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NEWSLETTER

International Regulatory Developments

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AECC INDUSTRY POSITION

The Combustion Engine – Part of the Solution for Low-Emission Mobility

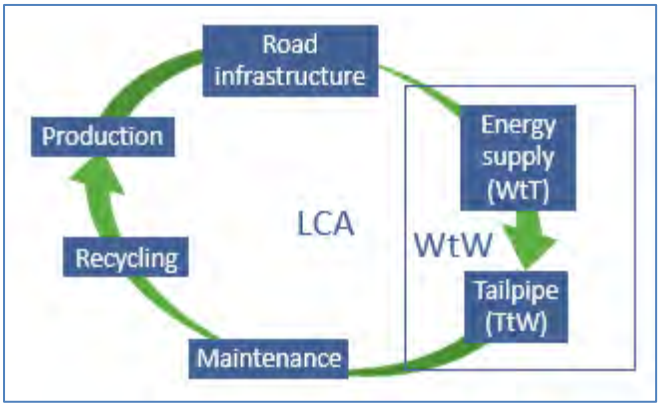
On 8 November 2017, AECC released a new industry position highlighting the role of the internal combustion engines for the low-emission mobility.

The COP21 Paris Climate Agreement target limits the global average temperature increase to less than 2°C above pre-industrial levels. The EU is committed to reducing greenhouse gas emissions by 80-95% by 2050 compared to 1990 levels with an intermediate target of 40% by 2030. This suggests moving away from today's fossil fuel-based energy sources to reduce greenhouse gas emissions from road transport in the EU.

To achieve this change, several vehicle technology options are required. Road transport decarbonisation technologies, including pure electric and hybrid vehicles (combined electric and liquid fuel) are becoming available along with an electric charging infrastructure. Lower carbon liquid fuel sources and fuel efficiency improvement will also contribute. Low-emission diesel and gasoline engines will therefore play a role in reducing greenhouse gas emissions from road transport for some time to come.

EU legislation defines tailpipe CO_2 targets for cars and vans based on the NEDC test cycle. The new WLTP procedure has been progressively introduced since 1 September 2017 and aims to provide a more realistic measure of vehicle CO_2 emissions per kilometre driven under average conditions. There are nevertheless a number of parameters to be accounted for when comparing the impact of different powertrains on climate.

In addition to the greenhouse gas emitted at the tailpipe (Tank-to-Wheel, TtW), there are also greenhouse gases generated by the production and delivery of the fuel or electricity to the vehicle, called Well-to-Tank (WtT) emissions. Their sum is referred to as Well-to-Wheel (WtW) emissions.



These parameters are very different for liquid and electric powertrains as pure electric vehicles have zero TtW emissions (used for vehicle tax incentives) but will have differing WtW values depending on the renewable content of the generated electricity. For example, electricity generated by wind has a very low WtT greenhouse gas value whereas electricity generated by coal has a relatively high WtT contribution. Equally, liquid fuels derived from renewable carbon sources in addition to extracted oil are not accounted for in the currently solely regulated tailpipe/TtW CO_2 emissions.

For a true comparison of the greenhouse gas contribution of the various types of vehicle now available it is also necessary to account for the greenhouse gases created during the manufacture of the vehicle, the energy transmission and storage, vehicle maintenance and recycling. This Life Cycle Analysis (LCA) is very complex but can provide a more comprehensive method of comparing pure electric, hybrid and liquid fuel vehicle greenhouse gas contributions.

Global warming is not limited to CO_2 emissions from energy sources. Other greenhouse gases with a global warming potential, such as methane (CH_4) and nitrous oxide (N_2O), should be accounted for as CO_2 equivalent ($CO_{2\ eq}$).

Data collected during real-world driving show tailpipe CO_2 emissions and electric consumption are usually higher than those listed for liquid fuel, pure electric and hybrid vehicles due to road gradients and other effects encountered on the road compared to a vehicle test laboratory. The real-world contribution of different vehicle types to total greenhouse gas emissions is difficult to determine; for electric and hybrid vehicles it will depend on the way the electricity was generated and for liquid fuel vehicles will depend on the renewable carbon content of the fuel.

In a Well-to-Wheel context, the internal combustion engine can, in the long term, continue to be a key contributor to climate-friendly mobility not only by using non-fossil, synthetic liquid or gaseous fuels produced from renewable sources; but also through technological improvements in the engine fuel efficiency.

Decarbonisation of transport will take place by a number of pathways including liquid fuel, pure electric and hybrid vehicle technologies. Thanks to efficient aftertreatment technologies, the reduction of greenhouse gas emissions from conventional and hybrid vehicles can be combined with ultra-low particulate and nitrogen oxide (NOx) emissions enabling climate change and air quality to be tackled simultaneously.

The AECC industry position is at www.aecc.eu/wp-content/uploads/2017/11/171108-AECC-Indus-Pos-ICE-for-low-emission-mobility.pdf.

EUROPE

Commission proposes Post-2020 CO_2 Standards for Cars and Vans

On 8 November 2017, the European Commission adopted a legislative proposal on post-2020 CO_2 standards for cars and vans as part of the Clean Mobility Package *(see next)*.

From left to right: Commissioner for Energy Union, Vice-President Maroš Šefčovič; Commissioner for Climate Action & Energy Miguel Arias Cañete; Commissioner for Transport Violeta Bulc; and Commissioner for Internal Market, Industry, Entrepreneurship and SMEs Elżbieta Bieńkowska.

According to the proposal, average emissions of the EU fleet of new cars in 2030 will have to be 30% lower than in 2021. For the EU fleet of new vans in 2030, the reduction also amounts to 30%. Intermediate targets of 15% lower than in 2021 are also set for 2025, both for cars and vans.

Starting from 2021, the emission targets will be based on the new emissions test procedure, the Worldwide harmonised Light vehicle Test Procedure (WLTP). As the WLTP test procedure will be phased in over the next years, the newly proposed 2025 and 2030 fleet wide targets are not defined as absolute values (in grams of CO_2/km), but expressed as percentage reductions compared to the average of the specific emission targets for 2021.

Battery electric and fuel cell vehicles are defined as zero-emission vehicles while low-emission vehicles are those having tailpipe emissions of less than 50 g CO_2 /km; the Commission considers these are mainly plug-in hybrid vehicles. Manufacturers achieving a share of zero- and low-emission vehicles, which is higher than the proposed benchmark level of 15% in 2025 and 30% in 2030, will be rewarded in the form of a less strict CO_2 target. For determining that share, the emission performance of the vehicles concerned is taken into account so that a zero-emission vehicle is counted more than a low-emission vehicle. The credit system may only be used to offset up to 5 percentage points of the CO_2 target.

The proposal also extends the scope of eco-innovations (innovative technologies whose effect in reducing emissions is not reflected in the official test procedure) to include air-conditioning systems and provides for a revision of the 7 g CO_2/km cap with effect from 2025.

The Commission will ensure the availability, from manufacturers or national authorities of robust non-personal data on real-world CO_2 emissions and energy consumption of passenger cars and light commercial vehicles. It will ensure that the public is informed of the evolution over time of type-approval and real-world values.

Finally, ultra-small volume manufacturers with less than 1000 new registrations per year are exempt from the 2025 and 2030 CO_2 targets.

The legislative text has been sent to the European Parliament and Council for codecision.

The proposal on post-2020 CO_2 standards is at https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/com_2017_676_en.pdf and the annexes are at https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/com_2017_676_annex_en.pdf.

Revised Clean Vehicle Directive in Clean Mobility Package

On 8 November 2017, the European Commission published its Clean Mobility Package that includes in particular post-2020 CO_2 standards for cars and vans (*see above*) but also proposed amendments to Directive 2009/33/EU on the promotion of clean and energy-efficient road transport vehicle (i.e. green public procurement).

The EU Clean Mobility Package actually consists of:

- A political Communication outlining the long-term strategy to fight climate change while improving the quality of life for Europe citizens and fostering competitiveness for its industry.
- Legislative initiatives on road transport vehicles, infrastructures and combined transport of goods. The initiatives focus on the reduction of greenhouse gas emissions and air pollutant emissions and aim for a broad take up of low-emission alternative fuels and low-emission vehicles on the market.
- Non legislative measures presented in an Alternative Fuels Action Plan to boost investment in alternative fuel infrastructure and develop a network of fast and interoperable charging and clean refuelling stations across Europe.

Amendments proposed to the Clean Vehicle Directive include a definition of 'clean vehicles' for light- and heavy-duty vehicles as described in the table below.

Table 2: Emission-thresholds for light-duty vehicles

Vehicle categories	2025		2030	
	CO2 g/km	*RDE air pollutant emissions* as percentage of emission limits***	*CO2 g/km*	*RDE air pollutant emissions* as percentage of emission limits*
M1 vehicles	25	80%	0	n.a.
M2 vehicles	25	80%	0	n.a.
N1 vehicles	40	80%	0	n.a.

* Real driving emissions of ultrafine particles in #/km (PN) nitrogen oxides in mg/km (NOx) measured according to the applicable version of Annex IIIA, Regulation 2017/1151.

** The applicable emission limit found in Annex I of Regulation (EC) 715/2007, or its successors.

Table 3: Alternative fuel requirements for heavy-duty vehicles

Vehicle categories	Alternative fuels
M3, N2, N3 vehicles	Electricity*, hydrogen, natural gas including biomethane, in gaseous form (compressed natural gas (CNG)) and liquefied form (liquefied natural gas (LNG)

*For use in a vehicle as defined in Art. 2 (2) of Directive 2014/94/EU, provided that electricity is used for a relevant part of the operational use of the vehicle.

The scope of the Directive is extended to forms of procurement other than purchase, namely vehicle lease, rent or hire-purchase, and to public service contracts for public road transport services, special purpose road

transport passenger services, non-scheduled passenger transport and hire of buses and coaches with driver.

For each EU Member State, minimum targets are set for the share of light- and heavy-duty 'clean vehicles' in the total public procurement.

The Clean Mobility Package is at https://ec.europa.eu/transport/modes/road/news/2017-11-08-driving-clean-mobility_en.

AECC Event on RDE Package 4 and AECC Position Paper

On 23 November 2017, AECC hosted a half-day event on the Final Elements of the 4th Real-Driving Emissions (RDE) package in Brussels.

The seminar brought together the key actors involved in the definition of the final RDE provisions. Amongst the attendants were experts from the European Commission, representatives of Member States authorities and of the European Parliament, NGOs, academics and industry associations.

AECC presented its new position on the elements discussed for the 4th RDE package, data on real-world emissions measurements conducted on a Plug-in Hybrid Electric Vehicle (PHEV) and a comparison of RDE evaluation methods under discussion. AECC and the industry it represents welcome the work on the 4th RDE package and believes that the RDE procedure should be realistic and as pragmatic as possible to ensure it is robust and transparent to deliver the air quality benefits needed by citizens, local authorities, and EU Member States.

As proposed by the European Commission, the Moving Average Window (EMROAD) tool can be retained to verify "RDE trip normality" but reporting of raw tailpipe NOx and PN emissions of an RDE test should be implemented as soon as is practical to ensure robustness and transparency.

On PHEV emissions, AECC highlighted the wide variety of conditions under which such vehicles can be operated. PHEVs can deliver zero tailpipe CO_2 and regulated pollutant emissions in urban areas within the electric range, when they are driven in electric mode and if the battery has been fully charged. On the PHEV tested, the high spikes of Particle Number observed at the cold-start of the internal combustion engine were well controlled by a Gasoline Particulate Filter (GPF). At type-approval of PHEVs, only a limited number of operating modes and battery state-of-charge will be evaluated on RDE. However, for market surveillance and real-world impact, it must be possible to assess their RDE performance under any combination of operating mode and battery state-of-charge.

In the 3rd RDE package, different RDE data evaluation methods have been established for conventional vehicles and PHEVs. AECC believes that a technology-neutral approach is needed and this would be ensured by reporting raw emissions data for RDE.

During the second part of the event, a panel discussion was moderated by Peter Teffer, a journalist of EU Observer. The panel was composed of experts from the European Commission (Dr Dilara from the DG Growth and Mr Wakenhut, head of the Clean Air unit in the DG for Environment), from a Member State with already some market surveillance activities (Mr Öhlund of the Swedish Transport Authority), from industry (Dr Greening of ACEA and Mr Bosteels of AECC) and from an NGO (Dr Mock of ICCT). The panellists exchanged views on the various elements to be covered in the 4th RDE package and replied to questions from the audience.

Real-Driving Emissions is unanimously considered as a major change in emissions control from cars and vans and the 4th regulatory RDE package is a crucial step. It will ensure In-Service Conformity checks of vehicles placed on the EU market are complemented by market surveillance activities, both at EU Member States level but also by independent third-parties.

Material from the AECC event, including AECC's Position on RDE package 4, is available at www.aecc.eu/event/final-elements-real-driving-emissions-rde-package-4.

Parliament's Exchange of Views with Commission on RDE Package 4

On 21 November 2017, the Environment (ENVI) Committee of the European Parliament held an exchange of views with the European Commission on the state of play on the 4th Real-Driving Emissions package.

Ms Szychowska of the Commission's DG-GROW first reminded that RDE requirements have applied to new type-approvals since 1 September 2017. The 4th package is addressing in particular rules for In-Service Conformity (ISC), the review of RDE data evaluation, the review of PEMS measurement margins, guidance for using PEMS, and a number of outstanding issues (hybrids, heavy fuels, light-commercial vehicles).

She explained the In-Service Conformity scheme where the Granting Type-Approval Authority (TAA), other TAAs, and independent third parties perform RDE tests. All have to be run by accredited labs.

Ms Szychowska also said that existing RDE data evaluation tools (EMROAD and CLEAR) are not providing appropriate results. Raw emissions are therefore under further investigation.

Because there are diverging ways of using PEMS, a guidance document is being prepared with the help of the Joint Research Centre (JRC). Guidance for detecting defeat devices is intended to be part of RDE package 4 so as to make it binding. On the 0.5 error margin on the NOx Conformity Factor (CF) for 2020, all measurement uncertainties are being considered (NOx concentration, distance driven, etc.) The JRC has prepared a report, based on which the EC will assess how much the error margin can be lowered. As a long-term objective, the EC would like to have standards developed for PEMS.

Finally, Ms Szychowska said that the 4th package of RDE is expected to be tabled for vote in TCMV in March or April 2018. It will be proposed together with a 2nd WLTP act. Entry into force is planned for the autumn 2018.

Two MEPs then raised questions. MEP Dance (UK, S&D) asked about when the Conformity Factor will be set to 1. Regarding ISC, he asked why only 5% of vehicles placed on the market are intended to be tested when the US EPA is checking 30% of vehicles. Ms Szychowska answered that the review of the error margin will be conducted on a yearly basis. There is currently a difference of 15% between PEMS and lab measurement. It cannot be foreseen whether the error margin will reach zero at any point in time. The scope of families for ISC has been enlarged. The 5% in EU and 30% in the US may not be comparable as there are also tests at Type-Approval in the EU and not in the US. There is also a risk analysis to be completed ahead of vehicle selection for market surveillance.

MEP Eickhout (NL, Greens) asked who will be responsible for validating RDE data, how many accredited labs exist in the EU and noted that guidelines on defeat devices are welcome as binding law, but as the January 2017 version was considered incomplete, he asked whether any change had been included. He also asked whether RDE boundary conditions are wide enough to cover most driving conditions and whether this is being discussed. Ms Szychowska replied that a Forum (maybe of TAAs) is being considered for RDE data validation but it is too early to answer. Accreditation of national technical services is being institutionalized. Independent labs can also be accredited but no list can be shared at this point. Further details will be shared whenever available. The part of the guidance on detection of defeat devices and NOx emissions control will be binding. Standard ISC is not about surprise tests but market surveillance activities can and will actually include surprise tests. Finally, the EC is not considering modifying RDE boundary conditions.

The ENVI committee meeting can be watched at http://web.ep.streamovations.be/index.php/event/stream/171121-1430-committee-envi.

First EU Clean Air Forum

On 16-17 November 2017, the European Commission organized the first EU Clean Air Forum. The event was hosted by the Paris city hall.

The Clean Air Forum provided a basis for structured dialogues, exchange of knowledge and good practices, and enhance capacity of relevant stakeholders to improve air quality in Europe. It aimed to reflect on the development of policies, projects and programmes in the context of air pollution and air quality, and facilitate the implementation of European, national and local air policies.

The Clean Air Forum focused on three themes: air quality in cities; agriculture and air quality; and clean air business opportunities.

In his introductory speech, the European Commissioner for Environment, Karmenu Vella, thanked the Mayor of Paris, Anne Hidalgo, for hosting the event. He added that Paris is a great place to hold the forum since under her leadership, the city has been at the forefront of the battle for defending citizens' right to clean air. Paris concentrates the challenges, he added. It shows how hard it is to deliver clean air, while meeting legitimate needs for heating and transport, when a significant proportion of the pollution originates elsewhere.

Maria Neira of the World Health Organization (WHO) stressed the urgency to tackle air quality and climate change.

Baden-Württemberg Transport Minister, Winfried Hermann, noted that the German 'car State' is under a transport transition with the possible introduction of a blue sticker to further restrict car access to Low Emission

Zones. The blue label would be attributed to Euro 3 and higher gasoline vehicles and to Euro 6 diesel cars that meet an NO_2 limit. There are new diesel engines that are clean, a complete diesel ban is not necessary, he added.

'Air quality is a challenge that needs to be addressed. Real-Driving Emissions requirement introduced in September of this year will drastically reduce emissions of diesel cars; they remain part of the solution for low emission mobility', commented the ACEA Secretary General Erik Jonnaert.

On the second day, the French State Secretary for Environment, Brune Poirson, said France was calling on the European Commission to come up with a Euro 7 standard that would include lower NOx emissions limits.

Electro-mobility was also highlighted as a key solution for the future but there is a need to consider life-cycle environmental impact of low-emission mobility options.

Wood-burning, emissions from agriculture, and health effects of pollution were also discussed.

Air Quality Atlas for Europe

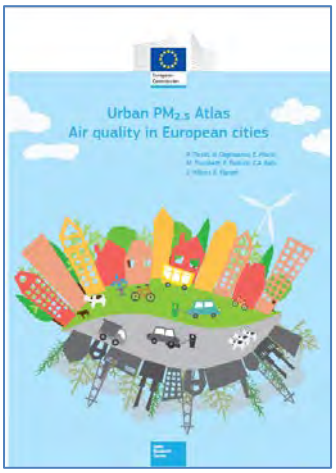
On 16 November 2017, the Joint Research Centre (JRC) of the European Commission released its Air Quality Atlas for Europe.

The report provides information on the type and location of the main emission sources of particulate matter ($PM_{2.5}$) in the air of the 150 European cities with a population density above 1500/km² and a population above 50 000.
The cities with the highest particulate pollution in Europe are located in Southern Poland, the Italian Po Valley and Bulgaria.

In 2015, the annual average and annual maximum $PM_{2.5}$ levels of Katowice, Krakow, Ostrava, Czestochowa, Plovdiv, Sofia, Lodz, Kielce, Poznan and Brescia were above the EU annual target value for $PM_{2.5}$ (25 µg/m³).

Nearly all 150 cities have their $PM_{2.5}$ levels above the WHO recommendation (10 µg/m³). According to data from 2015, only Stockholm, Glasgow, Tallinn, Helsinki, Goteborg, Genova and Clermont-Ferrand were below these levels.

Transport emissions represent an important contribution to the $PM_{2.5}$ levels in some of the European cities such as Madrid, Spain (39%), Luxembourg City, Luxembourg (30%) and Paris, France (29%) and are a key contributor in densely populated areas like Belgium and the Netherlands.



Although agricultural activities take place mostly outside cities, agricultural emissions contribute to fine particulate matter concentration in many European cities. Industry plays a key role in city pollution in some of the Eastern countries (Bulgaria, Romania and Greece) as well as in the western part of Germany. The impact of residential heating is more important in the eastern countries (Poland in particular) and in some cities in Italy.

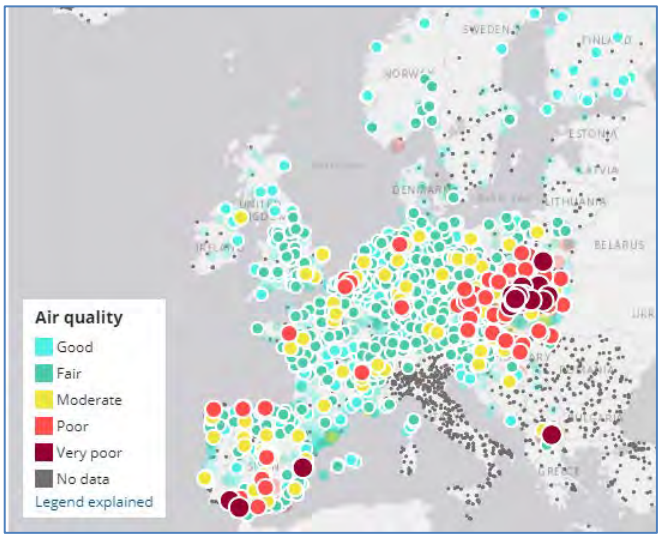
The Air Quality Atlas for Europe is at http://publications.jrc.ec.europa.eu/repository/bitstream/JRC108595/kjna28804enn.pdf.

European Commission and EEA launch Air Quality Index

On 16 November 2017, the European Commission and the European Environment Agency (EEA) launched a new online service, the European Air Quality Index, which provides information on the current air quality situation based on measurements from more than 2000 air quality monitoring stations across Europe.

The AQ Index consists of an interactive map that shows the local air quality situation at station level, based on five key pollutants: particulate matter ($PM_{2.5}$ and PM_{10}), ground-level ozone (O_3), nitrogen dioxide (NO_2) and sulfur dioxide (SO_2).

Users can zoom in or search for any town or region in Europe to check the overall air quality and measurements per key pollutant. The AQ Index shows an overall rating for each monitoring station, marked by a coloured dot on the map, corresponding to the worst rating for any of the five pollutants.



Hans Bruyninckx, EEA Executive Director, presented the AQ Index at the Clean Air Forum, organised by the European Commission, in Paris *(see above)*.

Karmenu Vella, EU Commissioner for the Environment, also welcomed the AQ Index, saying: "Air pollution is an invisible killer, so the Air Quality Index is needed to inform European citizens on the state of the air they breathe in their own neighbourhood. We are working with cities, regions, countries and industry to tackle the sources of that

pollution, which is a cocktail coming from factories, homes and fields, not only from transport. We must all work together to improve air quality."

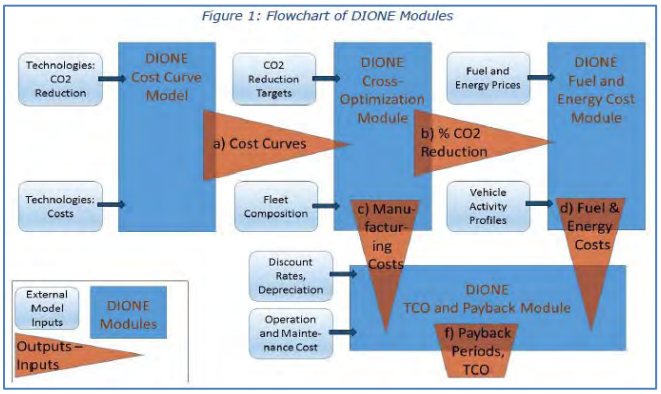
The European Air Quality Index is at www.eea.europa.eu/themes/air/air-quality-index.

JRC Report on Cost of reducing Light-Duty Vehicle CO_2 Emissions

On 8 November 2017, the Joint Research Centre (JRC) of the European Commission published a report on its DIONE model on Light-Duty Vehicle (LDV) CO_2 emission reduction cost curves and cost assessment.

To support the Commission proposal on post-2020 CO_2 targets for cars and vans, the JRC has used the DIONE family of software applications. Different computational modules have been developed specifically to support the assessment of policy options, in particular a cost curve model, a cross-optimization module, a fuel and energy cost module and a module on Total Cost of Ownership (TCO) and payback.

The methodology of the DIONE modules is described in the present report, and input data used as well as cost curves developed for the analysis are documented.



The JRC report is at https://publications.europa.eu/en/publication-detail/-/publication/911aef2b-c501-11e7-9b01-01aa75ed71a1/language-en/format-PDF.

EEA Report on EU Greenhouse Gas Emissions Trends and Projections

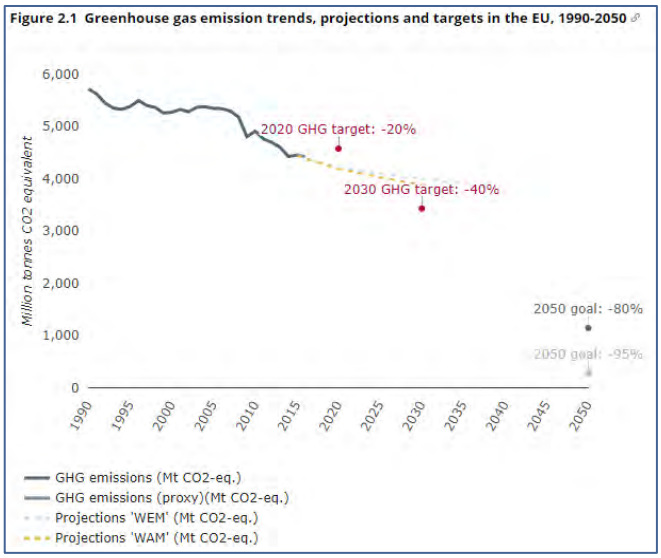
On 7 November 2017, the European Environment Agency (EEA) published the 'Trends and Projections in Europe' package.

It includes an assessment of progress towards the EU's climate targets, preliminary EU greenhouse gas (GHG) emissions for the year 2016, and a specific analysis of trends and projections in the EU Emissions Trading System (ETS).

According to preliminary estimates, GHG emissions for 2016 in the EU decreased by 0.7% from 2015. The slight drop corresponds to a 23% decrease in emissions between 1990 and 2016. The decrease in 2016 was mainly due to a rising share of renewable energy and a switch from coal to gas in the EU's fuel mix for power generation, despite an increase in energy consumption and growth in emissions in the residential and transport sectors.

In the non-ETS sectors such as transport, buildings, agriculture and waste, for which Member States have annual emissions targets, preliminary estimates indicate that EU-wide emissions increased by 0.9% in 2016. A higher demand for heating and a higher transport demand in 2016 help explain the increase. GHG emissions from these sectors are now 11% below 2005 levels.

While emissions from the EU as a whole will remain below the 2020 target, the situation differs between Member States. Twenty-one EU Member States expect to keep or reduce their emissions below their national targets by 2020. However, Austria, Belgium, Finland, Germany, Ireland, Luxembourg and Malta need to enhance their efforts immediately to meet their 2020 targets, the EEA said.



The EEA report is at www.eea.europa.eu/themes/climate/trends-and-projections-in-europe/trends-and-projections-in-europe-2017.

EEA Environmental Indicator Report

On 30 November 2017, the European Environment Agency (EEA) released the second edition of its Environmental Indicator report, which gives an overview of the EU's progress towards 29 environmental policy objectives.

These are relevant to the achievement of the three key priority objectives of the 7th Environment Action Programme (EAP): natural capital; resource-efficient, low-carbon economy; and people's health and well-being.

For priority objective 1: the EU's natural capital is not yet being protected, maintained and enhanced in line with the ambitions of the 7th EAP. The 2020 outlook remains bleak overall for the selected set of objectives related to this priority objective.

For priority objective 2: the 2020 outlook continues to show mixed progress. The EU is on track to meet climate and energy related targets. There have also been some resource efficiency improvements, while efforts so far to reduce the overall environmental impact of production and consumption (i.e. in the food, housing and mobility sectors) vary considerably in their success rates.

For priority objective 3: the 2020 outlook for this objective also continues to be mixed. On the one hand, there have been substantial reductions in emissions of air and water pollutants in recent decades. On the other, key concerns persist around air quality and noise pollution in urban areas and chronic exposure of the population to complex mixtures of chemicals in products.

Looking beyond 2020, the EU and its neighbours will need to accelerate progress in coming decades on climate change mitigation and adaptation, air pollution and other environmental problems in order to achieve the 7th EAP's 2050 vision of 'living well, within the limits of our planet'. Such accelerated efforts will, at the same time, contribute to meeting the many related EU commitments under the 2015 Paris Agreement on climate change and the United Nations' 2030 Agenda for Sustainable Development.

The EEA environmental indicator report is at www.eea.europa.eu/publications/environmental-indicator-report-2017.

UK updates Emissions Factors Toolkit

On 15 November 2017, the UK Department for Environment, Food and Rural Affairs (Defra) released version 8 of the Emissions Factors Toolkit.

The Microsoft Excel-based calculation tool can be used by local authorities to assess potential emission levels from road transport and understand the potential value of policy interventions on road traffic emissions such as Clean Air Zones (CAZs) or other measures that might form part of the UK national plan on compliance with EU air quality limit values.

The tool allows users to calculate road vehicle pollutant emission rates for NOx, Particulate Matter (PM_{10} and $PM_{2.5}$) and CO_2 for a specified year, road type, vehicle speed and vehicle fleet composition.

The Emissions Factors Toolkit is updated periodically due to updates to underlying data including vehicle fleet composition and emissions factors. The last update was from June 2016.

The UK Emissions Factors Toolkit is at https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html.

UK Consultation on Support to Businesses affected by Air Quality Plans

On 22 November 2017, the UK Department for Environment, Food & Rural Affairs (DEFRA) launched a public consultation on additional measures to support individuals and businesses affected by local NO_2 plans.

In July 2017, the UK government published the plan for tackling roadside NO_2 concentrations which sets out actions to bring NO_2 air pollution within regulatory limits in the shortest possible time.

The UK Autumn Budget now announced a £220 million Clean Air Fund, a funding pot which local authorities with the most challenging pollution problems can bid into. The Clean Air Fund will provide an opportunity for local authorities to implement additional measures tailored to their area which minimise the potential impact of local air quality plans.

The consultation includes measures that could be supported through that Clean Air Fund.

The UK consultation is open until 5 January 2018 and is at https://consult.defra.gov.uk/airquality/additional-measures.

London Ultra-Low Emissions Zone will start in 2019

On 3 November 2017, London Mayor Mr Sadiq Khan announced that the Ultra-Low Emission Zone (ULEZ) will operate from 8 April 2019 in central London, 17 months earlier than planned.

From April 2019, the ULEZ will replace the new Toxicity Charge (T-Charge) and operate in the same area, alongside the congestion charge but will work 24 hours a day, seven days a week.

Diesel vehicles that do not meet the Euro 6 standards and most petrol vehicles that do not meet the Euro 4 standard will have to take action or pay. There will be two ULEZ charge levels: £12.50 (€14) a day for cars, vans and motorbikes and £100 (€113) a day for lorries, buses and coaches. These charges will be in addition to the Congestion Charge (C-Charge), so the more polluting cars and vans would pay £24 per day and lorries would pay £111.50 during C-Charge hours. All revenue raised will be used by Transport for London to help maintain a greener transport fleet and reduce pollution across the transport network.

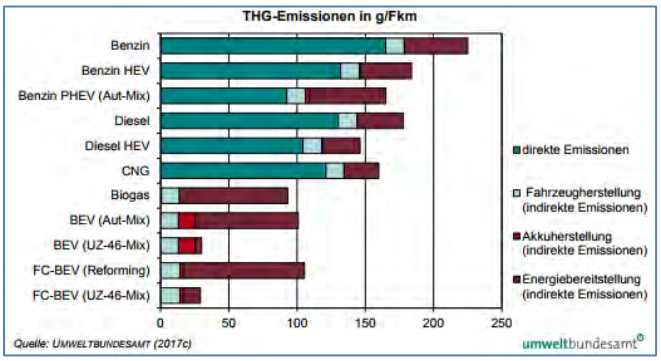
Road transport emissions in central London are expected to reduce by an additional 20% in 2019 as a result of the early introduction of the ULEZ.

More info on London's ULEZ is at https://tfl.gov.uk/modes/driving/ultra-low-emission-zone.

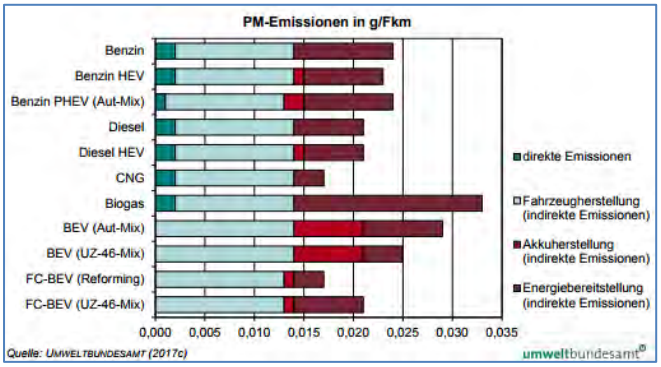
Austrian Life Cycle Assessment of Alternative Powertrains

On 28 November 2017, the Federal Environmental Agency (UBA) of Austria published an updated Life Cycle Assessment of alternative powertrains.

The report compares greenhouse gas emissions, air pollutant emissions (NOx and PM) and the energy requirements of various powertrains. The study published in 2016 is updated with a CNG (Compressed Natural Gas) vehicle, a biogas-powered car and fuel cell vehicles (FC-BEV). The environmental impacts that arise during the entire life cycle of the vehicles, from production through operation to disposal were taken into account. The manufacturing processes of batteries for electric cars was refined compared to the previous study.



Electric vehicles show the best performance for greenhouse gas and NOx emissions; when powered by renewable electricity, EVs can save 80% of GHG emissions compared to a fossil fuel car. However PM emissions from the manufacture and operation of an electric vehicle may be slightly higher than a conventional car.

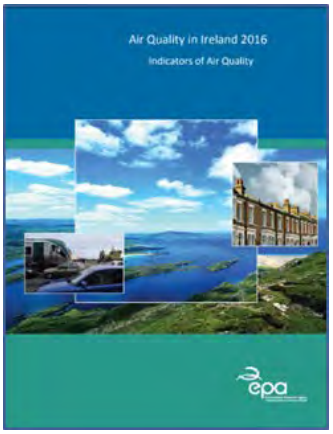


The Austrian UBA report on LCA (in German) is at www.umweltbundesamt.at/fileadmin/site/publikationen/DP152.pdf.

Report on Air Quality in Ireland

On 6 November 2017, the Environmental Protection Agency (EPA) of Ireland published a report on air quality in Ireland in 2016.

During 2016, ambient air was monitored at 30 stations in Ireland. Data collected from these stations was assessed against legislative and target values for the protection of health and vegetation/ecosystems. Concentrations observed were also compared to the World Health Organisation (WHO) air quality guideline values.



No levels above the EU limit value were recorded at any of the ambient air quality network monitoring sites in Ireland in 2016.

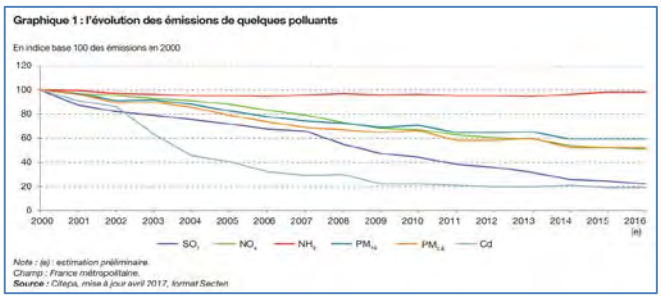
WHO guideline values were exceeded at a number of monitoring sites for particulate matter (PM_{10} and $PM_{2.5}$), ozone, SO_2 and NO_2: the PM_{10} 24-hr guideline was exceeded at 11 monitoring sites; the $PM_{2.5}$ 24-hr guideline was exceeded at 9 monitoring sites and the annual guideline at 2 monitoring sites. The ozone guideline was exceeded at 7 monitoring sites. The SO_2 24-hr guideline was exceeded at 2 monitoring sites; the NO_2 1-hr guideline at 1 monitoring site.

The Irish EPA Report is at www.epa.ie/pubs/reports/air/quality/Air%20Quality%20In%20Ireland%202016.pdf.

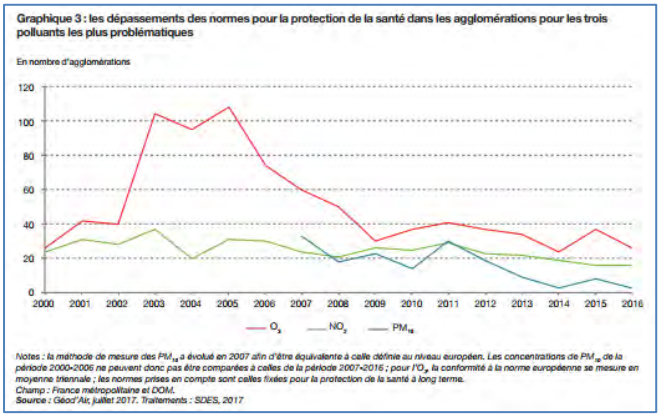
Report on Air Quality in France

On 31 October 2017, the Ministry of Environmental Transition in France published the 2016 report on national air quality.

The report highlights a positive trend where pollutant emissions generally decreased between 2000 and 2016. Background annual SO_2 mean concentrations have reduced by about 80%, while those of NO_2 and PM_{10} have reduced by about 30%. On the other hand, average summer concentrations of ozone (O_3) which is strongly related to weather conditions and long-range transboundary pollution, have not evolved significantly.



The report also shows that the number of cities where air quality limits are breached have reduced. Air quality infringements remain in particular in some highly populated areas. In 2016, limit exceedances are for three pollutants (NO_2, PM_{10} and O_3) like in many other EU Member States and occur mainly in the East of France, the Paris region and Martinique.



The report (in French) is at www.statistiques.developpement-durable.gouv.fr/fileadmin/documents/Produits_editoriaux/Publications/Datalab/2017/Datalab-26-bilan-de-la-qualite-de-l-air-en-france-en-2016-oct2017.pdf.

Dutch Consumers and Markets Authority fines Volkswagen

On 28 November 2017, the Netherlands Authority for Consumers and Markets (ACM) established unfair commercial practices by Volkswagen and imposed a fine of €450 000 on the car manufacturer.

ACM has established that Volkswagen misled consumers, in the period of 2009 to 2015, in the sale of its diesel cars with type EA 189 engines. Volkswagen advertised these cars, under the brands Volkswagen, Audi, Skoda and Seat, as environmentally friendly, while the results of emission tests had been manipulated by illegal software, ACM said.

Volkswagen can file an appeal against ACM's decision.

ASIA PACIFIC

India advances Launch of Euro 6 Fuels in New Delhi

On 15 November 2017, the *Economic Times* reported on the announcement by the Indian Oil Ministry that Euro 6 fuels will have to be rolled out in Delhi from April 2018.

India currently uses Euro 4 fuels and decided last year to move to the Euro 6 level from April 2020, leapfrogging over Euro 5 norms. The Euro 6 norms require gasoline and diesel fuels to have a sulfur content of 10 parts per million (ppm) down from 50 ppm in the Euro 4 fuels currently in use.

India will now advance the rollout of cleaner Euro 6 fuels in Delhi by two years to reduce high pollution levels in the capital city. Vehicular emissions as well as illegal crop burning in the farm states surrounding New Delhi have caused air quality to deteriorate dramatically, prompting calls for tough action.

The Oil Ministry has also asked oil companies if they can introduce Euro 6 fuels for the national capital region of Delhi, involving all its suburbs, by 2019.

The federal government is expected to issue a formal notification for advancing the roll-out to 2018.

Vehicles at New Delhi's Airport to Operate on CNG

In November 2017, India's National Green Tribunal directed that all coaches, buses and other vehicles operating within the airport zone of New Delhi's Indira Gandhi International Airport should operate using Compressed Natural Gas (CNG).

The Court has ruled that these CNG-operated vehicles must comply with the prescribed emission standards. Furthermore, it said that all the non-CNG buses/coaches or other vehicles being used at the airport, should be converted to CNG within six months.

Sri Lanka moves to Euro 4 in January 2018

On 10 November 2017, the Finance Minister of Sri Lanka announced that the country will adopt tougher vehicle emission standards early next year.

From January 2018, Sri Lanka will follow the Euro 4 emissions standard. The new norms will have a huge impact on the import of tuk-tuks – a favorite mode of transport in Sri Lanka, with 1.5 million already in the country. Almost all come from India and are considered major polluters.

The Government had said in October 2017 that it planned to restrict imports of the ubiquitous three-wheel taxis in a bid to reduce road accidents and congestion.

The announcement also comes as Sri Lanka moves to phase out fossil fuel vehicles by 2040, replacing all state-owned vehicles with electric or hybrid models by 2025. The Government plans to slash import taxes on three-wheelers that are electric-powered to help owners replace the current gasoline fleet. The Government will also arrange cheap credit for electric taxis and buses.

Nepal to implement a Regular Vehicle Emissions Testing Programme

On 28 November 2017, the Government of Nepal decided to have the Department of Transport Management to buy 40 vehicle emissions testing devices as part of the its plan to control air pollution level in major city areas including the Kathmandu Valley.

It was also decided to revise emissions standard, conduct regular emission test of vehicles and issue green stickers to vehicles that pass the test, among others, said a statement issued by the Office of the Prime Minister and Council of Ministers.

Emission tests of vehicles owned by various Government agencies were conducted in November 2017. Out of 30 vehicles that underwent the emission test on the Singha Durbar premises, most met the emission standards. While all gasoline vehicles passed the test, two diesel vehicles failed to meet the emission standards. According to the

existing emission standards, gasoline vehicles manufactured before and after 1980 should not emit carbon monoxide (CO) more than 4.5% and 3.5%, respectively, in its total smoke density. For older and newer diesel vehicles, tailpipe emissions should not exceed more than 75% and 65% Hartridge Smoke Units (HSU) respectively.

South Korea fines BMW, Mercedes and Porsche for violating Emissions Rules

On 9 November 2017, the Environment Minister of South Korea announced plans to impose a combined fine of 70.3 billion won (€54 million) on automakers BMW, Mercedes-Benz and Porsche citing violation of emission rules.

BMW will be fined 60.8 billion won (€47 million) for "falsifying" documents on emission test results and not obtaining approval for changes in emission control components before their cars were sold. Mercedes-Benz and Porsche will be fined about 7.8 billion won (€6 million) and 1.7 billion won (€1.3 million) respectively, for not obtaining approval for changes in emission control components before cars were sold. Certificates of fuel efficiency were to be cancelled by mid-November 2017 and sales stopped for 28 BMW models, the Environment ministry said. This measure will not affect cars that have already been sold, it added.

AFRICA

Additional African Countries move to Low Sulfur Fuels

From 1 November 2017, all imported fuel to Mozambique, Malawi and Zimbabwe have to meet low sulfur fuel standards. These countries join Ghana that also switched to low sulfur fuels in August 2017.

Gasoline and diesel fuels have now to conform to a maximum sulfur content of 50 parts per million (ppm).

Zimbabwe is hoping to fully embrace 50 ppm sulfur fuels by March 2018. Zimbabwe's Energy Regulatory Authority said that the country has adequate local reserves that can last till the March 2018 deadline for selling diesel fuel with 500 ppm sulfur limits.

This brings to 11 the number of countries in Africa that have moved to cleaner, 50 ppm maximum sulfur fuels. These countries are Morocco, Mauritius, Kenya, Uganda, Tanzania, Rwanda, Burundi, Ghana, Mozambique, Malawi and Zimbabwe.

Morocco is actually the first country in Africa to achieve ultra-low sulfur fuels (10 ppm maximum).

GENERAL

ACEA Report on Vehicles In-Use in Europe

On 2 November 2017, the European Automobile Manufacturers' Association (ACEA) published a report on vehicles in-use in Europe.

The report provides an extensive overview of the European motor vehicle fleet in 2017. Per country, it shows the number of vehicles in use for each segment – covering passenger cars, light commercial vehicles, medium and heavy commercial vehicles, as well as buses – and how those numbers have developed over recent years.

The report also provides statistics per vehicle segment for each country, such as average age, as well as the year of first registration; fuel type; and number of vehicles per 1000 inhabitants. In addition, the report looks at the number of cars per household in various countries, their average ownership period, the share of second-hand cars, as well as the average distance travelled (both for petrol and diesel cars).

The ACEA report highlights for instance that the EU passenger car fleet grew by 4.5% over the last five years; the number of vehicles on the road went from 241 to 252 million; there are over 6 million trucks on the EU's roads – with almost 1 million trucks, Poland has the largest fleet in the EU and Greek trucks are the oldest, with an average age of 18.7 years; cars are on average 10.7 years old in the EU – Poland, Latvia and Lithuania have the oldest fleets, while the youngest cars can be found in Luxembourg and Belgium; the average age of vans in the EU is 10.7 years.

Despite an increase in registrations in recent years, alternatively-powered passenger cars make up only 3% of the total EU car fleet. Diesel-powered light commercial vehicles are dominant in all EU countries except for Greece: 88% of the EU van fleet runs on diesel. Nearly all trucks (95.5%) in the EU run on diesel.

The ACEA report is at www.acea.be/uploads/statistic_documents/ACEA_Report_Vehicles_in_use-Europe_2017.pdf.

EUCAR 2018 Project Book

On 21 November 2017, the European Council for Automotive Research & Development (EUCAR) published the 2018 edition of its project book.

The EUCAR project book contains an overview of all the current research and innovation (R&I) projects in their priority fields for 'Safe and integrated mobility', 'Sustainable propulsion', 'Affordability and competitiveness' and 'Commercial vehicles'.

The EUCAR strategy on sustainable propulsion is to develop collaborative automotive R&I towards propulsion systems which are clean and energy-efficient over the full life cycle, with cost-effective technologies while maintaining customer priorities.

For example, the THOMSON project is evaluating mild hybrid cost effective solutions for a fast market penetration through the development of two different 48V architectures on two different engine families: a mid-size 1.6 l diesel engine and a small downsized spark ignited CNG engine with direct injection system.

The HDGAS project on Heavy Duty gas engines integrated into vehicles aims to develop, demonstrate and optimize advanced powertrain concepts for dual-fuel and for pure natural gas operation engines, perform integration thereof into heavy-duty vehicles and confirm achievement of Euro VI emissions standards, in-use compliance under real-world driving conditions and CO_2 or greenhouse gas targets currently under definition.

The REWARD project on real world advanced technologies for diesel engines aims to reduce pollutant emissions of diesel-powered class B, C, D and E passenger cars below the Euro 6 limits under Real Driving conditions and to improve their fuel efficiency.

The PAREGEN project aims to demonstrate a new generation of Gasoline Direct Injection (GDI)-engined vehicles, achieving a 15% reduction in CO_2 emissions and RDE-compliance with the Particle Number (PN) measured to a 10 nm threshold, through optimal combination of advanced engine and robust aftertreatment technologies.

The UPGRADE project aims to support the transition to a highly efficient, cleaner and affordable powertrain technology systems, based on spark-ignited GDI approach suitable for future light-duty applications. The project also includes a deep analysis of the phenomenon of nanoparticles formation and the study and development of a new Gasoline Particulate Filter (GPF) technology. The new engine platforms developed will allow a wider use of advanced biofuels and other alternative fuels like Compressed Natural Gas (CNG) and Liquefied Petroleum Gas (LPG).

The DIEPER project develops advanced diesel engine technologies for passenger cars and Light Commercial Vehicles (LCV). It also contributes to the framework of sub-23 nm particles emissions with new technology for the reduction of sub-23 nm particles from diesel engines.

Also, preparation of the 5th version of the JEC Well-to-Wheels (WTW) analysis of future automotive fuels and powertrains in the European context is on-going between EUCAR, Concawe and the JRC.

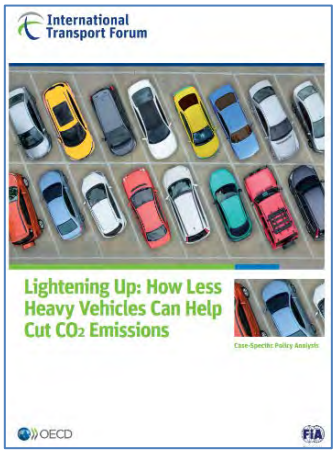
The EUCAR 2018 Project Book is at www.eucar.be/wp-content/uploads/2017/11/PROJECTBOOK_2018.pdf.

OECD Report on Lightening up Vehicles to cut CO_2 Emissions

On 3 November 2017, the International Transport Forum (ITF) of the Organisation for Economic Co-operation and Development (OECD) published a report titled 'Lightening up: how less heavy vehicles can help cut CO_2 emissions'.

The report examines how lowering vehicle mass can reduce CO_2 emissions from road transport. The average mass of new passenger cars in the EU has increased by around 40% over the past four decades. In 2015, a vehicle weighed on average 1400 kg, compared to just under 1000 kg in 1975.

Based on different scenarios, the study shows that mass reduction across all vehicle technologies has potential to reduce the gap between such ambitions and the current trend and would financially benefit the vehicle user.



In the baseline scenario, tailpipe CO_2 emissions from light-duty vehicles in 2050 are 21% lower than in 1990 levels. In the vehicle mass reduction scenario, a gradual reduction of vehicle mass down to 1000 kg for new passenger cars and 1100 kg for new light-commercial vehicles result in a near doubling of the

CO_2 reduction seen in the baseline scenario: CO_2 emissions fall by 39% or 210 megatonnes by 2050 compared to 1990 levels. Around 85% of these reductions come from passenger cars. These are significant reductions, yet they are not sufficient in themselves for reaching the EU target of a 60% reduction in transport CO_2 emissions by 2050 compared to 1990 levels. One option for closing this gap would be to increase in the share of zero-emission passenger cars in new vehicle sales from 27% in the baseline scenario to 64% by 2050, and from 40% to 68% for light-commercial vehicles.

For consumers, buying lighter-weight passenger cars is beneficial in financial as well as environmental terms, as savings in emissions and for fuel outweigh the increased cost of purchasing lighter and more fuel-efficient vehicles. Looking at changes in fuelling and purchase costs alone, consumers save €213 per tonne of CO_2 not emitted. The picture is less favourable for light-commercial vehicles because reducing vehicle mass is more costly and purchasing them therefore more expensive. Here, owners pay €977 for each tonne of CO_2 saved and the monetised environmental benefits do not outweigh the increased costs for the consumer.

The OECD report is at www.itf-oecd.org/sites/default/files/docs/less-heavy-vehicles-cut-co2-emissions.pdf.

ICCT Car CO_2 Report 'From Lab to Road'

On 5 November 2017, the International Council on Clean Transportation (ICCT) published the 2017 update of the 'From Laboratory to Road' series monitoring on-road and official CO_2 emission values from cars.

This fifth update of the report adds another year of data (2016), one new country (Belgium), one new data source (Cleaner Car Contracts Belgium), and more than 100 000 vehicles to the analysis.

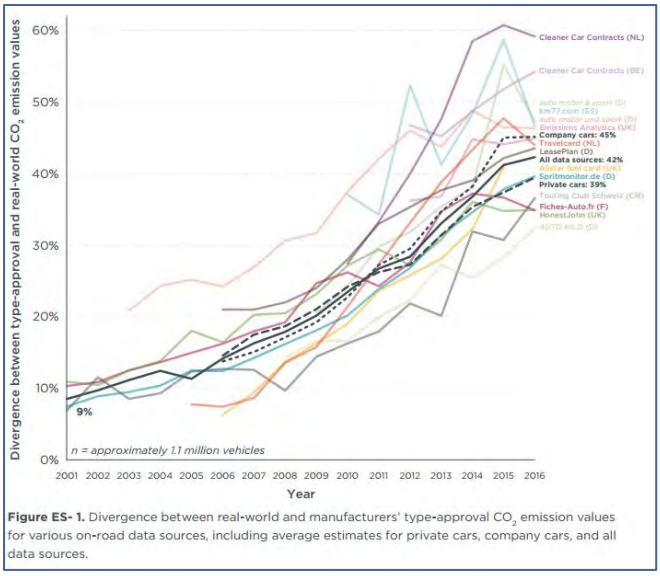


Figure ES- 1. Divergence between real-world and manufacturers' type-approval CO_2 emission values for various on-road data sources, including average estimates for private cars, company cars, and all data sources.

Data on approximately 1.1 million vehicles from 14 data sources and eight countries indicate that the gap between official type-approval and real-world CO_2 emission values of new European passenger cars increased from approximately 9% in 2001 to 42% in 2016.

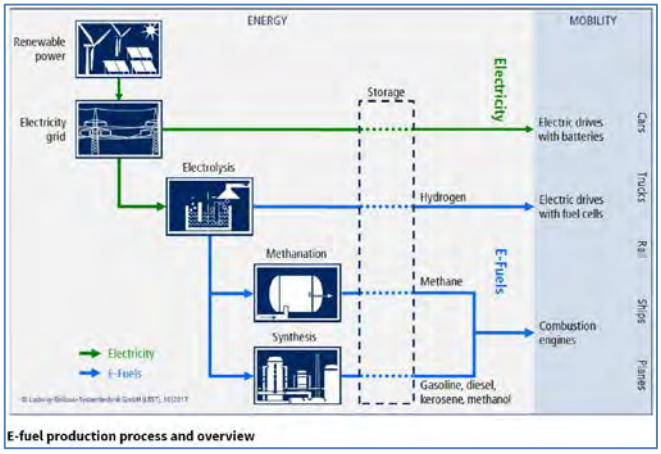
The ICCT report on the CO_2 gap is at http://theicct.org/sites/default/files/publications/Lab-to-road-2017_ICCT-white%20paper_06112017_vF.pdf.

VDA Study on E-Fuels for Low-Emission Transport in the EU

On 8 November 2017, the German Association of the Automotive Industry (VDA) published a new study conducted by the German Energy Agency (dena) and Ludwig-Bölkow-Systemtechnik (LBST) and titled "E-Fuels – The potential of electricity-based fuels for low emission transport in the EU".

The report analyses the future energy demand of the European transport market, along with the necessary build-up of renewable energy capacities and the related investments needed to achieve an 80-95% reduction in greenhouse gases, including CO_2 but also CH_4 and N_2O.

The main topics and questions of the study are: How can e-fuels help the transport sector to meet the EU climate targets? To what extent do renewable energy capacities need to be increased in order to meet energy demand in the transport sector? What is the amount of cumulated investments needed for energy and fuel supply by 2050?



E-fuel production process and overview

E-fuels have a high energy density and can therefore be transported conveniently over long distances and kept in large scale stationary storage over extended periods, allowing them to compensate even seasonal supply fluctuations and thus contribute to stabilizing the energy supply. The entire petrol / diesel / kerosene / gas infrastructure (pipelines, gas stations) can continue to be used. E-fuels can be used by the existing stock of passenger and utility vehicles.

However, the overall energy efficiency of electricity use in battery electric vehicles is 4-6 times, and via hydrogen in fuel cell vehicles about 2 times higher than e-fuels in combustion engines, including grid integration.

The study shows that e-fuels are necessary to meet the EU climate targets within the transport sector. Even in a

battery electric drive dominated scenario, the final energy demand of all transport modes in the EU will be met with more than 70% of e-fuels in 2050. The majority of these e-fuels will be used for aviation, shipping and freight transport.

The technological potential in Europe for renewable electricity generation is sufficient to cover the future demand of transport energy and e-fuels demand. However, a significant increase in electricity generation from renewable energies will be necessary for that. The estimated demand of renewable electricity for the entire transport sector in 2050 is ten times bigger than the current annual renewable electricity generation in the EU. Over 80% of this future demand is caused by the production of e-fuels.

At the moment, the costs of e-fuels are high, up to 4.50€/l diesel equivalent. Target costs of approximately 1€/l diesel equivalent appear possible with imports from regions with very good solar and wind power conditions. The quoted target costs include CO_2 extraction from ambient air. Nevertheless, future fuel cost are expected to also increase for all other clean transport variants based on the high share of renewable energy required, leading to a reduction of the clean fuels cost difference when comparing combustion engines and electric powertrains.

All scenarios require large investments into renewable power generation and in production plants for e-fuels. In the electric drive dominated scenario, the cumulated investments within the entire European transport sector between 2015 and 2050 is 15-30% lower than in the scenario with less electric drives (vehicle costs not considered). Assuming the full import of gaseous and liquid e-fuels (without hydrogen) from regions like North-Africa with favourable e-fuels conditions, the difference in investment between the scenarios is less than 10%.

To achieve the European climate protection target by 2030 for the transport sector, e-fuels production capacity build-up needs to be started today. Devising a corresponding e-fuels roadmap at national, EU, and international level outlining feasible e-fuels ramp-up paths is essential to ensure that the required volumes are available in time for 2030 and on the road to 2050.

The VDA study is at www.vda.de/en/services/Publications/%C2%ABe-fuels%C2%BB-study---the-potential-of-electricity-based-fuels-for-low-emission-transport-in-the-eu.html.

ICCT Global Assessment of Compliance and Enforcement Programmes

On 14 November 2017, the International Council on Clean Transportation (ICCT) published a global baseline assessment of compliance and enforcement (C&E) programmes for vehicle emissions and energy efficiency.

This study takes stock of C&E practices pertaining to emissions and efficiency regulations in key vehicle markets. It assesses C&E activities against a range of criteria, including legislative framework and resources, testing campaigns conducted, transparency, and vision for development. It covers 14 vehicle markets that combined accounted for 87% of global vehicle sales in 2015.

The study concludes that not all regulatory agencies have sufficient legal authority to enforce compliance. Budget and resource constraints and uncertainty frequently hamper C&E programmes. The most successful C&E programmes test vehicles at a number of different stages of their useful life and put the testing burden on manufacturers.

Penalties for non-compliance vary significantly across regions. Many C&E programmes lack transparency, making public monitoring and oversight difficult or impossible and undermining public confidence. Finally, C&E programmes tend to focus more on compliance with pollutant emissions standards than on greenhouse gas emissions and fuel consumption.

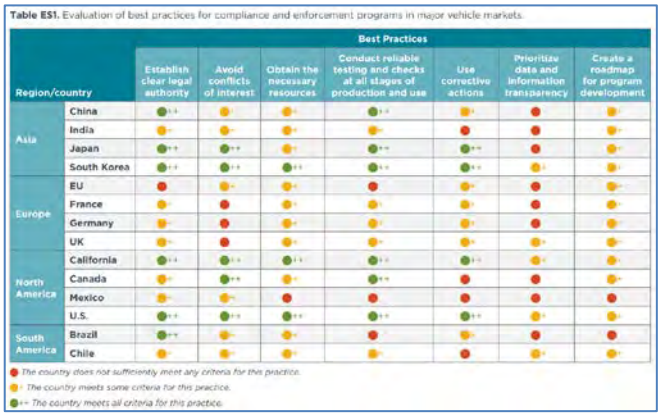


Table ES1. Evaluation of best practices for compliance and enforcement programs in major vehicle markets.

Region/country		Best Practices: Establish clear legal authority	Avoid conflicts of interest	Obtain the necessary resources	Conduct reliable testing and checks at all stages of production and use	Use corrective actions	Prioritize data and information transparency	Create a roadmap for program development
Asia	China	●++	●-	●-	●++	●+	●	●-
	India	●-	●-	●-	●-	●	●	●-
	Japan	●++	●++	●+	●++	●++	●	●+
	South Korea	●++	●++	●++	●++	●++	●+	●+
Europe	EU	●	●-	●-	●	●-	●	●-
	France	●-	●	●-	●-	●-	●	●-
	Germany	●-	●	●-	●-	●-	●	●-
	UK	●-	●	●-	●-	●-	●-	●-
North America	California	●++	●++	●++	●++	●++	●+	●+
	Canada	●-	●++	●-	●++	●	●	●-
	Mexico	●-	●-	●	●	●	●	●
	U.S.	●++	●++	●++	●++	●++	●+	●+
South America	Brazil	●++	●-	●-	●	●-	●	●
	Chile	●-	●-	●-	●-	●	●+	●-

● The country does not sufficiently meet any criteria for this practice.
●+ The country meets some criteria for this practice.
●++ The country meets all criteria for this practice.

The ICCT report on compliance and enforcement programmes is at www.theicct.org/sites/default/files/publications/PV-C%26E-global-baseline-assessment_ICCT-report_14112017_vF.pdf.

Concawe Market Fuel Survey 2015-2016

On 30 November 2017, the European refiners association Concawe released its market fuel survey for 2015-2016.

Concawe conducted a market fuel survey on petrol and diesel qualities, taking samples from seventeen European countries. A total of 244 samples (100 petrol and 144 diesel) were sampled – petrol samples were collected in the summer of 2015 and the diesels were sampled in the winter of 2016.

The main conclusion from this 2015 survey is that fuels in Europe appear to be meeting the fuel standards for the specification tests conducted and quality appears to be on the whole consistently good. Compared to previous Concawe surveys from 2008, 2010 and 2012, there were no significant changes in the trends observed for either petrol or diesel.

Observations on the 2015-2016 fuels survey include:

- Petrol: metals content were at low levels and averages were generally less than 100 ppb although there were

some individual results which were higher; ETBE (Ethyl Tert-Butyl Ether) and ethanol were the most commonly used oxygenates followed by smaller amounts of MTBE (Methyl Tert-Butyl Ether) and TAME (Tert-Amyl Methyl Ether) in the samples tested; average ETBE content was 1.7%v/v ranging from 0 to around 15%v/v; average ethanol content was 4.3%v/v ranging from 0 to around 10%v/v; high boiling fractions were on average below 1% and E150 was above the minimum limit of 75% in all cases; FAME (Fatty Acid Methyl Esters) contamination was not generally present in these samples.

- Diesel: metals content was measured at very low levels and averages were generally less than 30 ppb although there were some individual results which were higher; PAH (Polycyclic Aromatic Hydrocarbons) content is much lower than the 8%m/m specification value at 3%m/m on average and ranged from 0.3%m/m to 5.6%m/m; average FAME content was 3.7%v/v but ranged from 0 to 7.5%v/v; average EHN content was 557 mg/kg and ranged from 0 to around 1800 mg/kg; the oxidation stability requirement of the EN 590 standard was met in the vast majority of cases and there were no indications of filter blocking tendency in any of the samples tested.

The Concawe report is at www.concawe.eu/wp-content/uploads/2017/11/Rpt_17-10-2.pdf.

ICCT European Vehicle Market Statistics 2017/2018

On 28 November 2017, the International Council on Clean Transportation (ICCT) published the 2017/2018 edition of its European Vehicle Market Statistics pocketbook.

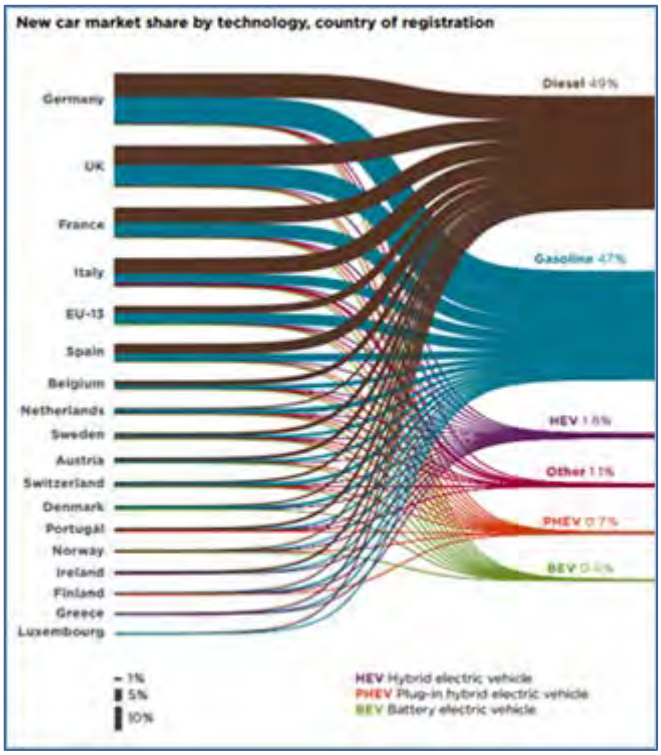
The pocketbook offers a statistical portrait of passenger car, light commercial vehicle, and heavy-duty vehicle fleets in the EU since 2001, with emphasis on vehicle technologies, fuel consumption, and emissions of greenhouse gases and other air pollutants.

New car registrations increased to 14.6 million, which is nearly the same level as in the years 2001-2007. At their low point in 2011, new cars sales totalled only 13.1 million.

Official average new car CO_2 emissions fell to 118 g/km in 2016. In fuel consumption terms, that equates to about 5 litres/100 km.

Sales of new diesel cars have declined significantly. In 2011-2012, about 55% of newly registered cars in the EU were powered by diesel fuel. In 2016 the overall diesel market share was 49%, though diesel shares vary by Member State.

The EU market share of hybrid electric vehicles rose slightly to 1.8% of all new car sales in 2016. Considerable variation exists among Member States, however; for example, in Spain, hybrid market share increased from 1.8% in 2015 to 2.7% in 2016.



Average engine power increased to 95 kW in 2016, nearly 30% more than 15 years before. At the same time, the average engine displacement has continued to decrease, and now is about 7% smaller than in 2001.

The ICCT pocketbook is at www.eupocketbook.theicct.org.

RESEARCH SUMMARY

Effects of Emissions and Pollution

Association between long-term exposure to air pollution and mortality in France: A 25-year follow-up study, Malek Bentayeb, et al.; *Archives des Maladies Professionnelles et de l'Environnement* (October 2017), Vol. 78, p. 471, doi: 10.1016/j.admp.2017.07.008.

DIDEM - An integrated model for comparative health damage costs calculation of air pollution, Marco Ravina, et al.; *Atmospheric Environment* (January 2018) vol. 173, pp. 81-95, doi: 10.1016/j.atmosenv.2017.11.010.

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FORTHCOMING CONFERENCES

Future of Transport 2017. Towards clean, connected and competitive Transport in Europe

6 December 2017, Brussels, Belgium
www.future-transport.eu

The conference will develop the debate around transportation in Europe by focusing on the innovation emerging as a result of technical and digital progress.

Internal Combustion Engines 2017

6-7 December 2017, Birmingham, UK
http://events.imeche.org/ViewEvent?code=con6442#section6

Key sessions at the conference will cover diesel engines and their fuels, powertrain design, gasoline engines, and vehicles and simulation.

21st Forum on Eco-Innovation – Air Quality

5-6 February 2018, Sofia, Bulgaria
http://ec.europa.eu/environment/ecoinnovation2018/1st_forum
The Forum will examine eco-innovative solutions for improving air quality. In particular, air pollution originating from energy use, transport and agriculture will be addressed. The issue of how to secure financing for eco-innovative solutions will also be discussed. This event is jointly organized by the European Commission's Directorate General for Environment and the Ministry of Environment and Water of the Republic of Bulgaria.

10th International AVL Exhaust Gas and Particulate Emissions Forum

20-21 February 2018, Ludwigsburg, Germany
www.avl.com/web/de/-/10th-international-avl-exhaust-gas-and-particulate-emissions-forum
AECC will give a presentation on Real-Driving Emissions from a Gasoline Plug-in Hybrid vehicle with and without a Gasoline Particulate Filter.

2nd Real-Driving Emissions Forum

6-7 March 2018, Amsterdam, Netherlands
www.bisgrp.com/portfolio/conferences/automotive/2nd-annual-real-driving-emissions-forum

11th International Conference on Air Quality – Science and Application

12-16 March 2018, Barcelona, Spain
www.airqualityconference.org
The conference brings together participants from the air quality, climate and health research and other stakeholder communities to discuss the latest research advances, new applications and highlight important implications for policy and users.

Integer Emissions Summit & AdBlue® Forum Asia Pacific 2018

14-15 March 2018, Tokyo, Japan
www.integer-research.com/conferences/ies-apac-2018

WCX18: SAE World Congress Experience

10-12 April 2018, Detroit, USA
www.wcx18.org

8th AVL Large Engines TechDays

11-12 April 2018, Graz, Austria
www.avl.com/-/8th-avl-large-engines-techdays
Electrification, New Fuels and Power Sources: Boom or Doom for Large Engines?

TRA 2018 – A Digital Era for Transport

16-19 April 2018, Vienna, Austria
www.traconference.eu
Key focus areas of TRA 2018 will be how digitalisation is transforming transport & mobility systems; decarbonisation & future growth – how to change our mobility system & remain competitive; and shaping the new mobility landscape – a vision for transport & mobility for Europe.

39th International Vienna Motor Symposium

26-27 April 2018, Vienna, Austria
https://wiener-motorensymposium.at
Outstanding lecturers from all over the world will present the latest findings in engine development and, amongst other topics, will report on new engines, fuel cells, hybrid technology, exhaust gas treatment and real driving emissions (RDE).

7th Freiburg Workshop 'Luftreinhaltung und Modelle'

15-16 May 2018, Freiburg, Germany
www.ivu-umwelt.de/front_content.php?idcat=3

SIA Powertrain 2018: the New Compression Engine for Passenger Cars & Commercial Vehicles

16-17 May 2018, Rouen, France
www.sia.fr/evenements/93-sia-powertrain-rouen-2018
The conference will support the automotive community in providing an overall picture of state-of-the-art technologies and by anticipating future development challenges. Reflecting the ongoing focus shift in transportation decarbonisation to a well-to-wheel basis, new topics will be introduced on alternative powertrain energy types (sustainable liquid and gaseous fuels) and fuel cells.

Integer Emissions Summit & AdBlue® Forum China 2018

5-7 June 2018, Beijing, China
www.integer-research.com/conferences/ies-china-2018

22nd ETH- Conference on Combustion Generated Nanoparticles

18-21 June 2018, Zurich, Switzerland
www.nanoparticles.ethz.ch
The conference serves as an interdisciplinary platform for expert discussions on all aspects of nanoparticles, freshly emitted from various sources, aged in ambient air, technical mitigation aspects, impact of particles on health, environment and climate and particle legislation.

7th International MinNOx Conference

19-20 June 2018, Berlin, Germany
www.iav.com/MinNOx
Topics of the conference include: exhaust emission legislation, MinNOx systems in diesel, gasoline and hybrid powertrains from passenger car to heavy-duty as well as off-highway applications; global optimization of engine and MinNOx systems to reduce both NOx and CO_2 emissions; innovative ideas and methods for the development, modelling or control of component and overall systems; emission control technologies; boundary conditions for operating MinNOx systems monitoring and diagnostics of MinNOx systems; and potential for cost reduction of future concepts.
Deadline for abstract: 19 January 2018

Integer Emissions Summit & AdBlue® Forum Europe 2018

26-28 June 2018, Brussels, Belgium
www.integer-research.com/conferences/integer-emissions-summit-adblue-forum-europe-2018/
The summit will cover emissions control for heavy-duty commercial vehicles, non-road mobile machinery, light-duty vehicles and passenger cars, and the European AdBlue® market.

37th FISITA World Automotive Congress: Disruptive Technologies for Affordable and Sustainable Mobility

2-5 October 2018, Chennai, India
www.fisita-congress.com
The congress topics include powertrain & emissions, fuels & lubricants, noise & vibration, vehicle dynamics, active and passive safety, electric & hybrid vehicles, autonomous & connected vehicles, manufacturing & materials, vehicle concepts, and sustainability.

2018 Aachen Colloquium Automobile and Engine Technology

8-10 October 2018, Aachen, Germany
www.aachener-kolloquium.de
The congress provides a wide range of technical presentations addressing current challenges of the vehicle and engine industry.

CAPoC11

29-31 October 2018, Brussels, Belgium
http://capoc.ulb.ac.be
The International Congress on Catalysis and Automotive Pollution Control will discuss applications and requirements of catalysis in automotive emission control such as catalyst and sorption technologies; particulate emission control for both diesel and gasoline engines; aftertreatment for gaseous HC, H_2 and renewable or reformulated fuel mixtures; emission control for natural-gas and dual-fuel engines; emission control for hybrid vehicles; off-cycles emissions and unregulated pollutants (e.g. greenhouse gases); materials for catalysts, washcoat and fuel-borne catalysts; modelling of aftertreatment systems and catalyst characterization; integrated emission control systems, on-board diagnostics; sustainable fuel technologies; and innovative technologies (new materials, recovery of precious metals).
Deadline for abstract: 15 February 2018

40th International Vienna Motor Symposium

16-17 May 2019, Vienna, Austria
https://wiener-motorensymposium.at