AUGUST 2024

NEWSLETTER

International Regulatory Developments

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EUROPE

Entry into Force of Industrial Emissions Directive

On 4 August 2024, the revision of the Industrial Emissions Directive (IED) entered into force.

The European Commission says it modernises the way national and local authorities give permits for installations which are a major source of pollution across the EU. In line with the European Green Deal's zero pollution ambition, the new Directive on industrial and livestock rearing emissions aims to reduce emissions to air, water and land from large industrial installations and the largest pig and poultry farms.

The enhanced law builds on the EU's permitting system for prevention and control of emissions, which is designed to ensure that 'best available techniques' are applied to reduce pollution. It covers new economic activities and additional sources of emissions, while streamlining the permitting process. It tightens conditions on granting derogations and gives authorities better enforcement powers. For the first time in EU environmental law, the new directive recognises people's right to seek compensation for damage to their health caused by illegal pollution.

EU frontrunners in industrial innovation will benefit from flexible permitting to test techniques with higher environmental performance.

A new Innovation Centre for Industrial Transformation and Emissions (INCITE) will gather information on innovative solutions for pollution control.

Member States will have until 1 July 2026 to adapt their national laws to the revised Directive. Data collected by national authorities will be first reported to the new Industrial Emissions Portal in 2028.

The European Commission announcement is at ec.europa.eu/commission/presscorner/detail/en/mex_24_4143.

Implementing Decision on Publication of List with Manufacturer CO_2 Values

On 21 August 2024, Commission Implementing Decision 2024/2165 was published in the Official Journal of the European Union. This relates to the publication of a list indicating certain CO_2 emissions values per manufacturer as well as average specific CO_2 emissions of all new heavy-duty vehicles registered in the Union pursuant to Regulation (EU) 2019/1242 for the reporting period of the year 2021.

The Decision states that the average specific CO_2 emissions of a manufacturer should be determined on the basis of data reported by Member States and manufacturers for vehicles of that manufacturer. It also contains provisions for the zero- and low-emission factor for each manufacturer, as well as the CO_2 emission reduction trajectory and the emission credits per manufacturer.

The Implementing Decision is available to read at eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202402165.

Confirmation of ENVI Coordinators

On 19 August 2024, the Environment (ENVI) Committee of the European Parliament published details of the coordinators representing the various parliamentary groups.

These coordinating MEPs are listed below:

- EPP – Peter Liese
- S&D – Tiemo Wölken
- PfE – Silvia Sardone
- ECR – Alexandr Vondra
- Renew – Pascal Canfin
- Greens/EFA – Sara Matthieu
- The Left – Jonas Sjöstedt
- ESN – Anja Arndt

Details are at europarl.europa.eu/cmsdata/287873/ENVI%20Coordinators_10th%20parliamentary%20term.pdf.

Legal Challenge to 2030 Climate Targets

On 27 August 2024, Climate Action Network (CAN) Europe and the Global Legal Action Network (GLAN) presented their arguments to the General Court of the EU on Tuesday (27 August) that the EU's 2030 climate targets are insufficient.

Currently, the EU must reduce its greenhouse gas emissions by 55% by 2030 compared to 1990. The NGOs argue that this reduction should be 65% and that the Commission should revise the annual emission allowances of Member States accordingly. They also say that the European executive sets unlawful annual emissions limits by 2030 for each EU country in the buildings, agriculture, waste, small industry, and transport sectors that cover about 57% of the total EU-27 greenhouse gas emissions.

In the court case, CAN Europe and GLAN argue that the allocations decided are contrary to environmental law and international commitments. This includes the Paris Agreement, the Charter of Fundamental Rights of the European Union, and Article 191 of the Treaty on the Functioning of the European Union.

The NGOs point to a series of legal flaws in the 2030 target and its accompanying Impact Assessment, from which it then followed that the annual emissions allocations contravene environmental law.

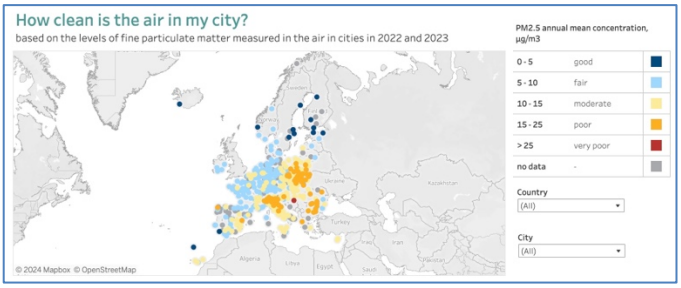
A hearing at the General Court could be held in the second half of 2025 and a judgement released in early 2026. The desired end result for CAN Europe and GLAN would be a ruling that forces the Commission to review and increase the national annual emissions limits.

Further information on the legal challenge is at glanlaw.org/single-post/eu2030-climate-target-case.

EEA European City Air Quality Viewer

On 29 August 2024, the European Environment Agency (EEA) published its updated European city air quality viewer. This ranks 375 cities from the cleanest to the most polluted based on average levels of fine particulate matter (PM2.5). The data was collected from over 500 monitoring stations at urban locations across EEA member countries over the past two calendar years, 2022 and 2023.

The viewer shows that only 13 European cities had average fine particulate concentrations that were below the World Health Organization's (WHO) health-based guideline level of 5 micrograms per cubic meter of air (5 μ g/m^3). These cities include four northern capitals: Reykjavik, Tallinn, Stockholm and Helsinki.



EEA says the European city air quality viewer provides an indication on the typical air quality in European cities over the past two years. The viewer focuses on long-term concentrations of PM2.5, as it is the air pollutant with the highest negative health impacts. Later this year, the EEA will publish an analysis on the impacts of air pollution on ecosystems and human health. This includes estimates on deaths and ill health that can be attributed to poor air quality.

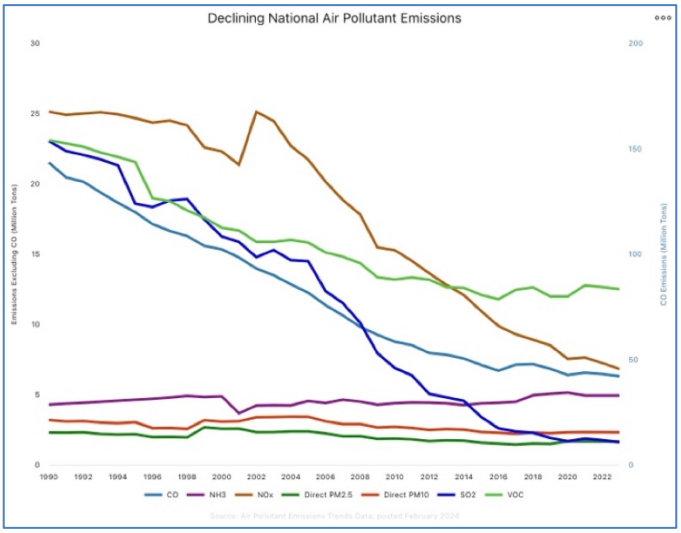
The EEA press release is at eea.europa.eu/en/newsroom/news/updated-data-uppsala-has-cleanest-city-air-in-europe.

NORTH AMERICA

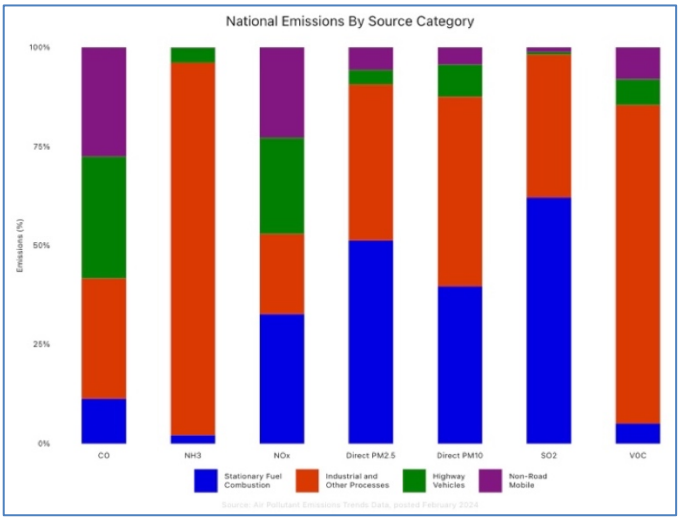
US EPA Air Quality Trends Report

On 16 August 2024, the US Environmental Protection Agency (EPA) published its annual interactive report tracking America's progress in improving air quality. 'Our Nation's Air: Trends Through 2023' tracks trends in air quality and emissions data, evaluates efforts to improve visibility in national parks and explores trends and community-level health impacts of hazardous air pollutants.

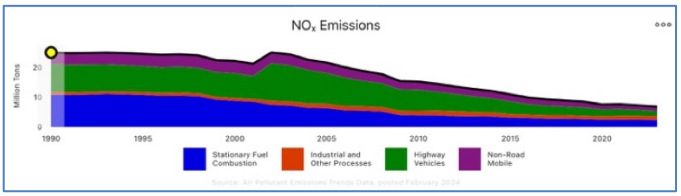
The report shows how air pollutant emissions have fallen since 1990, with NOx in particular continuing a downward trend since the early 2000s. Measurements of particulate matter (PM2.5 and PM10) show a level trajectory, albeit at a relatively low level in terms of mass.



When looking at emissions by source category, the data shows that highway vehicles and non-road mobile machinery together produce 47% of total NOx emissions.



Nevertheless, the overall emissions from highway vehicles especially have reduced significantly in the last 20 years.



The report is at gispub.epa.gov/air/trendsreport/2024/#naaqs_trends.

ASIA-PACIFIC

China Subsidies for China 3 Vehicle Scrappage

On 25 July 2024, the Chinese National Development and Reform Commission increased the level of subsidies to scrap

China 3 or earlier gasoline or diesel passenger cars or new energy passenger cars registered before 30 April 2018.

To receive the subsidy, a new vehicle must be purchased. Those opting to buy an NEV now qualify for a 20,000 yuan (€2 538) subsidy while those selecting a vehicle with an engine having a displacement of 2.0 L or less quality for a 15,000 yuan (€1 904) subsidy. The subsidies are available until the end of 2024. The measures have been implemented to increase consumer demand.

China 3 and earlier passenger cars that qualify are gasoline passenger cars registered before 30 June 2011 and diesel passenger cars registered before 30 June 2013. Those using other fuels also qualify.

In April, the subsidies were set at 10,000 yuan (€1 269) for an NEV purchase and 7,000 yuan (€888) for purchasing a vehicle with a 2.0 L or smaller engine.

The July announcement also included subsidies for scrapping NEV buses and power batteries more than eight years old, China III and older diesel trucks, older ships and older agricultural machinery.

The announcement, in Chinese, is at ndrc.gov.cn/xwdt/tzgg/202407/t20240725_1391943.html.

UNITED NATIONS

International Day of Clean Air for Blue Skies

On 7 September 2024, the UN's International Day of Clean Air for blue skies will be observed.

Held under the theme "Invest in #CleanAirNow", the UN says this year's observance emphasises the urgent need for stronger partnerships, increased investment, and shared responsibility to combat air pollution. It is the second leading risk factor for death, causing around 8.1 million premature deaths annually from conditions such as stroke, heart disease, lung cancer, and acute respiratory infections.

It goes on to say that 99% of people worldwide breathe polluted air; air pollution was responsible for 8.1 million deaths in 2021, with over 90% associated with noncommunicable diseases; and the deaths of more than 700 000 children under five were from causes related to household and outdoor air pollution.

The UN states that if action is taken now, global crop losses from air pollutants can be halved by 2050. Reducing emissions of methane, an important greenhouse gas and air pollutant, could save between $4 (€3.62) billion to $33 (€29.84) billion. Air pollution is estimated to cost the global economy $8.1 (€7.32) trillion per year, equivalent to 6.1% of the global GDP due to increased healthcare costs.

The UN Environment Programme press release is at unep.org/events/un-day/international-day-clean-air-blue-skies-2024.

GENERAL

Green NCAP Update to LCA Data and Fact Sheets

On 1 August 2024, Green NCAP announced an update of its Life Cycle Assessment (LCA) data and fact sheets. The update includes increased data coverage of countries, including Norway, and fuel types, such as LPG and E85, as well as more up to date information on battery production, supply of electricity and biofuel mixes. Green NCAP says this update reflects the evolving automotive industry and the rapidly changing energy sector.

Green NCAP's new LCA results have revealed the lowered environmental impacts of electric and plug-in hybrid vehicles over their lifetime, compared to conventional combustion engine vehicles. This change can be attributed primarily to the decreasing carbon intensity of battery production and the improving expectations for Europe's future energy mix.

Emissions from battery production, in kg CO_2-equivalent/kWh capacity, have decreased by ca. 16% in the new data, driven primarily by economies of scale and sustainability efforts of manufacturers. On average in Europe, electricity emission projections between today and 2039, in grams CO_2-eq./kWh, are expected to decrease by about 26% compared to old data. Increasingly ambitious policy initiatives, such as 'Fit for 55', are the driving force behind heightened expectations for greener European energy. Overall, these improvements in the industry, now reflected in the data, have resulted in a decrease in emissions of some 20 grams CO_2-eq./km for the average battery electric vehicle representing about 15% reduction of their total carbon footprint. This equates to a saving of 4.8 tonnes of CO_2-eq. for each vehicle over its lifetime. Biomass mix of biofuels is also changing. Most notably, FAME fuel (Biodiesel) is expected to contain 13 percentage points more used cooking oil and 16 percentage points less palm oil by 2050, which lowers the lifetime emissions of this fuel.

Green NCAP says there is a broad consensus that the LCA method is essential for producing fair environmental assessments of transportation systems. LCA calculations therefore allow vehicles to be compared in a more neutral and systematic manner.

Ricardo, the global strategic, environmental and engineering consultancy, and a leader in vehicle life-cycle assessment, assisted Green NCAP in this update by providing data projections for electricity supply in European countries.

The Green NCAP press release is at greenncap.com/press-releases/green-ncap-reveals-reduction-in-life-cycle-carbon-footprint-of-evs.

ICCT Policy Update on Australia's Euro 6d-equivalent Emission Standards

On 15 August 2024, the International Council on Clean Transportation (ICCT) published a policy update on Australia's

new Euro 6d-equivalent emission standards for light vehicles, which apply from 1 December 2025 for new models of vehicles.

The update provides an overview of the new standards, including the laboratory test procedure, emission limits, real-world driving test requirement, on-board diagnostic requirements, on-board fuel and energy consumption monitoring requirements and evaporative test procedure, as well as durability and vehicle useful life requirements.

ICCT states that Australia's regulatory impact analyses estimated that the new emission standards will lead to total benefits of more than AU$6.3 (€3.8) billion accrued over the period 2026–2040, which is more than four times higher than the estimated total costs of compliance. This package of Euro 6d-equivalent standards, combined with the improved fuel quality standards to be implemented between 2025 and 2028, is estimated to result in slightly larger benefits than for the emission standards alone – about AU$6.4 (€3.86) billion in total benefits by 2040. That outweighs the associated costs of compliance, approximately AU$1.8 (€1.08) billion, by a factor of almost 3.6.

The policy update can be read in detail at theicct.org/wp-content/uploads/2024/08/ID-199-%E2%80%93-Australia-Euro-6d_final.pdf.

Real-World Vehicle Exhaust Emissions in India using Remote Sensing

On 23 August 2024, The Real Urban Emissions (TRUE) Initiative published analysis of real-world motor vehicle exhaust emissions in Delhi and Gurugram using remote sensing.

The TRUE Initiative, with analysis led by the International Council on Clean Transportation (ICCT) and in collaboration with the Delhi and Gurugram authorities, conducted a testing campaign that aimed to develop a new understanding of the real-world tailpipe emissions of the Delhi and Gurugram vehicle fleets; demonstrate remote sensing technology and provide recommendations to support its broader application in India; and provide an independent evaluation of the tailpipe emissions from Indian vehicles to support evidence-based policymaking and provide guidance to decision-makers, connecting findings to policies and actions to mitigate vehicle pollution.

The study provided an opportunity to evaluate real-world emissions within the broader policy landscape that includes India's recent leapfrogging from Bharat Stage (BS) IV to BS VI tailpipe emission standards and the long-standing promotion of compressed natural gas (CNG) fuelled vehicles as a clean transportation alternative in the capital region.

Analysis shows that India's strategy of leapfrogging from BS IV to BS VI emission standards led to significant reductions in tailpipe emissions across all pollutants measured and vehicle types captured. For example, real-world NOx emissions from private cars showed a reduction of 81% and emissions from buses showed a reduction of nearly 95%.

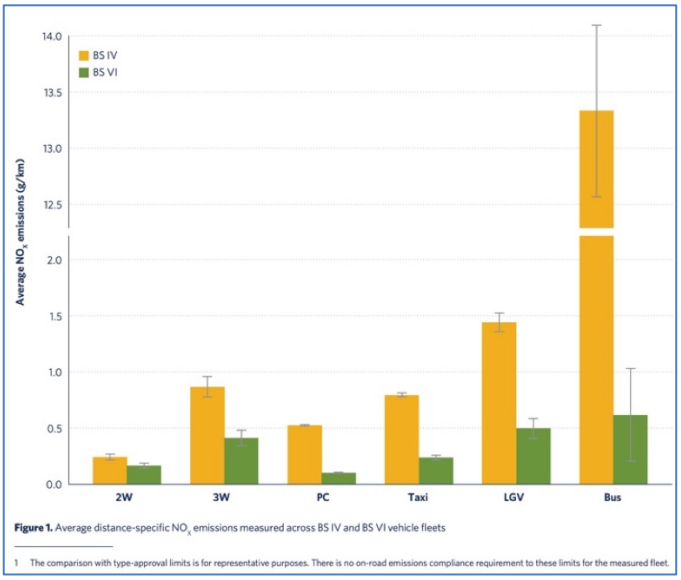


Figure 1. Average distance-specific NO_x emissions measured across BS IV and BS VI vehicle fleets

1 The comparison with type-approval limits is for representative purposes. There is no on-road emissions compliance requirement to these limits for the measured fleet.

Despite this improvement, real-world emissions from BS VI vehicles in many cases remain higher than type approval limits, particularly for NOx. Across the range of BS VI vehicles measured fuelled by CNG, emissions were 1.5 – 14 times greater than the limits.

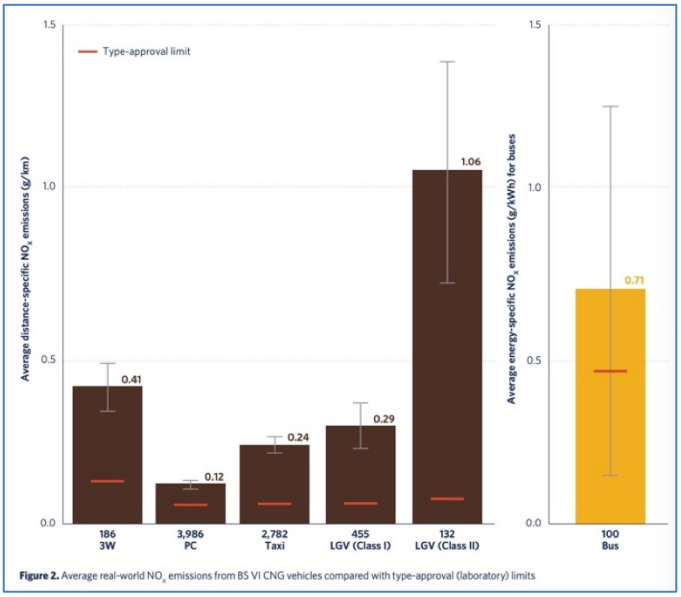


Figure 2. Average real-world NO_x emissions from BS VI CNG vehicles compared with type-approval (laboratory) limits

Average emissions from commercial vehicles are much higher than from private vehicles, with NOx emissions from BS VI taxi and light goods vehicle fleets being 2.4 and 5.0 times more, respectively, than their private car counterparts.

Certain BS VI vehicle fleets fuelled by CNG also showed high NOx emissions, and the report says this aligns with previous TRUE and ICCT analyses that challenge the conventional view that CNG is a "clean" alternative fuel.

The TRUE report is available to read at theicct.org/wp-content/uploads/2024/08/ID-200-%E2%80%93-Delhi-RS_TRUE_Fact-Sheet_final.pdf.

Real-World Vehicle Emissions in Four Major Scottish Cities

On 28 August 2024, The Real Urban Emissions (TRUE) Initiative published a further report (see AECC News of 22 March 2024) on its three-year long remote emissions testing campaign in four Scottish cities under Transport Scotland's Air Remote Sensing Project. From 2021 to 2023, approximately 1.4 million vehicle measurements were collected across Aberdeen, Dundee, Edinburgh, and Glasgow, providing a comprehensive picture of the Scottish fleet and allowing for greater insight into vehicle emissions over time.

TRUE says that now the campaign is concluded, one of the key takeaways is that measurements of NOx emissions from private passenger cars showed an annual rate of decrease of 7% with natural fleet turnover and without any additional policy intervention. It also points out that emission deterioration has led to the increase in fleet average emissions of taxis and private hires in Dundee and Edinburgh, despite the growth of cleaner vehicles in the fleet. Finally, trends of NOx emissions over time varied by city for trucks, but the results from all four showed that Euro V trucks, some of the oldest in the fleet, are particularly prone to emission increases over time. They are also more likely to have defective or tampered emission control systems, highlighting the importance of identifying these trucks and removing them from the fleet.

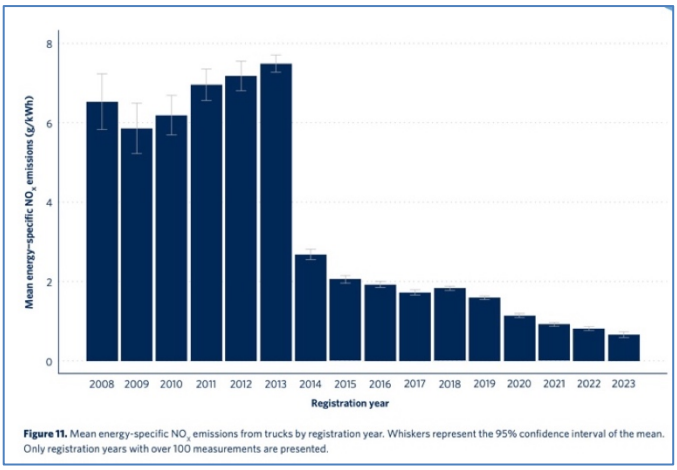


Figure 11. Mean energy-specific NO_x emissions from trucks by registration year. Whiskers represent the 95% confidence interval of the mean. Only registration years with over 100 measurements are presented.

TRUE concludes that this picture of vehicles across Scotland also offers the unique ability to provide policy recommendations based on real-world driving conditions over time. At the national level, the Ministry of Transport could consider adding NOx emissions to the required annual vehicle testing program to identify and remove high polluters from the road. Locally, cities could consider enforcing milage or stricter age limits on taxis and private hire vehicles. Policy measures to accelerate fleet renewal and a transition to zero-emission vehicles could also be considered.

The TRUE report can be downloaded from theicct.org/publication/rw-vehicle-emissions-in-four-major-scottish-cities-aug24.

RESEARCH SUMMARY

Effects of Emissions and Pollution

Traffic-related ultrafine particles impair mitochondrial functions in human olfactory mucosa cells – Implications for Alzheimer's disease, Laura Mussala et al.; *Redox Biology* (Volume 75, September 2024), doi:10.1016/j.redox.2024.103272.

Associations of air pollutants and related metabolites with preterm birth during pregnancy, Liuyan Zheng et al.; *Science of The Total Environment* (August 2024), doi:10.1016/j.scitotenv.2024.175542.

Clinical and inflammatory features of traffic-related diesel exposure in children with asthma, Anne M Fitzpatrick et al.; *Annals of Allergy, Asthma and Immunology* (July 2024), doi:10.1016/j.anai.2024.07.019.

Air Quality and Cardiovascular Mortality-Analysis of Recent Data, Carson Welker et al.; Journal of cardiothoracic and Vascular Anesthesia (July 2024), doi:10.1053/j.jvca.2024.07.042.

Southern Air Project - scientific efforts to monitor and measure the impacts of air pollution in southern Brazil, Rodrigo de Lima Brum et al.; *Societal Impacts* (December 2024), doi:10.1016/j.socimp.2024.100074.

Impact of Fine Particulate Pollution Exposures on Respiratory Health in a Megacity of Pakistan, Qiaoxuan Lin et al.; Atmospheric Pollution Research (August 2024), doi:10.1016/j.apr.2024.102277.

Air Quality, Sources and Exposure

Evaluating the efficacy of targeted traffic management interventions: A novel methodology for determining the composition of particulate matter in urban air pollution hotspots, Hamesh Patel et al.; *Science of The Total Environment* (November 2024), doi:10.1016/j.scitotenv.2024.175414.

Emission analysis based on mixed traffic flow and license plate recognition model, Shaojie Wu et al.; *Transportation Research Part D: Transport and Environment* (September 2024), doi:10.1016/j.trd.2024.104331.

Source apportionment of particle-bound polycyclic aromatic hydrocarbons (PAHs), oxygenated PAHs (OPAHs), and their associated long-term health risks in a major European city, Irini Tsiodra et al.; *Science of The Total Environment* (August 2024), doi.org/10.1016/j.scitotenv.2024.175416.

Air pollution exposure in active versus passive travel modes across five continents: A Bayesian random-effects meta-analysis, Marie Ramel-Delobel et al.; *Environmental Research* (November 2024), doi:10.1016/j.envres.2024.119666.

Emissions Measurements and Modelling

Impacts of mode shift on well-to-wheel emissions from inter-capital transport in Australia – Part I: Road and rail transport, Robin Smit and Paul Boulter; *EER* (2024), Vol. 1(1), article 3470, doi: 10.36922/eer.3470.

Using Multi-Source data to identify high NOx emitting Heavy-Duty diesel vehicles, Zhuoqian Yang et al.; *Transportation Research Part D: Transport and Environment* (Volume 134, September 2024), doi:10.1016/j.trd.2024.104332.

Exploring high-emission driving behaviors of heavy-duty diesel vehicles based on engine principles under different road grade levels, Bingyan Xie et al.; *Science of The Total Environment* (August 2024), doi:10.1016/j.scitotenv.2024.175443.

Emissions Control, Catalysis, Filtration

Regulated and unregulated emissions from Euro VI Diesel and CNG heavy-duty vehicles, Roberto Gioria et al.; *Transportation Research Part D: Transport and Environment* (Volume 134, September 2024), doi:10.1016/j.trd.2024.104349.

A progressive review on NOx purification from diesel vehicle exhaust: From technology development to material active sites analysis, Yiwen Wang et al.; *Separation and Purification Technology* (Volume 354, Part 5, 2025), doi:10.1016/j.seppur.2024.129111.

The promotion of rare earth on Pt-SiO2-Al2O3 catalyst for NO oxidation in diesel exhaust, Yaxin Liu et al.; *Journal of Environmental Chemical Engineering* (October 2024), doi:10.1016/j.jece.2024.113612.

Soot formation mechanism of modern automobile engines and methods of reducing soot emission for catalyzed diesel particulate filter: A review, Zhiqing Zhang et al.; *Process Safety and Environmental Protection* (October 2024), doi:10.1016/j.psep.2024.07.121.

Transport, Climate Change and Emissions

Correlation between carbon emissions, fuel consumption of vehicles and speed limit on expressway, Chao Gao et al.; *Journal of Traffic and Transportation Engineering* (July 2024), doi:10.1016/j.jtte.2023.02.007.

Have low emission zones slowed urban traffic recovery after Covid-19?, Daniel Albalate, Xavier Fegeda; International Journal of Sustainable Transportation (August 2024), doi:10.1080/15568318.2024.2386135.

FORTHCOMING CONFERENCES

Thermo- and Fluid Dynamics Processes for Clean Propulsion Powerplants
10-13 September 2024, Valencia, Spain
cmt.upv.es/#/thiesel2024

Rostock Large Engine Symposium
12-13 September 2024, Rostock, Germany
rgmt.de

Emissions Analytics Non-Road Powertrains and Fuels
18-19 September 2024, Munich, Germany
conferences.emissionsanalytics.com/nonroad-eu

SAE Conference on Sustainable Mobility
18-20 September 2024, Catania, Italy
universitacusano.com/csm2024

Aachen Colloquium Sustainable Mobility
7-9 October 2024, Aachen, Germany
aachener-kolloquium.de/en

Future of Biofuels
23-24 October 2024, Copenhagen, Denmark
fortesmedia.com/future-of-biofuels-2024,4,en,2,1,104.html

Ricardo Motorcycle Conference
4 November 2024, Milan, Italy
ricardo.com/en/news-and-insights/events-and-webinars/ricardo-motorcycle-conference

FISITA World Mobility Summit
13-14 November 2024, Warren, USA
events.fisita.com/event/Summit2024

POLIS Conference 2024
27-28 November 2024, Karlsruhe, Germany
polisnetwork.eu/2024-annual-polis-conference

SAE WCX World Congress
8-10 April 2025, Detroit, USA
wcx.sae.org

Heavy-Duty Sustainable Transport Symposium
7-8 May 2025, Gothenburg, Sweden
sae.org/attend/heavy-duty-sustainable-transport-symposium

Vienna Motor Symposium
14-16 May 2025, Vienna, Austria
oevk.eventsair.com/motorensymposium2025abstracts/en/Site/Register