025 and by 37.5% by 2030, relative to a 2021 baseline. Expressed in NEDC terms, using the current 2021 CO_2 target of 95 g/km as the baseline, these reductions would translate into a target value of 81 g/km (2025) and 59 g/km (2030). New vans' CO_2 emissions must fall, on average, by 15% by 2025 and by 31% by 2030. Expressed in NEDC terms, using the current 2020 CO_2 target of 147 g/km as the baseline, these reductions would translate into a target value of 125 g/km (2025) and 101 g/km (2030).

Vehicle weight is retained as the underlying utility parameter, i.e., the heavier a manufacturer's car fleet, the higher that manufacturer's CO_2 emission target will be under the regulation.

The post-2020 regulation defines zero- and low-emission vehicles (ZLEVs) as vehicles with CO_2 emission values from zero up to 50 g/km. For cars, it sets ZLEV sales targets of 15% for 2025 and 35% for 2030, while giving manufacturers some flexibility in how they reach those targets. The sales targets for ZLEVs for vans are 15% for 2025 and 30% for 2030.

As was the case under the previous vehicle CO_2 regulations, manufacturers can apply for a maximum of 7 g/km of credits for the use of eco-innovation technologies whose benefits are not adequately captured by the certification test cycle. However, in contrast to the previous regulations, efficiency improvements for mobile air conditioning systems can also qualify as eco-innovations, beginning in 2025.

Excess emission premiums for manufacturers failing to meet their emissions target will remain at €95 per vehicle for every g/km by which the manufacturer's fleet average CO_2 exceeds its target.

Under the current CO_2 regulation, niche manufacturers with no more than 300 000 new vehicles sold per year

were subject to less stringent targets. Under the new regulation, this derogation will be phased out by 2028.

With the new regulation, the EU becomes the only market worldwide to have set mandatory new car CO_2 targets up to the year 2030.

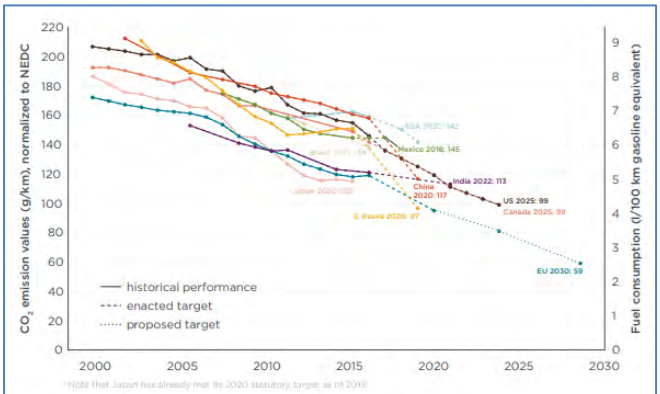


Figure 6. Comparison of global CO_2 regulations for new passenger cars.[17]

The trilogue agreement still needs to be formally adopted by the European Parliament and the Council (*see above*).

The ICCT policy update is at www.theicct.org/sites/default/files/publications/EU-LCV-CO2-2030_ICCTupdate_201901.pdf.

ICCT 2018 Report 'From Laboratory to Road'

On 10 January 2019, the International Council on Clean Transportation (ICCT) published the 2018 update of its 'From Laboratory to Road' series on official and 'real-world' fuel consumption and CO_2 values for passenger cars in Europe.

The report is based on a statistical analysis of 15 different sources with data for more than 1.3 million vehicles from eight European countries.

The update shows that in 2017, for the first time in years, the average gap between official fuel consumption figures and actual fuel use for new cars in the EU did not increase, but rather stabilized at 39%. Despite the recent slowdown, the discrepancy between official measurements of vehicle efficiency and actual performance of new cars in everyday driving has more than quadrupled since 2001.

Between 2001 and 2017, average official CO_2 emission values of new European cars decreased from 170 g/km to 119 g/km over the New European Driving Cycle (NEDC), a 30% decline. But the official CO_2 emission values are determined in a controlled laboratory environment. The gap between real-world and official CO_2 emission values grew steadily between the early 2000s and 2016, effectively cancelling out two-thirds of the on-paper efficiency improvements since 2001.

A number of reasons may have contributed to the change in the previous upward trend in the gap. There is currently limited regulatory pressure on car makers to increase vehicle efficiency, as the next set of CO_2 targets will not apply until 2020. Furthermore, increased scrutiny on the real-world performance of vehicles may have acted as a deterrent to further test optimization. The decline in diesel shares of new car registrations also plays a role in the stabilization of the gap, as diesel vehicles tend to exhibit a higher gap than their gasoline counterparts, the ICCT said.

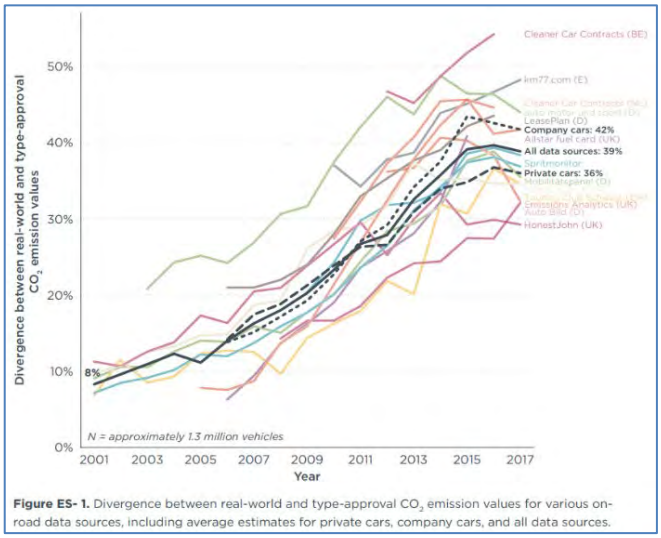


Figure ES- 1. Divergence between real-world and type-approval CO_2 emission values for various on-road data sources, including average estimates for private cars, company cars, and all data sources.

The ICCT report 'from laboratory to road' is at www.theicct.org/sites/default/files/publications/Lab_to_Road_2018_fv_20190110.pdf.

Study on Ethanol Blends' Effects on Vehicle Emissions

On 21 January 2019, the Urban Air Initiative (UAI) published a report prepared by Future Fuel Strategies who reviewed studies examining the effect of adding ethanol to U.S. gasoline at low- and mid-levels on tailpipe emissions of passenger cars and light-duty trucks and compared them to real-world application.

The report found that measured and modelled effects of ethanol blending on gaseous and particulate emissions have varied widely between studies, to the point that it is difficult to reach any summary conclusions on ethanol's emissions effects. Many of the test fuels used in emissions research studies do not reflect the makeup of consumer fuels, limiting the ability of ethanol to be used to reduce emissions and improve vehicle efficiency.

A key point made by the authors in the analysis is that consumer fuels are blended as economically as possible at the refinery and that is not the case in match blended fuel studies. In addition, the match blending method creates fuels that are not consistent from one study to the next

and draws into question the fuel's ability to make real-world emission predictions.

Test fuels are critical to the ethanol industry because they are the supporting evidence EPA uses to establish fuel regulations that dictate the amount of ethanol allowed in gasoline. UAI believes this third-party analysis can be used as a tool to establish a consensus on how to model test fuels moving forward. UAI's goal would be for EPA to create a fuel blending standard.

The key points of the study are at https://fixourfuel.com/wp-content/uploads/2019/01/Meta-Analysis-Executive-Summary-Release.pdf.

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The drivers behind differences between official and actual vehicle efficiency and CO_2 emissions, Juan Luis Jiménez, et al.; *Transportation Research Part D: Transport and Environment* (February 2019), Vol. 67, pp. 628-641, doi: 10.1016/j.trd.2019.01.016.

FORTHCOMING CONFERENCES

Integer Emissions Summit & ARLA 32 Forum Brazil

12-13 February 2019, Sao Paulo, Brazil
www.integer-research.com/conferences/ies-brazil-2019/

10th VERT Forum

14 March 2019, Dübendorf, Switzerland
https://www.vert-dpf.eu/j3/index.php/start-page/events/2-uncategorised/54-10th-vert-forum-march-15th-at-empa-switzerland
This 10th Forum is organized again in cooperation with EMPA and the VERT association and will focus on SCRT retrofit solutions for HDV and LDV. Best practices of emission reduction methodology are shared as they are available from VERT member companies.

10th CLEPA Aftermarket Conference

27-28 March 2019, Brussels, Belgium
https://clepa.eu/events/10th-clepa-aftermarket-conference/
The conference will discuss the future challenges in an increasing digitalized automotive aftermarket

Future Diesel Engine Summit China 2019

27-28 March 2019, Shanghai, China
www.fiveoit.com/desc/#/desc/home

SAE World Congress Experience (WCX)

9-11 April 2019, Detroit, USA
www.sae.org/attend/wcx

Integer Emissions Summit & AdBlue® Forum China

7-9 May 2019, Shanghai, China
www.integer-research.com/conferences/ies-china-2019/

International VDI Conference: Electrified Off-Highway Machines

14-15 May 2019, Düsseldorf, Germany
www.vdi-wissensforum.de/en/event/electrified-off-highway-machines/
The conference will focus on developments on electrified powertrains and battery technology specifically used in off-highway machines, and their implications on safety, standardization, maintenance and life cycle cost.

Ultrafine Particles – Air Quality and Climate

15-16 May 2019, Brussels, Belgium
www.ufp.efca.net
International Symposium of the European Federation of Clean Air and Environmental Protection Associations (EFCA).

23rd International Transport and Air Pollution (TAP) Conference

15-17 May 2019, Thessaloniki, Greece
www.tapconference.org
The theme of TAP2019 is 2020-2030: Transport in critical transition. Indeed, this decade will determine whether transport systems will succeed in moving ahead, fulfilling their sustainability targets.

EU Green Week High-Level Summit

15-17 May 2019, Brussels, Belgium
https://ec.europa.eu/info/events/eu-green-week-2019_en
The 2019 EU Green Week will be focusing on the implementation of EU environmental legislation, highlighting the benefit of EU environmental policies and showing their benefits for citizens.

40th International Vienna Motor Symposium

16-17 May 2019, Vienna, Austria
https://wiener-motorensymposium.at
AECC, IPA and IAV will present a joint paper on "Integrated Diesel System Achieving Ultra-Low Urban NOx Emissions on the Road"

International Conference on Calibration Methods and Automotive Data Analytics

21-22 May 2019, Berlin, Germany
www.iav.com/termine/tagungen/international-calibration-conference

The Path towards Euro 7 Conference

21-23 May 2019, Stuttgart, Germany
www.euro7conference.com
The conference is organized by the publishers of Engine Technology International magazine and will bring together leading experts to present exclusive papers about the numerous technologies and engineering solutions that exist to help gasoline and even diesel engines meet possible future emission targets.
Deadline for abstract: 28 February 2019

10th AVL International Commercial Powertrain Conference

22-23 May 2019, Graz, Austria
www.avl.com/icpc
The conference will tackle the challenges that the commercial vehicle industry is facing globally. How will emission legislation, trend for electrification and digitalization affect the powertrains of the future?

2nd Asia-Pacific Diesel Engine and Emission Summit 2019

23-24 May 2019, Bangkok, Thailand
www.borscon.com/2019apde/en/index.asp
The conference will discuss emission standards and technology roadmaps of Asia-Pacific countries, emission technologies, and the future of the diesel engine.

Integer Emissions Summit & AdBlue® Forum Asia Pacific

5-6 June 2019, Tokyo, Japan
www.integer-research.com/conferences/ies-apac-2019

31st International AVL Conference "Engine & Environment"

6-7 June 2019, Graz, Austria
www.avl.com/engine-environment
The conference will focus on three thematic blocks: production, storage, transport/distribution of energy carriers; energy storage media in the vehicle; and the main focus will be laid on the consequences for the powertrain portfolio.

SIA Paris 2019 Power Train & Electronics

12-13 June 2019, Port-Marly, France
www.sia.fr/evenements/136-sia-power-train-electronics-2019
To support the automotive industry in the transition towards ever more environmentally friendly mobility, a new automotive event in France named SIA power train & Electronics broadens the scope of the Powertrain Conference to include electric traction technologies, along with internal combustion engines (ICE), low carbon fuels, and transmissions.

8th International Congress on Combustion Engines

17-18 June 2019, Krakow, Poland
www.congress.ptnss.pl
The main topics of the congress include fuel injection systems and mixture formation; combustion processes control in SI and CI engines; engine thermal loading and utilization of heat released; alternative fuels; emission measurements and aftertreatment; alternative sources of power; engine testing, durability, reliability and diagnostics; modelling and optimization of engine processes; and global trends in engine technology.

ETH Conference on Combustion Generated Nanoparticles

18-20 June 2019, Zurich, Switzerland
www.nanoparticles.ch
The conference serves as an interdisciplinary platform for expert discussions on all aspects of nanoparticles, freshly emitted from various sources, aged in ambient air, technical mitigation aspects, impact of particles on health, environment and climate and particle legislation.
Deadline for abstract: 24 March 2019

Integer Emissions Summit & AdBlue® Forum Europe

25-27 June 2019, Munich, Germany
www.integer-research.com/conferences/ies-europe-2019

India & ASEAN Diesel Powertrain Summit

26-27 June 2019, Singapore
www.fiveoit.com/iadp
India & ASEAN Diesel Powertrain Summit 2019 is dedicated to providing the next 5-10 years of policy direction and supporting technological innovations as well as exploiting the market opportunities in India and ASEAN countries.

SAE Powertrains, Fuels and Lubricants

26-29 August 2019, Kyoto, Japan
www.pfl2019.jp

14th International Conference on Engines & Vehicles

15-19 September 2019, Capri, Italy
www.sae-na.it
Topics of the conference include engine modelling and diagnostics; engine combustion; new engines, components, actuators and sensors; hybrid and electric powertrains and eco-CAV; fuels and lubricants; and exhaust aftertreatment and emissions.
Deadline for abstract: 18 February 2019

3rd Annual Real Driving Emissions Forum

24-25 September 2019, Berlin, Germany
www.rde-realdrivingemissions.com
The Forum will showcase the forefront practices and approaches towards RDE and Energy Consumption reduction, compliance with recent update of the legislation on RDE, main automotive technology trends based on cost-and-energy-efficient solutions.

28th Aachen Colloquium Automobile and Engine Technology

7-9 October 2019, Aachen, Germany
www.aachener-kolloquium.de

The congress provides a wide range of technical presentations addressing current challenges of the vehicle and engine industry.
Deadline for abstract: 15 February 2019

European Transport Conference

9-11 October 2019, Dublin, Ireland
www.aetransport.org
The conference attracts transport practitioners and researchers from all over Europe where they can find in-depth presentations on policy issues, best practice and research findings across the broad spectrum of transport.

13th Conference on Gaseous Fuel Powered Vehicles

22-23 October 2019, Stuttgart, Germany
https://fkfs-veranstaltungen.de/3/conference-on-gaseous-fuel-powered-vehicles

Integer Emissions Summit USA

12-13 November 2019, Indianapolis, USA
Info will be at www.integer-research.com/conferences/ies-usa-2019/

POLIS Annual Conference

27-28 November 2019, Brussels, Belgium
www.polisnetwork.eu/2019conference
Europe's leading event on sustainable urban mobility in cities and regions
Call for speakers opens in March 2019

EU Clean Air Forum

28-29 November 2019, Bratislava, Slovakia
https://ec.europa.eu/info/events/eu-clean-air-forum-2019-nov-28_en
The European Commission is organizing the 2nd Clean Air Forum in close collaboration with the Ministry of Environment of the Slovak Republic. It will focus on three themes: air quality and energy; air quality and agriculture; and clean air funding mechanisms.

SAE World Congress Experience (WCX)

21-23 April 2020, Detroit, USA
Info will be at www.sae.org/attend/wcx

SAE Powertrains, Fuels and Lubricants

22-24 September 2020, Krakow, Poland
Info will be at www.pfl20.org
Call for abstracts opens in August 2019
Deadline for abstract: 18 February 2020