

NEWSLETTER

International Regulatory Developments

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AECC New Year Wishes

The AECC team wishes you a healthy, happy and successful 2023. We look forward to working in partnership with you for cleaner air.



EUROPE

Regulation regarding Emissions Type-Approval of HDVs using Pure Biodiesel

On 7 December 2022, Regulation 2022/2383 of 6 December 2022 amending Regulation No 582/2011 as regards the emissions type-approval of heavy-duty vehicles using pure biodiesel, was published in the Official Journal of the European Union.

This states that vehicles type-approved in the EU need to be able to run on pure biodiesel and on different blends of biodiesel and fossil fuels in case of need.

Type-approval testing needs to be duplicated on both diesel (B7) as well as pure biodiesel (B100) in order to demonstrate compliance with emissions requirements. To minimise duplication of testing and to facilitate the certification for the use of pure biodiesel and biodiesel blends (such as FAME B20/B30), it is necessary to introduce the specifications for pure biodiesel as a reference fuel, based on relevant international and European standards. Demonstrating compliance with the emission testing requirements for a B100 type-approval should be allowed by emission testing of the parent engine on pure biodiesel. While for the necessary in-service conformity testing any biofuel blend may be chosen.

The Regulation is available to read in full at eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2022.315.01.0063.01.

Regulation regarding Provisions on Emissions Monitoring from NRMM

On 8 December 2022, Delegated Regulation (EU) 2022/2387 of 30 August 2022 amending Delegated Regulation (EU) 2017/655 as regards the adaptation of the provisions on monitoring of gaseous pollutant emissions from in-service internal combustion engines

installed in non-road mobile machinery to include engines with power of less than 56 kW and more than 560 kW, was published in the Official Journal of the European Union.

This amends Delegated Regulation 2017/655 to adopt in-service monitoring requirements for internal combustion engines installed in non-road mobile machinery for engines other than sub-categories NRE-v-5 and NRE-v-6 i.e., with a power of less than 56 kW and more than 560 kW.

The Commission has carried out additional in-service monitoring programmes in cooperation with manufacturers to assess the suitability of monitoring tests and data analyses for measuring the emissions from non-road mobile machinery, regarding engines other than sub-categories NRE-v-5 and NRE-v-6, in actual operation over their normal operating duty cycles. As a consequence, appropriate in-service monitoring provisions for those sub-categories should be laid down in Delegated Regulation (EU) 2017/655.

Taking into account the disruption caused by the COVID-19 pandemic and its impact on the manufacturers' ability to perform in-service monitoring tests, in order to provide sufficient time to manufacturers to perform the tests and to the Commission to assess the test results and produce the report to the European Parliament and the Council as required under Regulation (EU) 2016/1628, it is necessary to modify the deadlines for submitting in-service monitoring test reports.

The COVID-19 pandemic has demonstrated that unexpected events outside the control of the manufacturer may make it impossible to conduct the monitoring of in-service engines as planned. Given the continued disruption caused by the COVID-19 pandemic, the approval authority should accept a reasonable adjustment of the original plan for monitoring each In-Service Monitoring Engine Group (ISM Group).

The amendments set out in this Regulation should not influence the monitoring of gaseous pollutant emissions from in-service internal combustion engines with power between 56 kW and 560 kW (sub-categories NRE-v-5 and NRE-v-6). For those sub-categories the changes introduced are limited to administrative adjustments that include their inclusion in an ISM Group, thus irrelevant for that monitoring. It is therefore appropriate that EU type-approvals of an engine type or engine family approved in accordance with Delegated Regulation (EU) 2017/655 before the day of entry into force of this Regulation remain valid.

The Regulation will enter into force on the twentieth day following its publication in the Official Journal. On 15 December a corrigendum to Regulation 2022/2387 was published in the Official Journal.

The Delegated Regulation can be found at eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2022.316.01.0001.01 with the corrigendum at eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2022.321.01.0073.01.

Agreement on Emissions Trading System

On 17 December 2022, the European Parliament and the European Council agreed to reform the Emissions Trading System to further reduce industrial emissions and invest more in climate friendly technologies. The ETS is part of the ‘Fit for 55 in 2030 package’, which is the EU’s plan to reduce greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels in line with the European Climate Law.

Emissions in the ETS sectors must be cut by 62% by 2030, compared to 2005, which is one percentage point more than proposed by the Commission. In order to reach this reduction, there will be a one-off reduction to the EU-wide quantity of allowances of 90 Mt CO₂ equivalents in 2024 and 27 Mt in 2026 in combination with an annual reduction of allowances by 4.3% from 2024-27 and 4.4% from 2028-30.

The Carbon Border Adjustment Mechanism (CBAM), on which MEPs reached an agreement with EU governments to prevent carbon leakage, will be phased in at the same speed that the free allowances in the ETS will be phased out. The CBAM will therefore start in 2026 and be fully phased in by 2034.

A separate new ETS II for fuel for road transport and buildings that will put a price on emissions from these sectors will be established by 2027. This is one year later than proposed by the Commission. As requested by Parliament, fuel for other sectors such as manufacturing will also be covered. In addition, ETS II could be postponed until 2028 to protect citizens, if energy prices are exceptionally high. Furthermore, a new price stability mechanism will be set up to ensure that if the price of an allowance in ETS II rises above €45, 20 million additional allowances will be released.

More money will be made available for innovative technologies and to modernise the energy system. The co-legislators also agreed to establish a Social Climate Fund for the most vulnerable.

Parliament and Council will have to formally approve the agreement before the new law can come into force.

The European Parliament press release can be found at europarl.europa.eu/news/en/press-room/20221212IPR64527/deal-on-more-ambitious-ets.

Publication of Third Clean Air Outlook

On 1 December 2022, the European Council published the Commission’s Third Clean Air Outlook report.

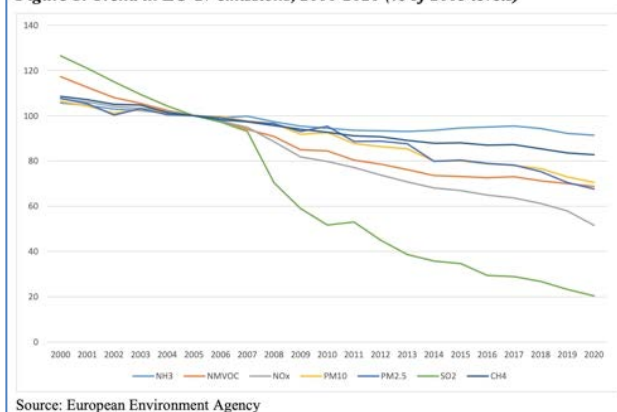
This edition of the Clean Air Outlook assesses the prospects of achieving the objectives of the NEC Directive for 2030 and beyond, in terms of reducing emissions of air pollutants and subsequent impacts on air quality, health, ecosystems and the economy.

This analysis builds on and complements the work carried out on the impact assessment underpinning the revision of the Ambient Air Quality Directives. It incorporates the EU’s climate targets under the ‘Fit for 55’ initiative, in line with the 2021 Commission proposals to move to a 55% reduction in greenhouse gas (GHG) emissions by 2030. The Third Clean Air Outlook also sheds light on

the implications of the current energy crisis on air quality and air pollution.

The Third Clean Air Outlook directly contributes to the Zero Pollution Monitoring and Outlook report by analysing the prospect of achieving the two clean air related zero pollution action plan targets. These are to reduce, by 2030 in the EU, by more than 55% the health impacts of air pollution (expressed as premature deaths), and by 25% the ecosystems where air pollution threatens biodiversity (compared to 2005 levels).

Figure 1: Trend in EU-27 emissions, 2000-2020 (% of 2005 levels)



The report says that despite an overall decrease in air pollution, the levels of health and ecosystem impacts from pollution remain problematic. In 2020, most people living in urban areas in the EU were exposed to air pollution at levels that damage their health. The European Environment Agency (EEA) estimates that air pollution is the single largest environmental health risk in Europe, and it is one that disproportionately affects sensitive and vulnerable social groups.

After reviewing the 2020 emission inventories submitted by Member States in 2022, the Commission concluded that 14 Member States did not comply with the set reduction commitments for at least one pollutant. The 2020 emission data submitted by Member States in 2022 also highlight that several Member States need to achieve a dramatic reduction in the emissions of several pollutants in order to fulfil their more ambitious emission reduction commitments for 2030 onwards. The EEA analysis shows that 7 and 8 Member States need their PM_{2.5} and NO_x emissions to fall by more than 30% between 2020 and 2030.

Table 1: Member States projected to miss their emission reduction commitments

Scenario	Year	NH ₃	NMVOC	NO _x	PM _{2.5}	SO ₂
Baseline	2025	BG, CZ, DK, DE, EE, IE, ES, FR, CY, LV, LT, LU, HU, AT, PL, PT, RO, SK, SE	LT	LV, LT	HU, RO, SI	-
Baseline	2030	BE, BG, CZ, DK, DE, IE, ES, FR, HR, CY, LV, LT, LU, HU, NL, AT, PL, PT, RO, SK	ES, LT, HU, SI	MT	DK, ES, HU, SI	-
Stricter air quality standards	2030	CZ, DK, DE, IE, CY, LV, LT, LU, AT	-	MT	-	-
All technical measures	2030	-	-	MT	-	-

Source: Own compilation based on IIASA (2022) modelling results.
Note: For 2025, the assessment is carried out against the linear reduction trajectory, as explained in Footnote 25. ‘-’ means all Member States are projected to meet the targets.

As regards the Ambient Air Quality Directives, as of October 2022, there were ongoing infringement cases opened due to exceedances of air quality standards in 18 Member States. Proceedings before both the Court of Justice of the EU and national courts confirm that in many cases, air quality plans were inadequate and/or insufficient measures were adopted to reduce air pollution.

As regards transport, the proposal for a Euro 7 emission standard tackles emissions from tailpipes as well as from brakes and tyres for new light- and heavy-duty vehicles. The proposed revised CO₂ standards for cars will ban the sale of combustion-engine cars and vans as of 2035. Other measures in the transport sector, more linked to behavioural change and action at local level, could not be reflected in the model.

According to the results of the Third Clean Air Outlook, only five Member States are on course to achieve in 2030 all their emission reduction commitments, under current national measures and EU legislation and provided the above legislative proposals by the Commission are adopted and implemented.

The report can be found at data.consilium.europa.eu/doc/document/ST-15860-2022-INIT/en/pdf.

Report on Progress Towards 2030 Zero Pollution Targets

On 8 December 2022, the European Environment Agency published the European Commission's first Zero Pollution Monitoring and Outlook report setting pathways to cleaner air, water and soil. report assessing progress towards the European Commission's zero pollution targets. It says progress has been made towards the 2030 targets but that pollution levels are still too high.

The report states that current pollution levels are still far too high, with over 10% of premature deaths in the EU each year still related to environmental pollution, mainly due to air pollution, but also to noise pollution and exposure to chemicals.

There has been good progress in reducing the health impacts of air pollution has been achieved, with a 45% fall in premature deaths since 2005. If this past trend continues, the EU will be on track to meet the target of a 55% reduction. It finds that if the EU implements all relevant measures proposed by the Commission, the number of premature deaths due to air pollution would fall by up to 66% in 2030 compared to 2005, with benefits of clean air measures outweighing costs and leading to overall GDP gains. The report also points to the importance of promoting global initiatives and supporting third countries in their efforts towards reducing pollution.

According to the report, current and proposed EU policies do not appear sufficient to enable the EU to reduce the area of EU ecosystems under threat from air pollution by 25% in 2030 compared to 2005. However, with the implementation of the recently proposed revision of the Ambient Air Quality Directives, it says this target could be achieved.

The report is available at eea.europa.eu/highlights/zero-pollution-monitoring?utm_source=EEASubscriptions.

Zero Pollution Stakeholder Conference

On 14 December 2022, the Zero Pollution Stakeholder Conference took place in Brussels, focusing on the first Zero Pollution Monitoring and Outlook report, with high-level discussions in the morning and parallel 'deep dives' in the afternoon.

During the morning session, Mr Patrick Child, Deputy Director General of the European Commission's DG ENV, mentioned the report is an important milestone as it describes the current situation and the outlook to reach our zero-pollution goals. The report brings together the information we have showing how legislation is bringing clear and strong benefits. Pollution levels are still high but it is very important to have access to data to assess the situation.

Executive Vice-President of the European Commission Mr Franz Timmermans in a video message described how each year about 300 000 Europeans die prematurely due to pollution. He said the Commission has made a number of proposals on emissions and pesticides to address these problems and launched the Zero-pollution package in October. These proposals tackle pollution on all sides, he stated. Mr Timmermans confirmed air pollution is still the largest environmental health problem.

Mr Hans Bruyninckx, Executive Director of the European Environment Agency, talked about how air, water and soil pollution should be reduced to levels no longer considered harmful to health and the natural environment. He informed the audience that four out of ten targets are on track for 2030, including the health impact of air pollution to be reduced by 55%, reducing the use of chemical pesticides by 50%, reducing the use of hazardous chemical pesticides by 50% and reducing the sale of antimicrobials for farmed animals and agriculture by 50%.

Mr Bernard Magenhan, Deputy Director General of the Joint Research Centre of the European Commission presented the zero-pollution outlook report produced by the JRC. The good news is that if EU countries, regions and cities implemented all European clean air measures, the number of premature deaths due to air pollution would fall by 70% by 2030. Thus, we can achieve the respective zero pollution target with current policies. On the other hand, the results suggest that current clean air measures are not enough to meet the air pollution target for the ecosystem.

The keynote presentations were followed by a panel of experts discussing reactions from the different stakeholders to the report.

Mr Virginijus Sinkevičius, European Commissioner for the Environment, Maritime Affairs and Fisheries gave the final remarks of the conference in a video message. He indicated that the report reflects the level of ambition needed for 2030. At the beginning of his mandate, there was no integrated view on how polluted the EU was. Now this first report is available and will be used as the starting point.

The conference was followed by deep dive sessions covering topics related to health, biodiversity and circular economy.

The session on health included remarks from Viviane Andre, European Commission, presenting the third Clean Air Outlook. She referred to the recently presented proposal for air quality rules and the impact expected on the zero-pollution outlook. The air quality rules proposal baseline was discussed with Member States and the modelling was conducted using the GAINS model from IIASA. The policies considered in the baseline are the 'Fit for 55' energy and climate policies as well as the proposals on revised Industrial Emission Directive (IED) and Euro 7.

More details on the conference can be accessed at environment.ec.europa.eu/events/zero-pollution-stakeholder-conference-2022-12-14_en.

The first Zero-pollution monitoring and outlook report is at ec.europa.eu/commission/presscorner/detail/en/ip_22_7552, and the full speech from Mr Timmermans can be found at ec.europa.eu/commission/presscorner/detail/en/SPEECH_22_7716.

Study on Security of Supply of Critical Raw Materials for Green Transition

On 19 December 2022, the European Parliament's committee on Industry, Research and Energy (ITRE) published a study titled 'Strengthening the security of supply of products containing Critical Raw Materials for the green transition and decarbonisation.

The study assesses the needs and vulnerabilities of the EU in accessing products containing Critical Raw Materials (CRM) needed for the green and digital transitions in a changing geopolitical context. It provides an overview of the wider situation, as well as a policy context. The study sets out to identify at which stage of the supply chain, ranging from raw materials to final products, the European industrial ecosystem is dependent on CRM imports. It reviews the CRM methodology designed by the JRC to identify which materials are critical and require special attention.

The research provides an overview of the supply chains involved in key green and digital technologies, from raw material needs, components, to final goods. It sets the scene of the EU's need for CRM by mapping the technologies needed to meet the various decarbonisation targets. It distinguishes where the EU makes use of the raw materials directly, and where it makes use of components and products that embed these raw materials.

The study discusses the CRM methodology designed by the JRC to identify which materials are critical and require special attention. This methodology rests on two criteria, economic importance (EI) and supply risk (SR).

Stockpiling is proposed as a course of action to mitigate supply disruptions of raw materials and components. The study investigates the suitability of stockpiling as a solution to alleviate the consequences of supply chain disruptions and of the potential weaponisation of trade vulnerabilities, especially in the specific context of achieving the green transition.

The study finds that the EU has a dependency on key components for most green energy and digital technologies, more than on raw materials as such. At present, the EU relies on Russia for a significant share of its imports for three CRMs: platinum, palladium and titanium. These are indispensable materials for the development of hydrogen technology. In addition, the EU highly depends on imports from China for both the production of permanent magnets and the extraction and refining of Rare Earth Elements (REEs) used in their production and relies on China for imports of batteries used for Electric Vehicles (EVs) and energy storage.

The study also finds that the EU develops the industrial capacity to manufacture products from these raw materials in line with the industrial policy objectives of the European Commission. These focus on developing domestic industrial capacity for batteries, electrolysers and fuel cells for renewable hydrogen, and the permanent magnets needed for the electric motors used in e-mobility and wind power industries.

According to the study, setting up of EU stockpiling facilities could mitigate supply disruptions of raw materials and components. The strategic stockpiling of products containing CRM is a common policy in the US, Japan, South Korea and Switzerland, and principles for European stockpiling can be drawn from these examples. Among the preferred composition of product groups to be stockpiled are those shaping the green and digital transition.

The study is available to read at [europarl.europa.eu/RegData/etudes/STUD/2022/740058/IPOL_STU\(2022\)740058_EN.pdf](https://europarl.europa.eu/RegData/etudes/STUD/2022/740058/IPOL_STU(2022)740058_EN.pdf).

French Plan for Air Pollutant Emissions Reduction

On 16 December 2022, the French Ministry of Ecological Transition published a national plan for the reduction of air pollutant emissions (PREPA) for the period 2022-2025.

This new decree follows the previous plan (2017-2021), defining new measures to be implemented for the 2022-2025. To achieve the goals, actions in all sectors are needed. This plan brings together in a single document the orientations of the State for the benefit of air quality over the medium and long term in many sectors.

In the field of transport, PREPA aims to develop active mobility and shared transport. It plans to promote the use of the least polluting vehicles, in particular through conversion aid and the establishment of low emission mobility zones (ZFE-m) in urban areas with more than 150 000 inhabitants. To support the deployment and acceleration of ZFE-m, actions co-financed by the State and local authorities in the territories concerned by existing ZFE-m will be implemented through the ecological transition acceleration fund in the territories (green fund).

The full announcement can be found (in French) at ecologie.gouv.fr/plan-national-reduction-des-emissions-polluants-atmospheriques-prepa-periode-2022-2025#xtor=RSS-23.

NORTH AMERICA

US EPA Final Rule on Control of Air Pollution from HDVs

On 20 December 2022, the US EPA adopted a final rule, 'Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards,' that sets stronger emissions standards to further reduce air pollution, including pollutants that create ozone and particulate matter, from new heavy-duty vehicles and engines starting in model year 2027.

The final programme includes new, more stringent emissions standards that cover a wider range of heavy-duty engine operating conditions compared to today's standards, and it requires these more stringent emissions standards to be met for a longer period of time of when these engines operate on the road.

EPA says this final rule is consistent with President Biden's Executive Order, 'Strengthening American Leadership in Clean Cars and Trucks' and is the first step in the Clean Trucks Plan. The final rule also includes amendments regarding the confidentiality of certain information submitted to EPA for engines, vehicles, and equipment subject to emission standards and other requirements under the Clean Air Act. In addition, the final rule includes other limited amendments to the regulations that implement our air pollutant emission standards for other sectors (e.g., light-duty vehicles, marine diesel engines, locomotives, various types of nonroad engines, vehicles, and equipment).

EPA estimates that the final rule will reduce NOx emissions from heavy-duty vehicles in 2040 by more than 40%; by 2045, a year by which most of the regulated fleet will have turned over, heavy-duty NOx emissions will be almost 50% lower than they would have been without this action

The final NOx standards will be implemented with a single step in MY 2027 and reflect the greatest emission reductions achievable starting in MY 2027, giving "appropriate consideration to costs and other factors".

Table I-1: Final NO_x Emission Standards for Heavy-Duty CI and SI Engines on Specific Duty Cycles [milligrams/horsepower-hour (mg/hp-hr)]

	Current	Model Years 2027 and later	
	All HD Engines	Spark Ignition HDE, Light HDE, Medium HDE, and Heavy HDE	Medium and Heavy HDE with Interim In-Use Compliance Allowance
Federal Test Procedure (transient mid/high load conditions)	200	35	50
Supplemental Emission Test (steady-state conditions)	200	35	50
Low Load Cycle (low-load conditions)	N/A	50	65

In addition to demonstrating emission control over defined duty cycles tested in a laboratory, heavy-duty CI engines must be able to demonstrate emission control over operations experienced while engines are in use on the road in the real world (i.e., "off-cycle" testing). The EPA is finalising with revisions the proposed updates to the procedure for off-cycle testing, such that data

collected during a wider range of operating conditions will be valid, and therefore subject to emission standards.

Full details are available at [epa.gov/system/files/documents/2022-12/new-motor-veh-air-poll-control-hd-eng-veh-stnd-frm-2022-12-20.pdf](https://www.epa.gov/system/files/documents/2022-12/new-motor-veh-air-poll-control-hd-eng-veh-stnd-frm-2022-12-20.pdf).

US EPA Renewable Fuel Standards

On 1 December 2022, the US EPA issued a multi-part proposal that will build on the foundation for the Renewable Fuel Standard (RFS) programme started in the current Administration. It seeks to 'advance the priorities of energy security, less pollution, and consumer protection'.

This proposal includes steady growth of biofuels for use in the nation's fuel supply for 2023, 2024, and 2025. Because the Energy Independence and Security Act of 2007 (EISA) does not include volumes after 2022, this is the first time that EPA is setting these proposed biofuel volume targets without using those outlined in statute. When setting biofuel volumes for years after 2022, EPA must consider a variety of factors specified in the statute, including costs, air quality, climate change, implementation of the programme to date, energy security, infrastructure issues, commodity prices, and water quality and supply.

The agency is seeking comment on the proposed volumes and how to appropriately balance these factors so that the programme works for renewable fuel growers and producers, refiners and the union workers who operate these facilities, and fuel consumers. EPA is also proposing new regulations governing the generation of qualifying renewable electricity made from renewable biomass that is used for transportation fuel in electric vehicles. The agency is seeking comment on this new component of the RFS programme that would tie electricity generation from renewable biomass into the programme for the first time.

A summary of the proposed volume requirements for 2023-2025 is provided below:

Proposed Volume Targets (billion RINs)

	2023	2024	2025
Cellulosic biofuel	0.72	1.42	2.13
Biomass-based diesel*	2.82	2.89	2.95
Advanced biofuel	5.82	6.62	7.43
Renewable fuel	20.82	21.87	22.68
Supplemental standard	0.25	n/a	n/a

*Biomass-based diesel is in gallons

EPA will be soliciting public comment on the proposed rule and holding a public hearing in January.

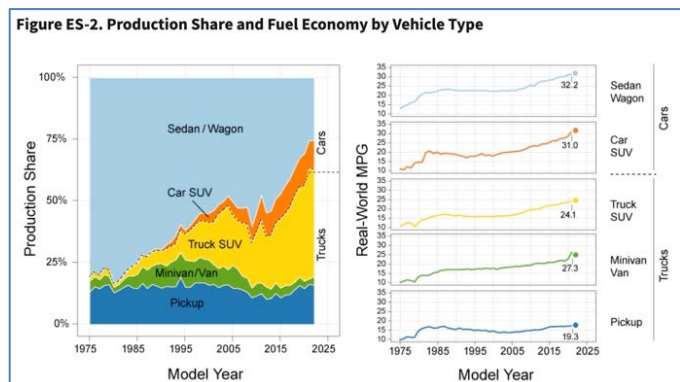
Further information is available at [epa.gov/newsreleases/epa-takes-next-steps-renewable-fuel-standard-program-2023-25](https://www.epa.gov/newsreleases/epa-takes-next-steps-renewable-fuel-standard-program-2023-25).

US EPA Annual Automotive Trends Report

On 12 December 2022, the US EPA released its annual Automotive Trends Report, which shows that model year (MY) 2021 vehicle fuel economy remained at a record high while emission levels reached a record low. The report also shows all 14 large automotive manufacturers achieved compliance with the Light-duty Greenhouse Gas (GHG) standards through at least MY2020.

For MY 2021, vehicle fuel economy remained at an all-time high of 25.4 miles per gallon (mpg), and new vehicle real-world carbon dioxide (CO₂) emissions decreased to a record low of 347 grams per mile (g/mi). All vehicle types are at record low CO₂ emissions; however, the market shift away from cars and towards sport utility vehicles and pickups has offset some of the fleetwide benefits.

Since MY 2004, average fuel economy in the U.S. has increased by 32%, or 6.1 mpg. The average estimated real-world CO₂ emission rate for all new vehicles fell by 2 g/mi to 347 g/mi, the lowest ever reported. Since MY 2004, CO₂ emissions have decreased 25%, or by 114 g/mi. Over that time, CO₂ emissions have been reduced in 14 of the past 17 years.



EPA says that overall, advancements in technology are helping industry reach these carbon reduction achievements. In model year 2021, hybrid vehicles reached a new high of 9% of all production. The combined category of electric vehicles (EVs), plug-in hybrid electric vehicles (PHEVs), and fuel cell vehicles (FCVs) increased to 4% of nationwide production in MY 2021.

The US EPA press release can be found at [epa.gov/newsreleases/epa-releases-annual-automotive-trends-report](https://www.epa.gov/newsreleases/epa-releases-annual-automotive-trends-report).

Approval of CARB Climate Change Scoping Plan

On 15 December 2022, the California Air Resources Board (CARB) held a public meeting to consider the 2022 Climate Change Scoping Plan for achieving carbon neutrality (see AECC Newsletter of November 2022).

The Board approved the 2022 Climate Change Scoping Plan and certified the Environmental Analysis prepared for the 2022 Scoping Plan. The Plan lays out a path to achieve targets for carbon neutrality and reduce anthropogenic greenhouse gas emissions by 85% below 1990 levels no later than 2045, as codified by AB 1279.

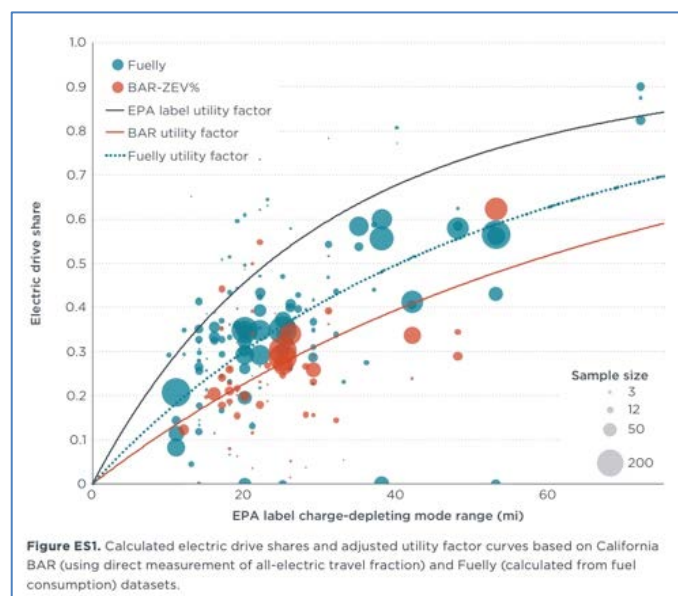
Details of the meeting are at arb.ca.gov/ma121522.

Real-World Usage of Plug-In Hybrid Vehicles in United States

On 20 December 2022, the International Council on Clean transportation (ICCT) published a white paper on the real-world usage of plug-in hybrid vehicles (PHEVs) in the United States.

The study examines the current state of PHEV usage in the United States using recent data from two previously unexplored sources: self-reported fuel consumption from Fuely.com and engine-off distance travelled collected by the California Bureau of Automotive Repair (BAR).

ICCT says the analysis of the new datasets presents strong evidence that real-world electric drive share is far below the utility factor label rating. Specifically, the analysis finds that real-world electric drive share may be 26%–56% lower and real-world fuel consumption may be 42%–67% higher than assumed within EPA's labelling programme for light-duty vehicles.



The NGO goes on to say that more data collection could provide greater precision and clarity regarding the deviation of real-world electric drive share and what is assumed in EPA labelling. As PHEVs are still a small share of the existing fleet and new sales, all data sources to date may be inherently biased towards early adopters. In addition, ICCT says all datasets examined suffer from some degree of self-selection bias, and potentially other confounding factors. At a minimum, it concludes that the trends in the new PHEV data point to the need for closer inspection and broader investigation into PHEV usage to inform regulatory treatment.

The ICCT document can be found at theicct.org/wp-content/uploads/2022/12/real-world-phev-us-dec22.pdf.

Canada Proposals for ZEV Sales

On 21 December 2022, the Canadian Minister of Environment and Climate Change announced that the Government of Canada has published proposed regulations that set zero emission vehicle (ZEV) sales targets for manufacturers and importers of new passenger cars, SUVs, and pickup trucks. The regulations will require that at least 20% of new vehicles sold in Canada will be zero emission by 2026, at least 60% by 2030, and 100% by 2035.

The Government also announced investments to make buying and charging an electric vehicle (EV) easier for Canadians, including 50 000 more EV charging stations across the country, for almost 85 000 federally funded chargers across Canada by 2027. This is in addition to charging stations supported by provincial governments and the private sector. In addition, it will continue to provide Canadians as much as CAN\$5 000 (€3 497), and businesses up to CAN\$10 000 (€6 995), towards the cost of buying or leasing a ZEV. Over 180 000 individuals and businesses have taken advantage of this programme to date.

Further details are available at tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles/canada-zev-sales-targets.

and canada.ca/content/dam/eccc/documents/pdf/climate-change/erp/factsheet-06-transportation.pdf.

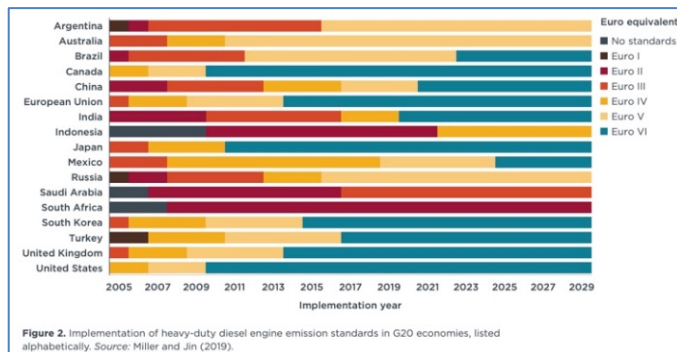
with the unofficial proposal at canada.ca/content/dam/eccc/documents/pdf/greenhouse-gas-emissions/amending-auto-light-truck-ghg-reg-bil.pdf.

AFRICA

Cost-Benefit Analysis of Euro VI Heavy-Duty Vehicle Standards in South Africa

On 20 December 2022, the International Council on Clean Transportation (ICCT) published a working paper estimating the costs and benefits of adopting Euro VI standards in diesel heavy-duty vehicles (HDVs) in South Africa under different timelines of fuel quality and emission standard advancements. Based on the results, it also makes policy recommendations that it says would reduce HDV emissions and improve air quality and public health in South Africa.

According to the study, transportation was responsible for 7% of deaths caused by exposure to PM_{2.5} and ozone in 2015 in South Africa, and of these deaths, 48% are attributed to on-road diesel vehicles. ICCT says severely outdated vehicle emission standards have contributed to this air pollution: the current HDV emission standards in South Africa are Euro II, first introduced in Europe more than 20 years ago and phased out long ago there and in other major economies. South Africa has not updated its official emission standard regulations since adopting Euro II standards in 2006. Diesel engines that lack modern emission control devices produce PM_{2.5}, soot, nitrogen oxides (NOx) and other pollutants in large quantities.



ICCT's analysis finds that South Africa would enjoy substantial benefits in adopting Euro VI standards for its diesel HDV fleet. It adds that 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.

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.

Table 5. Present discounted (5%) cumulative value of costs and benefits from 2021 to 2050 compared with the Baseline scenario, in billion U.S. dollars

Variable	Incremental	Leapfrog	Beyond Euro VI
Incremental technology costs	1.56	1.66	2.46
Incremental operating costs	0.07	0.09	0.09
Total incremental costs	1.63	1.75	2.55
Societal benefits	13.6 (7.9–23.1)*	14.2 (8.2–24.0)	14.4 (8.3–24.3)
Net benefits	12.0 (6.2–21.5)	12.4 (6.4–22.3)	11.8 (5.7–21.8)
Benefit-cost ratio	8.4 (4.8–14.2)	8.2 (4.7–13.7)	5.6 (3.3–9.6)

*Values in parentheses are 5th and 95th percentile estimates

The ICCT working paper can be downloaded from theicct.org/publication/africa-me-hvs-soot-south-africa-dec22/.

UNITED NATIONS

Publication of UN Regulation No 154 concerning Emissions Approval of LDVs

On 10 November 2022, UN Regulation No 154 concerning the approval of light duty passenger and commercial vehicles with regards to criteria emissions, emissions of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range (WLTP), was published in the Official Journal of the European Union.

The intention of the Regulation is to establish uniform provisions concerning the approval of motor vehicles with regard to the emissions of light-duty vehicles based on the new World harmonized Light vehicle Test Procedure (WLTP) included in UN

GTR No. 15 and the updated Evaporative Emissions test procedure (Type 4 test) which has been developed in UN GTR No. 19. It will enable Contracting Parties (CPs) to issue and accept approvals based on these new type-approval tests.

The WLTP Type 1 test replaces both the current Type 1 test in UN Regulation No. 83 and UN Regulation No. 101, whilst the updated Evaporative Emissions test procedure (Type 4 test) replaces that currently in UN Regulation No 83.

In addition, this new Regulation includes an update to the Type 5 test for verifying the durability of pollution control devices and updated On-Board Diagnostic (OBD) requirements. These updates are in order to reflect the changes from the previous NEDC based Type 1 test to the new WLTP Type 1 test.

The 02 series of this Regulation covers two sets of requirements – termed Level 1A and Level 1B. Level 1A is based on a four phase test cycle (Low, Medium, High and Extra-High), whilst Level 1B is based on a three phase test cycle (Low, Medium and High), with different type 1 limits applying to these different levels. The majority of the regulatory text is applicable to both Level 1A and Level 1B. Where the requirements are specific to either Level 1A or Level 1B the relevant sections are labelled accordingly. This series of amendments covers regional requirements and does not require mutual recognition by other Contracting Parties.

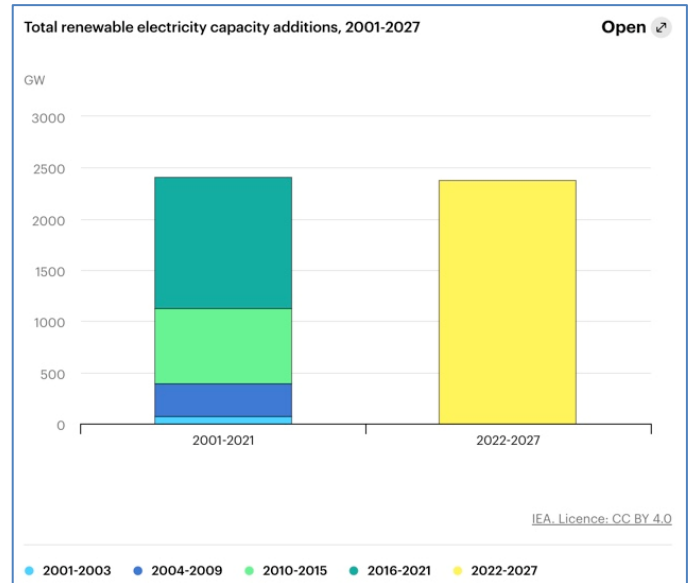
The 03 series of this Regulation includes a harmonised procedure which contains the most stringent procedures/limits which shall be subject to full mutual recognition. A type-approval to the 03 series shall therefore be accepted by all CPs having adopted this Regulation.

The full regulation can be found at eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:42022X2124&from=EN.

GENERAL

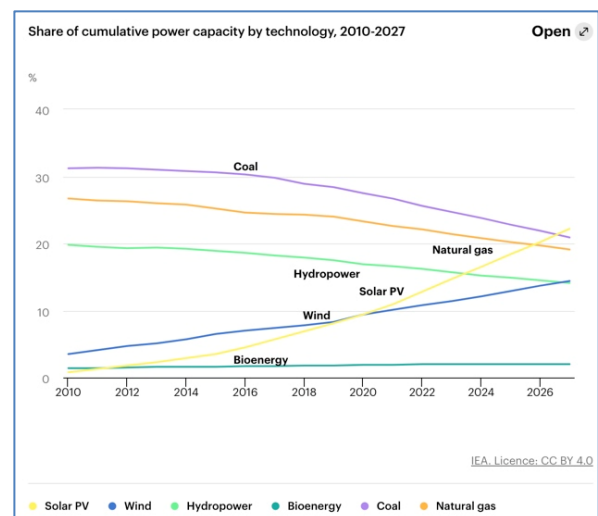
Publication of IEA Renewables 2022 Report

On 6 December 2022, the International Energy Agency (IEA) published Renewables 2022. This states that global renewable power capacity is now expected to grow by 2 400 gigawatts (GW) over the 2022-2027 period, an amount equal to the entire power capacity of China today.



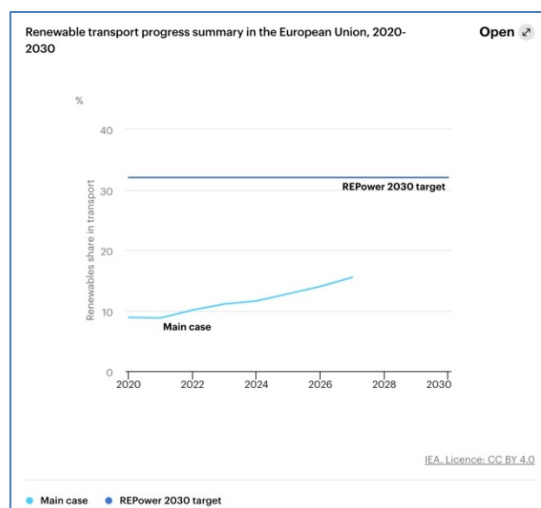
This expected increase is 30% higher than the amount of growth that was forecast just a year ago, highlighting how quickly governments have thrown additional policy weight behind renewables. The report finds that renewables are set to account for over 90% of global electricity expansion over the next five years, overtaking coal to become the largest source of global electricity by early 2025.

The amount of renewable power capacity added in Europe in the 2022-27 period is forecast to be twice as high as in the previous five-year period, driven by a combination of energy security concerns and climate ambitions. An even faster deployment of wind and solar PV could be achieved if EU member states were to rapidly implement a number of policies, including streamlining and reducing permitting timelines, improving auction designs and providing better visibility on auction schedules, as well as improving incentive schemes to support rooftop solar.



Beyond Europe, the upward revision in renewable power growth for the next five years is also driven by China, the United States

and India, which are all implementing policies and introducing regulatory and market reforms more quickly than previously planned to combat the energy crisis. As a result of its recent 14th Five-Year Plan, China is expected to account for almost half of new global renewable power capacity additions over the 2022-2027 period. Meanwhile, the US Inflation Reduction Act has provided new support and long-term visibility for the expansion of renewables in the United States.



Total global biofuel demand is set to expand by 22% over the 2022-2027 period. The United States, Canada, Brazil, Indonesia and India make up 80% of the expected global expansion in biofuel use, with all five countries having comprehensive policies to support growth.

The Renewables 2022 report can be downloaded from [iea.org/reports/renewables-2022/executive-summary](https://www.iea.org/reports/renewables-2022/executive-summary).

Green NCAP Results on Impact of Bioethanol on GHG Emissions

On 15 December 2022, Green NCAP released the ratings of six cars tested with two different fuels: standard E10 petrol and E85 bioethanol.

The NGO says test results show that bioethanol has considerable benefits for the overall reduction of greenhouse gases and global impact on the environment.

Green NCAP says that in the transport sector there are a range of possibilities that will contribute to a reduction in greenhouse gas emissions, depending on the local situation and available resources. In the transition phase to clean and green mobility, full powertrain electrification could be effectively supported by other climate friendly options such as biofuels. It concludes that if surplus bioethanol amounts are available, the blending share can be increased and E85 could be a viable fuel for some applications. In the short term, flex fuel vehicles are a cost effective and efficient technical choice in the transition, provided the ethanol used complies with sustainability and socio-economic criteria.

Full results can be found at

[greenncap.com/press-releases/green-ncap-reveals-the-positive-impact-of-the-alternative-fuel-bioethanol-on-ghg-emissions/](https://www.greenncap.com/press-releases/green-ncap-reveals-the-positive-impact-of-the-alternative-fuel-bioethanol-on-ghg-emissions/).

RESEARCH SUMMARY

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Lessons learnt for air pollution mitigation policies from the COVID-19 pandemic: The Italian perspective, Massimo D'Isidoro, et al.; *Atmospheric Pollution Research* (December 2022), Vol. 13, Issue 12, 101620, [doi: 10.1016/j.apr.2022.101620](https://doi.org/10.1016/j.apr.2022.101620).

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Dirty density: Air quality and the density of American cities, Felipe Carozzi and Sefi Roth; *Journal of Environmental Economics and Management* (in press), [doi: 10.1016/j.jeem.2022.102767](https://doi.org/10.1016/j.jeem.2022.102767).

PLUME Dashboard: A free and open-source mobile air quality monitoring dashboard, Chris Kelly, et al.; *Environmental Modelling & Software* (February 2023), Vol. 160, 105600, [doi: 10.1016/j.envsoft.2022.105600](https://doi.org/10.1016/j.envsoft.2022.105600).

Emissions Measurements and Modelling

Environmental and health risk implications of unregulated emissions from advanced biofuels in a Euro 6 engine, Silvana Arias, et al.; *Chemosphere* (February 2023), Vol. 313, 137462, [doi: 10.1016/j.chemosphere.2022.137462](https://doi.org/10.1016/j.chemosphere.2022.137462).

Performance and regulated emissions from a Euro VI-D hybrid bus tested with fossil and renewable (hydrotreated vegetable oil) diesel fuels under urban driving in Bilbao city, Spain, Carmen Mata, et al.; *Journal of Cleaner Production* (January 2023), Vol. 383, 135472, [doi: 10.1016/j.jclepro.2022.135472](https://doi.org/10.1016/j.jclepro.2022.135472).

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Emissions Control, Catalysis, Filtration

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FORTHCOMING CONFERENCES

SAE On-Board Diagnostics Symposium

14-16 March 2023, Prague, Czech Republic

sae.org/attend/obd-europe

13th VERT Forum

21 March 2023, Switzerland

vert-dpf.eu/j3/index.php?view=article&id=66:vert-r-13th-vert-forum-march-21th-2022-conference&catid=8

WCX SAE World Congress Experience

18-20 April 2023, Detroit, USA

sae.org/highlights/wcx

44th International Vienna Motor Symposium

26-28 April 2023, Vienna, Austria

wiener-motorensymposium.at/fileadmin/Media

SAE Heavy-Duty Diesel Sustainable Transport Symposium

3-4 May 2023, Gothenburg, Sweden

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

AECC will have a presentation.

Fuel Science – From Production to Propulsion

23-25 May 2023, 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

Stuttgart International Symposium

4-5 July 2023, Stuttgart, Germany

fkfs-veranstaltungen.de/en/events/stuttgart-symposium

Deadline for abstracts 20 January 2023

Cenex-LCV

6-7 September 2023, Millbrook, United Kingdom

cenex-lcv.co.uk

FISITA World Congress 2023

12-15 September 2023, Barcelona, Spain

fisita.com/diary/fisita-world-congress-2023

Deadline for abstracts February 2023