

NEWSLETTER

International Regulatory Developments

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AECC Wishes for the New Year

The AECC team wishes you a healthy, happy and successful 2022. We look forward to working in partnership with you for cleaner air.



EUROPE

Meeting of EU Transport Ministers

On 9 December 2021, European Union Transport Ministers met for the last day of the Transport, Telecommunications and Energy Council meeting, chaired by the Minister of Infrastructure Mr Jernej Vrtovec. The 'Fit for 55' energy and climate package were the main topic of the meeting.

Mr Vrtovec stated that the Slovenian Presidency had put enormous efforts into the proposal for the Regulation on the deployment of alternative fuels infrastructure (AFIR) and achieved progress on technical aspects and the level of ambition. He said that the transition to alternative fuels will greatly contribute to reducing our carbon footprint as fossil fuels will be replaced by alternative fuels from renewable sources with low or no net-greenhouse gas emissions. He added that not enough people buy alternative fuel vehicles as the infrastructure for recharging or refuelling with alternative fuels is limited and very unevenly distributed across the EU. Discussions also focused on the aviation and maritime sectors.

More details of the meeting can be found at slovenian-presidency.consilium.europa.eu/en/news/transport-ministers-address-dossiers-from-fit-for-55-package.

Commission Response to Parliamentary Question on Zero Emission Standards

On 7 December 2021, European Commission Vice-President Mr Frans Timmermans responded to a question on potential impacts of the Commission's proposed CO₂ emission standards. This related to car dealerships and to Italy's call for an exemption for luxury cars.

Commissioner Timmermans confirmed that the CO₂ emission standards apply to all manufacturers placing new vehicles on the market in the EU, regardless of where those vehicles are manufactured. This includes the imports of vehicles from third countries registered in the EU as new vehicles. As a result, it is not expected that the Commission's proposal would negatively impact car dealers as their sales of new cars would simply shift to zero-emission car models, which will become more affordable with increased supply under the CO₂ standards.

Mr Timmermans also stated that the Commission's proposal includes the removal of the derogation for small volume manufacturers from 2030, to enable emissions reductions from all new registered vehicles in the EU in line with the strengthened climate ambition. The Commission considered it impossible to exempt such cars fully from the emission targets, also given the need to create a level playing field among manufacturers.

The question and answer can be found at europarl.europa.eu/doceo/document/E-9-2021-004221_EN.html and europarl.europa.eu/doceo/document/E-9-2021-004221-ASW_EN.pdf.

Draft ENVI Committee Report on CO₂ Emission Standards

On 8 December 2021, the Environment (ENVI) Committee of the European Parliament published its draft report on CO₂ emission standards.

The ENVI committee Rapporteur MEP Huitema (NL, Renew) has released the draft ENVI committee report, which includes the amendments suggested to the CO₂ emission standards proposal presented by the European Commission. This report will be discussed in the ENVI Committee on 13 January 2022.

The main items included in the report are that no change is proposed to the 100% reduction target for 2035, and interim car and van targets are proposed for 2027 of 40% and 45% respectively. The 2030 target is increased from 55% to 75% for cars and 70% for vans.

In addition to a progress report every two years, starting in 2028, ENVI says that in addition, the Commission should monitor and assess the need for possible measures to address the social impacts on households and workers of the transition to zero-emission vehicles. It says that innovative technologies such as the production of electro-fuels with air capture, if further developed, could offer prospects to decarbonise light-duty vehicles with internal combustion engines, which can be put on the market until the date of application of the zero-emissions target laid down in this Regulation.

The draft report is a first set of amendments from the ENVI committee. Members of the committee will be able to table further amendments (deadline is 25 January 2022). Further

amendments can be tabled during the discussion of the final ENVI report during the EP plenary session.

The draft report can be found at europarl.europa.eu/doceo/document/ENVI-PR-697678_EN.pdf.

First Meeting of Zero Pollution Stakeholder Platform

On 16 December 2021, the members of the Stakeholder Platform announced by the EU Action Plan: Towards Zero Pollution for Air, Water and Soil met for the first time. The meeting was held to start developing the 2022-2024 work programme, meant to support the implementation of the Action Plan. The platform is a joint initiative of the European Commission and the European Committee of the Regions (CoR).

Commissioner for the Environment, Oceans and Fisheries Virginijus Sinkevičius said that the Zero Pollution Stakeholder Platform has an important role to play in implementing the Action Plan. He invited all stakeholders involved to develop and share good practices.

The Zero Pollution Stakeholder Platform will help deliver on the flagship initiatives and actions set out in the Zero Pollution Action Plan by bringing together actors from different communities and areas of expertise to tackle inter-related challenges, e.g., strengthening a joint environment and health agenda, and by defining a common vision on how to achieve zero pollution objectives.

The CoR press release can be found at cor.europa.eu/en/news/Pages/Zero-Pollution-Stakeholder-Platform-.aspx.

EEA Report on Air Quality in Europe 2021

On 7 December 2021, the European Environment Agency (EEA) published 'Air Quality in Europe 2021', presenting its annual assessment of air pollutant emissions and concentrations in ambient air across Europe, as well as associated impacts on health and the environment. The annual assessments are based on official data available from European countries.

The report says that despite improvements, air pollution is still a major health concern for Europeans. In the 27 Member States of the EU, 307 000 premature deaths resulted from exposure to fine particulate matter. It calculates that were the new WHO air quality guidelines for fine particulate matter to have been met across Europe in 2019, then this would have delivered a 72% drop in premature deaths across the European Union compared with 2005 levels.

The EEA report is available to download from eea.europa.eu/publications/air-quality-in-europe-2021?utm_source=EEASubscriptions&utm_medium.

EEA Single Programming Document 2022-2024

On 21 December 2021, the European Environment Agency (EEA) published its single programming document for 2022-2024. This contains the agency's mission statement as well as providing details of new tasks and objectives for the years ahead.

Under the Eighth Environment Action Programme (8th EAP) proposal put forward at the end of 2020, the European Commission added several new tasks to the EEA's work programme for 2021 and onwards. For 2022, under the 8th EAP, the Commission had proposed that the EEA should support new monitoring methods for real-world fuel consumption and emissions from light- and heavy-duty vehicles, but as resources have already been provided in 2021, the work will commence early.

Under the recently adopted European Climate Law, which enshrines the EU's climate neutrality objective set out in the EGD, the EEA will support the reporting of progress towards climate neutrality and the monitoring and evaluation of progress on adaptation under the regulation.

The document is available to read at eea.europa.eu/publications/single-programming-document-2022-2024?utm_source=EEASubscriptions&utm_medium=RSS.

NORTH AMERICA

US EPA Passenger Vehicle Greenhouse Gas Standards

On 20 December 2021, the United States Environmental Protection Agency (US EPA) finalised the federal greenhouse gas (GHG) emissions standards for Model Years (MY) 2023 to 2026 light-duty passenger cars and trucks.

The final standards are more stringent than originally proposed in response to the many comments received from states, environmental and consumer groups. EPA says the final rule also delivers more net benefits to consumers than the proposed rule, 'showcasing how zero-emission vehicles are more affordable and more efficient for consumers'. The rule is expected to be published in the Federal Register before 2 January 2022, with a start date of MY2023.

The US EPA is planning to initiate a separate rulemaking to establish multi-pollutant emission standards under the Clean Air Act for MY 2027 and later that it says will speed the transition of the light-duty vehicle fleet toward a zero-emissions future consistent with President Biden's Executive Order, "Strengthening American Leadership in Clean Cars and Trucks."

Model Year	Cars CO2 (g/mile)	Light Trucks CO2 (g/mile)	Fleet CO2 (g/mile)
2022 (SAFE reference)	181	261	224
2023	166	234	202
2024	158	222	192
2025	149	207	179
2026 and later	132	187	161
Total change 2022-2026	-49	-74	-63

The agency states that the standards provide adequate lead time for manufacturers to comply at reasonable costs. EPA’s analysis shows manufacturers can comply with the final standards with modest increases in the numbers of electric vehicles entering the fleet. By MY 2026, EPA projects that the final standards can be met with sales of about 17% electric vehicles (EVs), and wider uptake of advanced gasoline engine and vehicle technologies available today.

The EPA press release can be found at [epa.gov/newsreleases/epa-finalizes-greenhouse-gas-standards-passenger-vehicles-paving-way-zero-emissions](https://www.epa.gov/newsreleases/epa-finalizes-greenhouse-gas-standards-passenger-vehicles-paving-way-zero-emissions).

CARB Truck and Bus Inspection and Maintenance Programme

On 9 December 2021, the California Air Resources Board (CARB) approved the proposed Heavy-Duty Inspection and Maintenance Programme regulation (HD I/M) for trucks and buses. The regulation covers around 1 million vehicles with gross vehicle weight ratings (GVWR) greater than 14 000 pounds (6 350 kg) (Classes 4-8) licensed in California as well as out of state and out of country trucks operating in the state.

CARB will launch the programme in three phases. From 1 January 2023, the HD I/M programme will roll out a state-wide network of roadside remote emission monitors to screen for high emitting trucks, starting with the San Joaquin Valley and South Coast and geographically expanding over time. Identified high-emitting trucks would be required to conduct OBD or opacity testing and repairs.

The second phase, beginning on 1 July 2023, would link the HD I/M programme to the California DMV registration system to facilitate compliance certificate enforcement and start freight contractor and facility checks of on-vehicle certificates. Full programme implementation would begin on 1 January 2024 and initiate the twice per year compliance testing requirements.

The CARB press release can be found at content.govdelivery.com/accounts/CARB/bulletins/3001635.

ICCT Analysis of California’s Clean Diesel Programme

On 13 December 2021, the International Council on Clean Transportation (ICCT) published a white paper summarising the efforts made by the California Air Resources Board (CARB) in reduce emissions from diesel engines of all types. Specifically, it describes steps taken to develop plans and

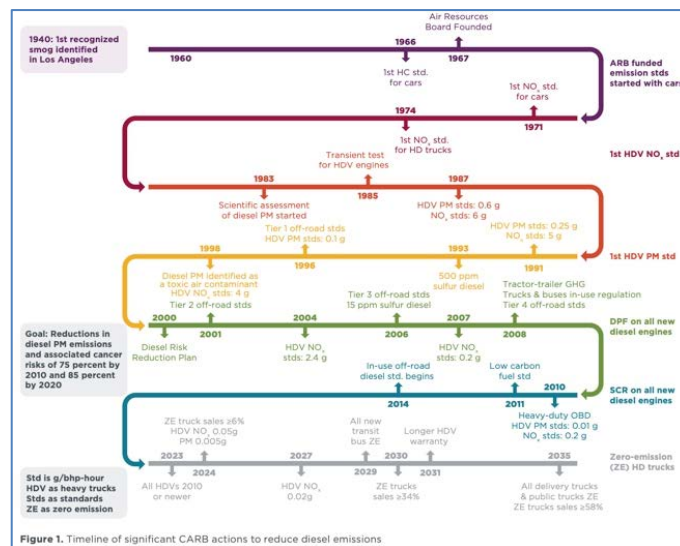
strategies to combat pollution from vehicles, off-road equipment and marine vessels, enforcement efforts taken to ensure compliance, and programmes developed to accelerate the replacement of older, high-emitting diesel engines.

Based on CARB’s experience reducing diesel and other mobile sources of emissions, ICCT says that certain lessons are relevant to current and future emission control efforts.

Firstly, it says an effective emission control program requires clear legal authority. A single implementing agency needs to be empowered to take actions to achieve a clearly stated goal, such as meeting health-based air quality standards, and reducing climate emissions by a specified percentage in a certain timescale.

The NGO says that technology-forcing emission standards for new vehicles must be effective. Technology-forcing regulation challenges engine and vehicle manufacturers and developers of emission control technologies to invent and demonstrate the feasibility of the most effective systems. Such requirements also establish the necessary lead time to commercialise new technologies.

The ICCT adds that an active in-use compliance programme is essential. This can identify engine families suspected of poor emissions-control durability, along with identifying operational modes where emissions are high, leading to regulatory improvements. In addition, such testing can identify malfunctioning control systems or detect tampering.



They say programmes that accelerate turnover of old diesel vehicles for new, low-emission vehicles are also important. In order to reduce truck emissions, CARB has used both incentives, such as grants to help reduce the price of new trucks, and a requirement that in 2023 no truck operating in California can be older than a 2010 model.

ICCT concludes that zero emissions are essential. For mobile sources, CARB has concluded that zero-emission vehicles

are the best approach to addressing the climate problem and eliminating urban pollutants. However, it adds that the full transition to zero-emissions will take several decades, so efforts to reduce combustion-engine NO_x, PM, and CO₂ emissions need to continue.

The ICCT press release can be found at theicct.org/publications/california-clean-diesel-hdvs-us-dec21.

ASIA-PACIFIC

New Zealand Biofuel Mandate

On 15 December 2021, the New Zealand government announced that it will introduce a Sustainable Biofuels Mandate to help reduce greenhouse gas emissions in the transport sector.

From 1 April 2023, fuel wholesalers will be required to cut the total greenhouse gas emissions for transport fuels they sell by a set percentage each year, by deploying biofuels as a part of their fuel supply. Land transport is estimated to account for almost half of New Zealand's CO₂ emissions.

Transport Minister Mr Michael Wood said that biofuels will help reduce emissions while the country makes the transition to low-emission vehicles.

On 16 December 2021, the International Council on Clean Transportation (ICCT) published a working paper considering three scenarios for how the government could implement its sustainability aims for this policy. It focuses on various limits that could be placed on food- and feed-based biofuels, and the authors assess the combination of biofuel pathways that could be used to meet the mandate in 2025 in each scenario, and also the associated greenhouse gas (GHG) impacts and costs.

	Scenario 1	Scenario 2	Scenario 3
GHG difference compared to no action (thousand tons CO ₂ e)	-813	-562	+69
Share of food- and feed-based biofuels	0%	50%	78%
Total policy cost to consumers (million NZD)	70	38	22
Average cost of carbon abatement (NZD/tCO ₂ e)	86	68	N/A (there is no carbon abatement)
GHG credit price (NZD/tCO ₂ e)	131	112	91

the GHG reductions are highest in Scenario 1, where no food- or feed-based biofuels are allowed, and this comes at a greater cost than Scenario 2, where such biofuels are limited to 50% for compliance and high indirect land use change (ILUC) biofuels are not allowed. GHG emissions actually increase compared to no policy action in Scenario 3, where there is no limit on the amount of food- or feed-based biofuels. Scenario 1 comes at a greater cost to consumers than Scenario 2 because supplying high quantities of waste-based biofuels is more expensive than supplying food-based biofuels. However, the average cost of carbon abatement when considering ILUC emissions is only about 20% lower in Scenario 2 than in Scenario 1.

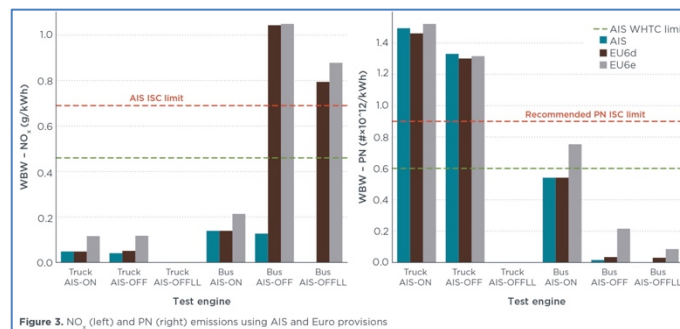
The New Zealand government press release is at beehive.govt.nz/release/powering-nz%E2%80%99s-future-biofuels. The ICCT working paper can be downloaded from theicct.org/publications/sustainable-biofuels-nz-dec21.

Real-World Emissions Performance of Bharat Stage VI Truck and Bus

On 20 December 2021, the International Council on Clean Transportation (ICCT) published a working paper evaluating emissions of a Bharat Stage VI truck and bus, based on Part IV of India's AIS 137 and the Euro VI-D and E provisions.

In addition, researchers conducted a comprehensive, no-exclusions-based assessment at different engine loads and speeds. Both the truck and the bus were found to be well under the limits for nitrogen oxides (NO_x) emissions using India's AIS (Automotive Industry Standard) provisions. When the Euro VI provisions were applied, however, the NO_x emissions increased for both vehicles and more so for the bus, which showed emissions 1.75 to 2.2 times higher than the WHTC (World Harmonised Transient Cycle) limit, depending on the test parameters. The opposite was found for particle number (PN) emissions, as the bus had lower PN emissions than the truck on all routes.

The ICCT says that overall, results show that India's AIS provisions have some large gaps to cover when compared with the latest Euro VI-E provisions and do not capture emissions during cold start or urban operations well. The NGO says that for ISC (In-Service Conformity) testing in India to capture all emissions from real-world driving, the findings suggest that the power threshold needs to be lowered to 5%; all cold-start emissions must be included; and the percentile for data evaluations should be increased to 100%.



The full ICCT report can be downloaded from theicct.org/publications/india-hdv-pems-testing-dec21.

GENERAL

CLEPA Report on Employment Impact of Electrification

On 6 December 2021, CLEPA, the European Association of Automotive Suppliers, published a PwC Strategy& study carried out to assess the impact of three different Green Deal policy scenarios on employment and value-add among

automotive suppliers across Europe in the period of 2020-2040.

The scenarios represent a mixed technology approach, the current EV-only approach proposed in the 'Fit for 55' package, and a radical EV ramp-up scenario. All three scenarios assume accelerated electrification to meet climate goals, with a high market share for electric vehicles by 2030 of more than 50%, almost 80%, and close to 100%, respectively.

The study forecasts that in the EV-only scenario, 70% of the employment impact will be felt already in the period of 2030-2035 and substantiates that electric vehicle opportunities hinge on the establishment of a deep EU battery supply chain, the timing and likelihood of which are still uncertain. Western European countries appear best placed to be strongholds in EV powertrain production, while employment in Central Eastern European countries will remain highly dependent on the internal combustion engine.

CLEPA says that 501 000 auto supplier jobs in Internal Combustion Engine (ICE) powertrain components production are expected to become obsolete if technology is phased-out by 2035. Of those half a million jobs, 70% (359 000) will most likely be lost in just a 5-year period from 2030-2035, highlighting the limited timeframe to manage considerable social and economic impacts.

The trade association adds that by complementing electrification, a mixed technology approach allowing use of renewable fuels could deliver a 50% CO₂ reduction by 2030, while maintaining jobs and creating value-add.

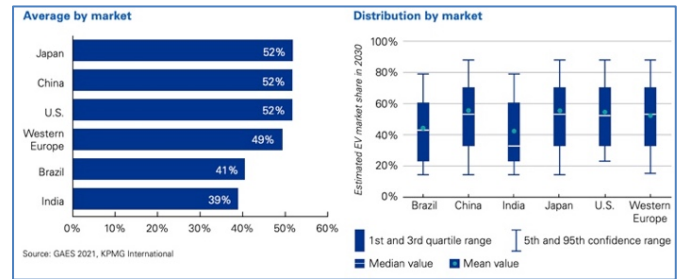
Further information is available at clepa.eu/mediaroom/an-electric-vehicle-only-approach-would-lead-to-the-loss-of-half-a-million-jobs-in-the-eu-study-finds/.

KPMG Global Automotive Executive Survey 2021

KPMG has published the 2021 edition of its Global Automotive Executive Survey. This is a survey of more than 1 100 industry executives in 31 countries regarding anticipated changes in the next five to ten years.

When questioned about the future of powertrains, executives believe that by 2030 electric vehicles (EVs) will achieve widespread adoption, but there is no consensus on what share of the market they will capture. Overall, though, the survey aligns with the many recent OEM commitments to EVs. When asked, executives are willing to make further investments in EV powertrains, if offered additional R&D funding.

On average, executives say they expect that EVs will take half the auto market in Japan, China, the U.S. and Western Europe by 2030 and around 40 percent in Brazil and India. There is however a large spread in estimates for the future EV share in each market.



Almost three-quarters of respondents expect that EVs will have reached cost parity with ICE vehicles by 2030. Just over three-quarters of respondents believe that EVs will achieve widespread adoption without government subsidies. However, 91% support such subsidies.

The full report can be found at assets.kpmg/content/dam/kpmg/xx/pdf/2021/11/global-automotive-executive-summary-2021.pdf.

RESEARCH SUMMARY

Effects of Emissions and Pollution

Fine particulate matter air pollution and under-5 children mortality in China: A national time-stratified case-crossover study, Chunhua He, et al.; *Environment International* (January 2022), Vol. 159, 107022, doi: [10.1016/j.envint.2021.107022](https://doi.org/10.1016/j.envint.2021.107022).

Easy Breathing: A Review of the Impact of Air Quality on Pediatric Health Outcomes, Traci Gonzales, et al.; *Journal of Pediatric Health Care* (January 2022), Vol. 36, pp. 57-63, doi: [10.1016/j.pedhc.2021.08.002](https://doi.org/10.1016/j.pedhc.2021.08.002).

Air Quality, Sources and Exposure

Switzerland's PM₁₀ and PM_{2.5} environmental increments show the importance of non-exhaust emissions, Stuart Grange, et al.; *Atmospheric Environment: X* (December 2021), Vol. 12, 100145, doi: [10.1016/j.aeaoa.2021.100145](https://doi.org/10.1016/j.aeaoa.2021.100145).

Effects of COVID-19 lockdown on PM₁₀ composition and sources in the Rome Area (Italy) by elements' chemical fractionation-based source apportionment, Lorenzo Massimi, et al.; *Atmospheric Research* (in press), doi: [10.1016/j.atmosres.2021.105970](https://doi.org/10.1016/j.atmosres.2021.105970).

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Exhaust and non-exhaust emissions from conventional and electric vehicles: A comparison of monetary impact values, Ye Liu, et al.; *Journal of Cleaner Production* (January 2022), Vol. 331, 129965, doi: [10.1016/j.jclepro.2021.129965](https://doi.org/10.1016/j.jclepro.2021.129965).

Operation principles for hydrogen spark ignited direct injection engines for passenger car applications, Marcus Fischer, et al.; *International Journal of Hydrogen Energy* (in press), doi: [10.1016/j.ijhydene.2021.11.134](https://doi.org/10.1016/j.ijhydene.2021.11.134).

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A causal supervisory control strategy for optimal control of a heavy-duty Diesel engine with SCR aftertreatment, Stijn van Dooren, et al.; *Control Engineering Practice* (February 2022), Vol. 119, 104982, doi: [10.1016/j.conengprac.2021.104982](https://doi.org/10.1016/j.conengprac.2021.104982).

Integrated effects of SCR, velocity, and air-fuel ration on gaseous pollutants and CO₂ emissions from China V and VI heavy-duty diesel vehicles, Xueyao Li, et al.; *Science of The Total Environment* (in press), doi: [10.1016/j.scitotenv.2021.152311](https://doi.org/10.1016/j.scitotenv.2021.152311).

Transport, Climate Change & Emissions

Life cycle CO₂ footprint reduction comparison of hybrid and electric buses for bus transit networks, Antonio García, et al.; *Applied Energy* (February 2022), Vol. 308, 118354, doi: [10.1016/j.apenergy.2021.118354](https://doi.org/10.1016/j.apenergy.2021.118354).

Optimal electrification level of passenger cars in Europe in a battery-constrained future, Ehsan Shafiei, et al.; *Transportation Research Part D: Transport and Environment* (January 2022), Vol. 102, 103132, doi: [10.1016/j.trd.2021.103132](https://doi.org/10.1016/j.trd.2021.103132).

FORTHCOMING CONFERENCES

SAE WCX World Congress

5-7 April 2022, Detroit, USA and Online

[sae.org/attend/calls-for-papers](https://www.sae.org/attend/calls-for-papers)

Catalysis and Automotive Pollution Control (CAPoC12)

6-8 April 2022, Brussels, Belgium

capoc.ulb.ac.be

Vienna Motor Symposium

27-29 April 2022, Vienna, Austria

wiener-motorensymposium.at/en

CITA International Conference

1-2 June 2022, Amsterdam, Netherlands

citainsp.org/cita-conferences

8th International MinNO_x Conference

15-16 June 2022, Berlin, Germany

iav.com/en/events/minnox

SIA Powertrain & Electronics

15-16 June 2022, Rouen, France

sia.fr/evenements/263-sia-powertrain-energy-rouen-2022

The ETH Conference on Combustion-Generated Nanoparticles

12-14 July 2022, Zurich, Switzerland

nanoparticles.ch

31st Aachen Colloquium Sustainable Mobility

10-12 October 2022, Aachen, Germany

aachener-kolloquium.de/en

Transport Research Arena 2022

14-17 November 2022, Lisbon, Portugal

traconference.eu/about-tra