

NEWSLETTER

International Regulatory Developments

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AECC-IPA Euro 7 Technical Seminar and Driving Event

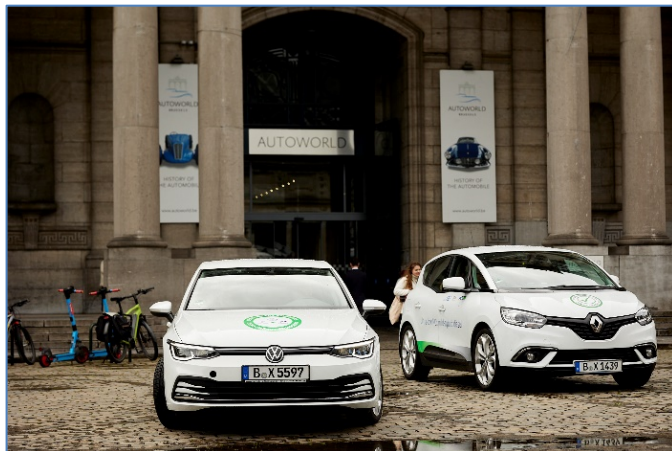
On 27 September 2022, AECC, the Association for Emissions Control by Catalyst, and IPA, the International Platinum Group Metals Association, organised a technical seminar on Euro 7 and an ultra-low emission test driving event at the Autoworld museum in Brussels.

The event was attended by representatives of the European Commission, European Parliament and Council. Member States' technical experts as well as UNECE representatives participated, along with representatives of the main Brussels-based trade associations as well as NGOs and academia.

The introductory remarks were given by Mr D. Bosteels, Executive Director, AECC, and Mr B. Oeyen, Head of Market Development, Anglo American Ltd, on behalf of IPA, as Ms Gabriele Randlshofer could not join the event.

AECC presented the latest data from the AECC-IPA light- and heavy-duty demonstrator vehicles as display models of the light-duty emission control systems were available at the AECC exhibition stand.

The AECC presentations were followed by a presentation from Dr P. Dilara, Clean Vehicles Team Leader, EC DG GROW, where the Euro 7 emission standards proposal development was introduced. The presentation showed publicly for the first time the policy options evaluated by the European Commission within the Euro 7 Impact Assessment.



Guests were able to speak with AECC members and staff about the emission control technologies included in the light-duty demonstrator vehicles as display models of the light-duty emission control systems were available at the AECC exhibition stand.

Details on the AECC-IPA Euro 7 event presentations and pictures can be found at aecc.eu/event/aecc-ipa-euro-7-technical-seminar-and-driving-event.

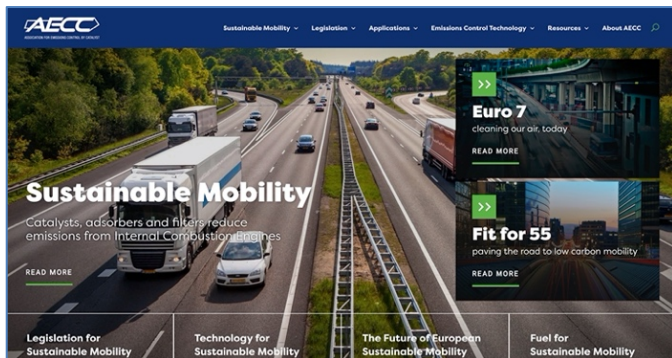
Updated AECC Website

On 7 September 2022, AECC updated its website. Visitors to the site will now be able to find our key messages on Euro 7 and on 'Fit for 55' in an even more accessible manner. AECC demonstration programmes now each have a landing page which includes its main results as well as relevant publications and presentation materials available.



The event showcased the three AECC-IPA demonstrator vehicles. Participants were given the opportunity to be driven around Brussels' European quarter in one of the demonstrator cars whilst directly witnessing ultra-low tailpipe emissions in real time. The vehicles were driven by IAV representatives, with participants in some of the driving slots also joined by AECC members or staff.

The demonstrator truck was displayed and FEV representatives were present at the vehicle to explain the emission control system implemented.



Other sections of interest for our industry, policymakers and other stakeholders have been updated as well.

The updated AECC website is at aecc.eu.

EUROPE

State of the European Union Speech

On 14 September 2022, the European Commission President Ms Ursula von der Leyen gave the annual State of the European Union (SotEU) speech.

The President said that the Commission will ease the collateral required by energy traders as part of energy future deals, which is causing severe problems with liquidity. She said she believed the electricity market was broken and “not fit for purpose anymore.” There will be a “comprehensive reform of the electricity market.”

Ms von der Leyen announced plans to curb reliance on Russia and China with a European Critical Raw Materials Act that will help the EU develop an industry for minerals used in electric vehicle batteries. The coming EU legislation will set out a way to subsidise production, processing and strategic storage reserves here in Europe aimed at safeguarding supply moving forward. She also proposed to create an EU Hydrogen Bank.

The full text of the SotEU speech is at ec.europa.eu/commission/presscorner/detail/en/SPEECH_22_5493.

Trialogues on Revised CO₂ Emission Standards for New Cars and Vans

On 8 September 2022, the European Parliament’s Environment (ENVI) Committee announced that technical meetings will be held between the EU institutions (Commission, Parliament and Council) in the coming weeks and months on the proposal revising EU rules on CO₂ emission performance standards for new cars. MEP Bas Eickhout (Greens/EFA, NL) reported back to the committee on the outcome of the first triilogue meeting held on 5 September 2022.

As both the European Parliament and the Council have finalised their position on the LD CO₂ proposal, informal negotiations with the aim of reaching a first reading agreement on the proposal are expected to begin in the coming months. The Czech Council Presidency is scheduled to debrief the Permanent Representatives Committee (COREPER) and the Council’s Working Party on the Environment on the outcome of the first triilogue on 7 and 9 September 2022, respectively. Any resulting compromise would need to be approved by the European Parliament and by the Council.

The ENVI committee web stream can be found at multimedia.europarl.europa.eu/en/webstreaming/envi-committee-meeting_20220908-0900-COMMITTEE-ENVI.

European Parliament Vote on Renewable Energy Directive

On 14 September 2022, MEPs voted to raise the share of renewables in the EU’s final energy consumption to 45% by 2030, under the revision of the Renewable Energy Directive (RED) – a target also backed by the European Commission under its “RepowerEU” package.

The legislation also defines sub-targets for sectors such as transport, buildings, and district heating and cooling. In the transport sector, deploying renewables should lead to a 16%

reduction in greenhouse gas emissions, through the use of higher shares of advanced biofuels and a more ambitious quota for renewable fuels of non-biological origin such as hydrogen.

The text was adopted with 418 votes in favour, 109 against and 111 abstentions.

Details of the vote are available at europarl.europa.eu/news/en/press-room/ep-backs-boost-for-renewables-use-and-energy-savings and the adopted text can be found at europarl.europa.eu/doceo/document/TA-9-2022-0317_EN.html.

European Commission Public Consultation on Critical Raw Materials

On 30 September 2022, the European Commission launched a public consultation on critical raw materials (CRMs) linked to the green and digital transition.

To achieve the green and digital transitions, the Commission says the EU must significantly increase and diversify its critical raw materials supply, strengthen circularity and support research and innovation.

The initiative will aim to reinforce EU monitoring capacities and strengthen both the EU value chain – through the identification of mineral resources and raw materials projects in the EU’s strategic interest, with strong environmental protection – and EU external policies on CRMs.

The consultation is open until 25 November and is at ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13597-European-Critical-Raw-Materials-Act_en.

Commission Publication of Environmental Implementation Review

On 8 September 2022, the European Commission published the third Environmental Implementation Review (EIR), a key reporting tool that supports environmental enforcement and raises awareness about the importance of implementing environmental rules. It says bridging the gap between what is decided at Union level and what is implemented on the ground is essential to ensure good environmental outcomes for citizens, and to maintain a level playing field for businesses while creating opportunities for economic development.

Commissioner for Environment, Oceans and Fisheries, Virginijus Sinkevičius, said that the review shows progress in some areas since the previous review but that the implementation gap is still getting wider, which makes us all more vulnerable to environmental pollution and related risks.

On the subject of air pollution, the Commission states that it is still a major health concern for Europeans. Member States need to fulfil air quality monitoring requirements in a systematic and consistent manner in order to better enforce clean air at national and EU level. Achieving compliance

requires strict measures, notably switching to sustainable mobility powered by renewables, introducing low-emission agricultural techniques, including for livestock, manure and fertiliser management.

The Commission’s press release is available to read at ec.europa.eu/commission/presscorner/detail/en/IP_22_5367.

European Mobility Week

From 16-22 September 2022, European Mobility Week was celebrated across Europe. Around 3 000 towns and cities from more than 40 countries were expected to participate in the campaign by organising awareness raising activities and hosting events that promote active, inclusive mobility. The week culminated in World Car-Free Day, which saw streets closed to motorised traffic and open to people.

Each year the campaign adopts a theme to showcase the different dimensions of sustainable mobility. In 2022, the theme ‘Better Connections’ encouraged towns and cities to foster synergies between people, places, packages - such as the ecological delivery of parcels - policy and planning.

More information can be found at mailchi.mp/a11c01d36ddf/press-release-european-commission-announces-sustainable-mobility-award-winners.

European Parliament Vote on Climate Action

On 15 September 2022, the European Parliament adopted a resolution on increasing the EU’s efforts to fight climate change by 469 votes in favour, 34 against and 44 abstentions. A plenary debate with Environment Commissioner Virginijus Sinkevičius and the Czech Presidency took place on 13 September.

MEPs voted for the EU to step up its climate mitigation work, to contain global warming to 1.5°C compared to pre-industrial levels, and its climate adaptation plans. They want the Commission to propose a comprehensive, ambitious and legally binding European climate adaptation framework, with particular emphasis on the EU’s most vulnerable regions. The EU should also continue to play an active role in defining a global goal for adaptation and in ensuring the international community meets its goal for international climate finance.

MEPs also called for the EU to increase its disaster response capacity and to adapt its food systems to make them more resilient.

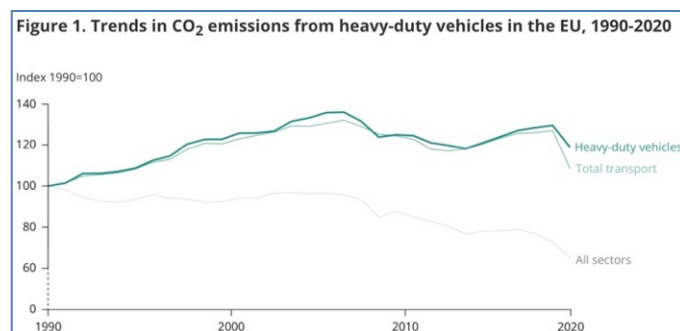
More details of the debate and vote are at europarl.europa.eu/news/en/press-room/meps-say-eu-must-urgently-strengthen-its-climate-action.

EEA Briefing on Greenhouse Gas Emissions from Heavy-Duty Vehicles

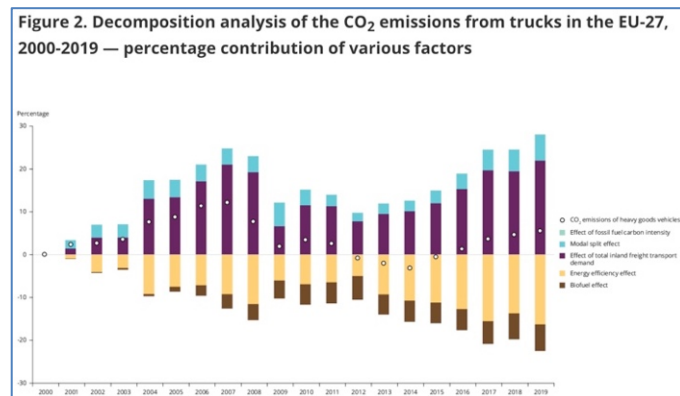
On 7 September 2022, the European Environment Agency (EEA) published a briefing titled ‘Reducing greenhouse gas emissions from heavy-duty vehicles in Europe’. This presents

comprehensive data and analysis on greenhouse gas emissions from trucks, buses, and coaches in European road transport.

According to the EEA briefing, greenhouse gas emissions from heavy-duty vehicles increased by about 29 % from 1990 to 2019. These vehicles are currently responsible for about a quarter of total road transport emissions in the EU. Moreover, emissions from heavy-duty vehicles have increased every year since 2014, except for the 2020 decline caused by the COVID-19 pandemic.



The EEA analysis shows that the efficiency gains that have been achieved in vehicles and transport operations have been outpaced by the growing demand for freight transport, ultimately leading to continued growth in emissions.



To reduce total emissions from heavy-duty vehicles, improvements in vehicle fuel efficiency need to continue, but further efforts are also necessary. Shifting freight transport from road to rail and passenger transport from cars to buses and coaches offers an important pathway to emissions reductions. Further, reducing the number of trips or their length are important measures to reduce overall emissions, the EEA briefing notes.

The EEA briefing can be found at eea.europa.eu/highlights/europes-growing-transport-demand-increases.

EEA Data on CO₂ Emissions from New Cars in Europe

On 26 September 2022, the European Environment Agency (EEA) published details of average carbon dioxide (CO₂) emissions from new cars registered in Europe in 2020.

Average CO₂ emissions of new cars dropped by 12% in 2020 compared to the year before, according to the EEA's final figures. The main reason for the sharp decrease of emissions was a surge in the share of electric vehicle registrations.

The share of electric vehicle registrations tripled from 3.5% in 2019 to 11.6% in 2020 (including 6.2% full electric vehicles and 5.4% plug-in hybrid electric vehicles). Despite the shrinking overall market for new cars due to the COVID-19 pandemic, the total number of new electric cars registered in 2020 increased to over 1 million.

About 1.4 million new vans were registered in Europe in 2020 with average emissions 1.9 % lower than in 2019. The share of electric vans increased from 1.4% in 2019 to 2.3% in 2020.

Full details of the emissions data can be found at eea.europa.eu/highlights/average-carbon-dioxide-emissions-from.

German Citizens' Case against Government for Right to Clean Air

On 26 September 2022, a group of German citizens announced that they are suing their government over a lack of progress in meeting World Health Organisation (WHO) recommendations on air quality levels presented in 2021.

The seven claimants represent Germany's four most polluted cities — Munich, Düsseldorf, Berlin, and Frankfurt am Main — measured by the pollutants nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}).

The case has been filed at the Federal Constitutional Court of Germany and claims legal basis per the German constitution, the European Convention on Human Rights, and the EU Charter of Fundamental Rights.

According to the statement, the claimants accept the government is not breaking national law but argue it is based on outdated science meaning citizens are breathing air five to six times more polluted than WHO standards.

A report on the legal action can be found at euractiv.com/section/health-consumers/news/german-citizens-sue-government-for-right-to-breathe-clean-air/.

NORTH AMERICA

CARB Proposed Amendments to In-Use Off-Road Diesel-Fuelled Fleets Rule

On 20 September 2022, the California Air Resources Board (CARB) issued Proposed Amendments to the In-Use Off-Road Diesel-Fuelled Fleets Regulation. This will reduce

emissions of criteria pollutants and toxics from off-road diesel vehicles operating in California.

The Proposed Amendments, as identified in the Proposed 2022 State Implementation Plan (SIP) Strategy, are critical measures needed to achieve further emissions reduction from the off-road sector to achieve California's clean air goals. The Proposed Amendments would reduce emissions by requiring that fleets phase-out operation of their oldest and highest-emitting off-road diesel vehicles, prohibiting the addition of high-emitting vehicles to a fleet, and requiring the use of R99 or R100 renewable diesel (RD99/100) in off-road diesel vehicles.

Major changes include phasing out the oldest and highest-emitting off-road engines (Tier 0, 1, and 2) from operation in California, and restricting the addition of vehicles with Tier 3 and 4i engines, which is an expansion of provisions of the Current Regulation that restrict the vehicle-engine Tier that can be added to a fleet. They also mandate the use of RD99/100 for all fleets, with some limited exceptions, provide voluntary compliance flexibility options for fleets that adopt zero-emission technology, and include additional requirements to increase enforceability, provide clarity, and provide additional flexibility for permanent low-use vehicles.

The deadline to submit comments is 7 November, or during the Public Hearing on 17 November.

Details of the Proposed Amendments are at arb.ca.gov/rulemaking/2022/off-road-diesel/.

ASIA-PACIFIC

Australian Electric Vehicle Strategy Consultation

On 28 September 2022, the Australian government launched a consultation on its proposed goals, objectives and actions for the National Electric Vehicle Strategy. It says this feedback will help shape a truly national Strategy to ensure Australians can access the best transport technologies and help meet emission reduction targets. The Strategy will aim to provide social, economic, business, health and environmental benefits to make sure Australia can capture opportunities and have an orderly transition to transport electrification.

The government wants to make electric vehicles (EVs) more affordable and to expand EV uptake and choice. Its other goals are to reduce emissions, save Australians money on fuel and increase local manufacturing.

It intends to do this by encouraging rapid increase in demand for EVs, increasing supply of affordable and accessible EVs to meet demand, and establishing the systems and infrastructure to enable rapid uptake of EVs.

The consultation closes on 31 October and is at storage.googleapis.com/converlens-au-industry/industry/NationalElectricVehicleStrategyConsultationPaper.pdf.

AFRICA

Euro 4/IV Implementation in East Africa Community States

On 1 July 2022, the East African Community states published a Gazette Notice which brought into effect the first edition of EAS 1047:2022 standards on Air Quality – Vehicular Exhaust Emission Limits.

The seven countries in the sub-region (Democratic Republic of the Congo, the United Republic of Tanzania, the Republics of Kenya, Burundi, Rwanda, South Sudan, and Uganda) have six months from the date of the notice to implement Euro 4/IV emission standards.

The sub-region has had clean low sulfur fuels since 2015, suitable for supporting the Euro 4/IV vehicle emission standards adopted. In addition, approximately 90% of vehicles registered are imported used and the standard would form the basis of pre-verification of conformity before vehicles are imported. The standards cover emissions for new, imported used, and in-use vehicles.

Further information is available to read at unep.org/events/workshop/east-africa-sub-region-becomes-second-sub-region-africa-adopt-euro-4iv-equivalent.

UNITED NATIONS

World Clean Air Day

7 September 2022 marked the 3rd annual International Day of Clean Air for blue skies. In its press release, the UN stated that air pollution does not recognise borders.

The UN's Climate & Clean Air Coalition (CCAC) pointed out that the United Nations General Assembly has passed a historic resolution declaring that everyone on the planet has a right to a healthy environment, including clean air, water, and a stable climate. By formally acknowledging the impact of climate change on human well-being, the resolution could allow citizens of many countries to challenge environmentally destructive policies under human rights legislation.

While not legally binding, the CCAC this news could prove to be very important in protecting the planet and its people, especially from air pollution, which kills 7 million people each year. Almost everyone on Earth – 99% of the world's population – breathes air that exceeds WHO air quality limits. Air pollution disproportionately harms women, children, the elderly, and the poor, and children who grow up in heavily polluted places develop irreversible health effects, like lower lung capacity, than those in cleaner areas.

CCAC goes on to say that short-lived climate pollutants, or SLCPs, are responsible for up to 45% of global warming today, contributing to rising sea levels and more frequent and extreme climatic events like droughts, fires, and storms. And climate change and air pollution increasingly threaten food

production and supply, making the challenge of ending hunger and malnutrition more difficult than ever.

It concludes that this resolution could help accelerate action to cut SLCP emissions, which is regarded as the fastest and most effective way to keep us under 1.5°C.

The CCAC press release is at ccacoalition.org/en/news/un-declares-healthy-environment-%E2%80%93-including-clean-air-%E2%80%93-human-right.

On the same day, the Chief Scientists of the World Health Organization (WHO), the International Union for Conservation of Nature (IUCN), the World Meteorological Organization (WMO) and the UN Environment Programme (UNEP) came together to highlight this issue.

The chief scientists state that air pollution affects other systems such as ecosystems, can lead to reduced yields of major crops and affect their nutritional value, and has high economic costs, for example, through lost work or school days due to chronic diseases such as asthma, increased health care costs, reduced crop yields, and reduced competitiveness of globally connected cities.

Finally, they say that air pollution is strongly linked to climate change, with many greenhouse gases and air pollutants being emitted by the same sources. This means that the adoption of coherent policies and measures aimed at reducing emission of climate pollutants could also have beneficial impacts on air quality.

The chief scientists at UNEP, WHO, IUCN, and WMO commit to contribute to a more integrated and systems-based approach to address air pollution by working more closely together at the international level to understand the scale of the problem; share information; identify gaps in the knowledge needed by countries to act and to encourage the agencies they represent to coordinate their efforts at national scale to reduce the air pollution threat more rapidly.

The statement from the chief scientists is at unep.org/news-and-stories/statements/statement-chief-scientists-2022-international-day-clean-air-blue-skies.

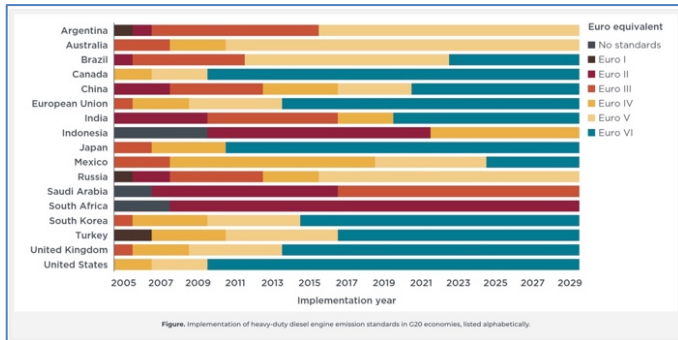
GENERAL

Cost Benefit Analysis of Euro VI HDV Standards in South Africa

On 13 September 2022, the International Council on Clean Transportation (ICCT) published a working paper titled 'Soot-free road transport in South Africa: a cost-benefit analysis of Euro VI heavy-duty vehicle standards'. The study estimates the costs and benefits of adopting Euro VI standards in diesel HDVs in South Africa under different timelines of fuel quality and emission standard advancements.

Transportation was responsible for 7% of deaths caused by exposure to PM2.5 and ozone in 2015 in South Africa, and of these deaths, 48% are attributed to on-road diesel vehicles.

ICCT says that “severely outdated” vehicle emission standards have contributed to this deadly air pollution: the current HDV emission standards in South Africa are Euro II. South Africa has not updated its official emission standard regulations since adopting Euro II standards in 2006.



ICCT states that its analysis finds that South Africa would enjoy substantial benefits in adopting Euro VI standards for its diesel HDV fleet. The announcement of a 10 ppm sulfur diesel requirement by 2023 provides a great window of opportunity for modern emission standards to sync with fuel quality improvements.

The NGO calculates with a timeline of implementing Euro VI standards in 2024, the societal benefits associated with reduced HDV tailpipe emissions can outweigh the costs of technology advancements and operating expenses by a ratio of 8.2:1 (5% discounted) between 2021 and 2050. By contrast, delaying the implementation of 10 ppm sulfur diesel requirements or Euro VI standards will diminish the health benefits and lead to a net welfare loss for South Africa.

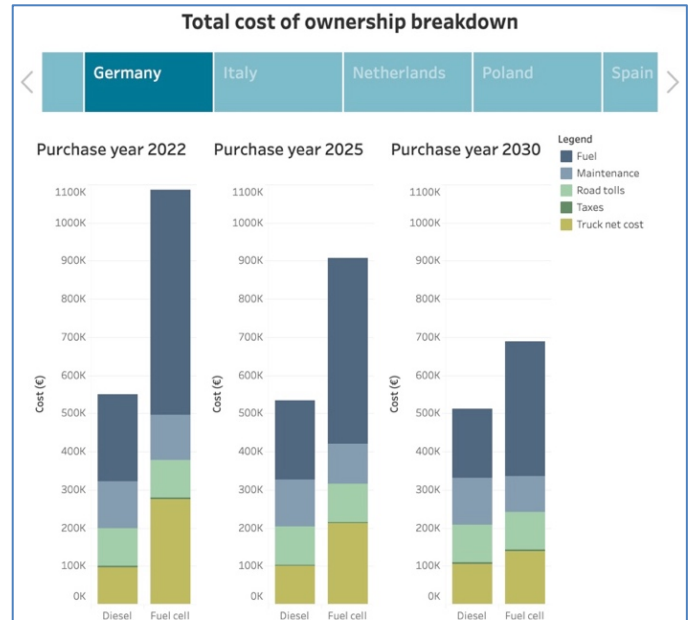
ICCT’s working paper is available at theicct.org/publication/africa-me-hvs-soot-south-africa-sep22/.

ICCT TCO Analysis of Fuel Cell Long-Haul Trucks in Europe

On 14 September 2022, the International Council on Clean Transportation (ICCT) published a white paper evaluating the total cost of ownership (TCO) of fuel cell electric trucks (FCETs) in France, the United Kingdom, Germany, Italy, Spain, the Netherlands, and Poland. The study focuses on long-haul tractor-trailers, the highest-emitting HDV segment in the EU. The TCO includes the costs of truck acquisition, renewable electrolysis hydrogen, diesel fuel, and maintenance, as well as road tolls and other country-specific taxes and levies.

A key finding is that FCETs will not achieve TCO parity with their diesel counterparts before 2030 in any of the seven countries. Nonetheless, the TCO gap between the two technologies is significantly narrowed by 2030. The study also finds that fuel cell long-haul trucks can reach TCO parity with their diesel counterparts by 2030 in Europe if the at-the-pump green hydrogen fuel price is around €4/kg, a figure that is 50% lower than the expected hydrogen fuel price by 2030.

In this case, hydrogen fuel subsidies will be needed to justify the business case for FCETs in Europe during this decade.



ICCT says that regulatory support can help reducing the TCO gap between FCETs and diesel tractor-trailers. Policy support in the form of purchase premiums, road tolls exemptions and hydrogen fuel subsidies can significantly reduce the TCO gap between both truck technologies. European policy makers should therefore expedite the implementation of the Eurovignette directive into national law and fully exempt zero-emission trucks from road tolls, according to the NGO. Incentivising the purchase of zero-emission trucks based on the retail price differential between fuel cell and diesel trucks can also help reduce the TCO gap between the two technologies and can significantly reduce the capital investment needed to ramp up market demand.

The ICCT white paper can be found at theicct.org/publication/eu-hvs-fuels-eva-fuel-cell-hdvs-europe-sep22/.

NGO Letter on WHO Guidelines to EU Governments

On 22 September 2022, a group of more than 100 organisations in 17 EU countries called on their health and environment ministers to save lives and protect nature from air pollution with science-based EU air quality standards. This coincides with the first anniversary of the publication of new Global Air Quality Guidelines with recommendations for maximum concentrations of the major air pollutants.

The senders, representing health professionals including major health networks and environmental civil society groups across the EU, are asking their national ministers to support a full alignment with WHO recommendation in the EU’s upcoming revision of its clean air standards, by 2030 at the latest.

At EU level, the publication of the legislative proposal revising EU's Ambient Air Quality Directives, which sets clean air standards, is foreseen for 26 October 2022 as part of the Zero Pollution Package. The organisations say that in this crucial update for public health, the Council has a unique opportunity to "save lives and prevent disease on an unprecedented scale".

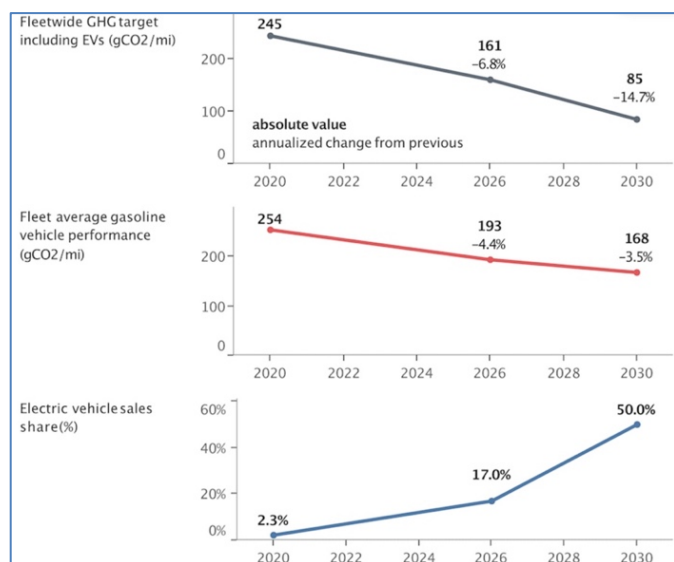
The Health and Environment Alliance letter is at env-health.org/100-organisations-call-for-strict-health-based-eu-air-pollution-limits/.

ICCT Blog on US EV Goal and Vehicle GHG Emissions

On 7 September 2022, the International Council on Clean Transportation (ICCT) published a blog proposing greenhouse gas targets it believes to be required in order to meet the US target of 50% electric vehicle sales in 2030.

ICCT points out that in December 2021 the EPA projected that the revised standard would lead to 17% EV sales in 2026. It says this would be a 'big jump' from 4% in 2021 and 7% in the first six months of 2022.

ICCT states that a key missing policy lever for reaching 50% EV sales in 2030 is regulation that covers the entire country. EPA has the opportunity to deliver this last piece in its upcoming proposal for passenger vehicle GHG standards, expected early next year, for vehicles sold after 2026.



Following the estimated annual improvement rate of 3.5%, and using data for EPA's fuel economy trends report, ICCT says gasoline vehicles would have an average GHG emissions rate of 168 gCO₂ per mile in 2030, compared to its estimate of 254 gCO₂ per mile in 2020. This is what it thinks can be achieved by gasoline vehicles alone, without considering a single EV. ICCT concludes that roughly halving the gasoline vehicle emissions rate to 85 gCO₂ per mile is

what it thinks EPA needs to set the light-duty standard at in 2030 to reach President Biden's goal.

ICCT says this is achievable and in line with existing standards. It considers that setting the next round of standards at anything higher would risk missing President Biden's goal and would leave valuable climate benefits on the table.

The ICCT blog can be found at theicct.org/us-ghg-standards-ev-sales-sep22/.

RESEARCH SUMMARY

Effects of Emissions and Pollution

Cardiopulmonary benefits of respirator intervention against near road ambient particulate matters in healthy young adults: A randomized, blinded, crossover, multi-city study, Wei Niu, et al.; *Chemosphere* (in press), [doi: 10.1016/j.chemosphere.2022.136437](https://doi.org/10.1016/j.chemosphere.2022.136437).

Mitigating the impact of air pollution on dementia and brain health: Setting the policy agenda, Brian Castellani, et al.; *Environmental Research* (in press), [doi: 10.1016/j.envres.2022.114362](https://doi.org/10.1016/j.envres.2022.114362).

Air Quality, Sources and Exposure

Downscaling global anthropogenic emissions for high-resolution urban air quality studies, Victor Vlencia, et al.; *Atmospheric Pollution Research* (October 2022), Vol. 13, 101516, [doi: 10.1016/j.apr.2022.101516](https://doi.org/10.1016/j.apr.2022.101516).

Using Machine Learning to estimate the impact of different modes of transport and traffic restriction strategies on urban air quality, Alexandre Fabregat, et al.; *Urban Climate* (September 2022), Vol. 45, 101284, [doi: 10.1016/j.uclim.2022.101284](https://doi.org/10.1016/j.uclim.2022.101284).

Emissions Measurements and Modelling

Determination of Euro 6 LPG passenger car emission factors through laboratory and on-road tests: Effect on nation-wide emissions assessment for Italy, Tommaso Bellin, et al.; *Atmospheric Environment: X* (October 2022), Vol. 15, 100186, [doi: 10.1016/j.aeaoa.2022.100186](https://doi.org/10.1016/j.aeaoa.2022.100186).

Multi-pollutant emission characteristics of non-road construction equipment based on real-world measurement, Bobo Wu, et al.; *Science of The Total Environment* (in press), [doi: 10.1016/j.scitotenv.2022.158601](https://doi.org/10.1016/j.scitotenv.2022.158601).

Review on exhaust emissions of CI engine using ethanol as an alternative fuel, Jacob AJohn, et al.; *Materials Today* (in press), [doi: 10.1016/j.matpr.2022.08.536](https://doi.org/10.1016/j.matpr.2022.08.536).

Suitability Assessment of NO_x Emissions Measurements with PTI Equipment, Eugenio Fernandez, et al.; *Vehicles* (2022), 4(4), 917-941, [doi: 10.3390/vehicles4040050](https://doi.org/10.3390/vehicles4040050).

Emissions Control, Catalysis, Filtration

CH₄ combustion over a commercial Pd/CeO₂-ZrO₂ three-way catalyst: Impact of thermal aging and sulfur exposure, Weiwei Yang, et al.; *Chemical Engineering Journal* (January 2023), Vol. 451, 138930, [doi: 10.1016/j.cej.2022.138930](https://doi.org/10.1016/j.cej.2022.138930).

Mechanism, performance and modification methods for NH₃-SCR catalysts: A review, Zhiwei Shi, et al.; *Fuel* (January 2023), Vol. 331, 125885, [doi: 10.1016/j.fuel.2022.125885](https://doi.org/10.1016/j.fuel.2022.125885).

Developments for future EU7 regulations and the path to zero impact emissions – A catalyst substrate and filter supplier's perspective,

Thorsten Boger, et al.; *Transportation Engineering* (December 2022), Vol. 10, 100129, [doi: 10.1016/j.treng.2022.100129](https://doi.org/10.1016/j.treng.2022.100129).

On-Board Monitoring to meet upcoming EU-7 emission standards – Squaring the circle between effectiveness and robust realization, Volker Müller, et al.; *Transportation Engineering* (December 2022), Vol. 10, 100138, [doi: 10.1016/j.treng.2022.100138](https://doi.org/10.1016/j.treng.2022.100138).

Effects of Wall-Ash and Plug-Ash on Pressure Drop and Soot Deposition in Diesel Particulate Filter, Kazuhiro Yamamoto and Takuya Morimoto; *Emiss. Control Sci. Technol.* (in press), [doi: 10.1007/s40825-022-00214-9](https://doi.org/10.1007/s40825-022-00214-9).

Hydrocarbon emission control of an adsorptive catalytic gasoline particulate filter during cold-start period of the gasoline engine, Bin Zhang, et al.; *Energy* (January 2023), Vol. 262, Part A, 125445, [doi: 10.1016/j.energy.2022.125445](https://doi.org/10.1016/j.energy.2022.125445).

Influence of coke deposition by propene poisoning on Cu-SSZ-13 catalyst for selective catalytic reduction of NO_x with NH₃, Lin Ling, et al.; *Journal of Environmental Chemical Engineering* (in press), [doi: 10.1016/j.jece.2022.108593](https://doi.org/10.1016/j.jece.2022.108593).

Transport, Climate Change & Emissions

Can hydrogen be the sustainable fuel for mobility in India in the global context? Arunkumar Jayakumar, et al.; *International Journal of Hydrogen Energy* (in press), [doi: 10.1016/j.ijhydene.2022.07.272](https://doi.org/10.1016/j.ijhydene.2022.07.272).

Emissions from charging electric vehicles in the UK, Daniel Mehlig, et al.; *Transportation Research Part D: Transport and Environment* (September 2022), Vol. 110, 103430, [doi: 10.1016/j.trd.2022.103430](https://doi.org/10.1016/j.trd.2022.103430).

Comparative lifecycle assessment of hydrogen fuel cell, electric, CNG, and gasoline-powered vehicles under real driving conditions, Aidin Teimouri, et al.; *International Journal of Hydrogen Energy* (in press), [doi: 10.1016/j.ijhydene.2022.08.298](https://doi.org/10.1016/j.ijhydene.2022.08.298).

FORTHCOMING CONFERENCES

Aachen Colloquium Sustainable Mobility

10-12 October 2022, Aachen, Germany

aachener-kolloquium.de/en

AECC will make a presentation.

8th International MinNOx Conference

26-27 October 2022, Berlin, Germany

iav.com/en/events/8-internationale-minnox-conference

AECC will make a presentation.

13th ECMA International Conference & Exhibition

10-11 November 2022, New Delhi, India

ecmaindia.in/eventsdetails.aspx?mpgid=41&pgidtrail=42

Transport Research Arena 2022

14-17 November 2022, Lisbon, Portugal

traconference.eu/about-tra

FEV Zero CO₂ Mobility

15-16 November 2022, Aachen, Germany

fev-live.com/zero-co2-mobility/conference-program/

Powertrains For Renewable Fuels

22-23 November 2022, Stuttgart, Germany

kfvs-veranstaltungen.de/en/events

POLIS Annual Conference

30 November – 1 December 2022, Brussels, Belgium

polisnetwork.eu/2022-annual-polis-conference

E-Fuel World Summit

6-7 December 2022, Brussels, Belgium

e-fuelworldsummit.com/

WCX SAE World Congress Experience

18-20 April 2023, Detroit, USA

sae.org/highlights/wcx

Deadline for abstracts 13 September 2022.

44th International Vienna Motor Symposium

26-28 April 2023, Vienna, Austria

wiener-motorensymposium.at/fileadmin/Media

Deadline for abstracts 30 September 2022.

SAE Heavy-Duty Diesel Sustainable Transport Symposium

3-4 May 2023, Gothenburg, Sweden

sae.org/attend/heavy-duty-diesel-sustainable-transport-symposium

Fuel Science – From Production to Propulsion

23-25 May 2022, Aachen, Germany

fuelcenter.rwth-aachen.de/cms/Fuelcenter/Austausch/~smxp/Int-Konferenz

AVL Vehicle & Environment Conference

25-26 May 2023, Graz, Austria

avl.com/-/vehicle-environment?j=3464186&sfmc_sub

SIA Powertrain 2023

14-15 June 2023, Paris, France

sia.fr/evenements/302-sia-powertrain-2023

Deadline for abstracts 4 November 2022.