

【欧州】 【自動車】

Road/Railway - New legal instruments on environment for vehicles: European Court of Auditors' report on CO₂ emission reduction of new passenger cars recommends improvements for collection and verification of vehicles' CO₂ emissions and uptake of EVs

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【概要 : Summary】

The European Green Deal aims to achieve the target of net-zero GHG emissions by 2050 and to reduce GHG emissions in the transport sector by 90%. Since road transport is responsible for 76% of the transport sector's CO₂ emissions, the electrification of road transport and the deployment of zero-emission electric vehicles are considered being fundamental for achieving the GHG emissions reduction target in the transport sector. The EEA's figures on CO₂ emissions of newly registered passenger cars show that their CO₂ emissions only decreased thanks to an acceleration of the introduction of EVs in recent years.

The latest report of the European Court of Auditors (ECA) confirms that existing measures will fall short of achieving the 2030 CO₂ emissions reduction target. The ECA report shows a misalignment between CO₂ reduction targets for new passenger cars and the EU's 2030 climate goals and emphasises that electromobility is the only factor to significantly reduce CO₂ emissions in the road transport sector, and to

help achieving the 2050 net-zero GHG emission target.

To improve the current shortcomings in the assessments of CO₂ emission reduction for passenger cars, the ECA recommends three key recommendations. The European Commission should increase assurance levels for vehicle CO₂ emissions alignment, improve the utilisation of electronic tools for data collection, and address key factors affecting CO₂ emissions from new passenger cars, including affordability of EVs, charging infrastructure, as well as raw material supply for batteries.

In their response to the ECA's report and recommendations, both, the European Commission and EEA commit to implementing improvements in the next two years to enhance the implementation of Regulation (EU) 2023/851 on the strengthening of the CO₂ emission performance standards for new passenger cars to effectively reducing their CO₂ emissions to meet the EU's 2030 and 2050 climate targets.

【記事 : Article】

1. Development of GHG emission reduction targets for new passenger cars and vans in EU Regulations

Based on the EU's commitment under the Paris Agreement and the European Green Deal (COM/2019/640 final) target to reach climate neutrality by 2050 and a 90% reduction of GHG emissions from transport, also the road transport sector will have to significantly reduce its GHG emissions to achieve these targets. In 2019, the transport sector was responsible for 25.9% of the EU-27 total GHG emissions, and road transport alone constitutes the highest proportion of the transport sector's overall GHG emissions by emitting 76% of the EU's transport sector's GHG emissions in 2021 (EEA 2022a, 2023a).

The first legislation on reducing the GHG emissions from road transport was introduced in 2009 for passenger cars under Regulation (EU) 443/2009 and in 2021 for light duty vehicles (vans) under Regulation (EU) 510/2011 (European Commission n.d.). Based on Regulation (EC) 443/2009, the passenger cars' CO₂ emissions target was set at 130 grams of CO₂ per kilometre (g/km) by 2015 and 95g/km by 2021 (Regulation (EC) 443/2009). The Regulation also gave automobile manufacturers additional incentives to produce vehicles with low emissions of 50g/km or lower. Regarding the vans, Regulation (EU) No 510/2011 set the average CO₂ emissions target for new vans at 175g CO₂/km by 2017 and at 147g CO₂/km by 2020 (Regulation (EU) 510/2011).

However, the EU's transport sector needed to be decarbonised sooner and at a higher pace to achieve the EU's long-term climate goals. Therefore, the Regulation (EU) 2019/631 adopted on 17 April 2019, set new CO₂ emission reduction targets for new passenger cars and for new vans in the EU, for the years 2025 and 2030 (Regulation (EU) 2019/631). The targets were defined as a percentage reduction from the 2021 starting points, with a reduction target of -15%

for the newly registered passenger cars to be reached by 2025 and a 37.5% reduction from 2030 onwards, based on 2021 levels (Regulation (EU) 2019/631). Regarding vans, the CO₂ emissions had to be reduced by 15% from 2025 onward and by a further 31% reduction from 2030 onward, based on 2021 levels (Regulation (EU) 2019/631).

Furthermore, an incentive for zero- and low-emission vehicles (ZLEV) was defined and to incentivise the uptake of ZLEV, a crediting system is introduced from 2025 onward, among others (Regulation (EU) 2019/631).

The average CO₂ emissions from all new passenger cars registered in Europe fell by 12% between 2019 and 2020, and further by 12.5% between 2020 and 2021 (European Commission n.d.). The main driver of the decrease in CO₂ emissions is attributed to a surge in zero-emission passenger car registrations (European Commission n.d.).

However, in line with the EU's increased climate ambitions under the European Green Deal (COM (2019) 640 final), which also includes the GHG emission reduction in the transport sector by 90% by 2050, a further alignment of existing laws and the introduction of a new 2030 mid-term GHG emission reduction target of 55% under the "Fit for 55" package was required (EEA 2022a, see also Antolini 2023a).

The average CO₂ emissions for new passenger cars and new vans had to be further reduced (Council of the EU 2023a). On 19 April 2023, the European Parliament and the Council adopted Regulation (EU) 2023/851, amending Regulation (EU) 2019/631 to strengthen the CO₂ emission performance standards for new passenger cars and new vans (European Commission n.d.). The EU fleet-wide CO₂ emission targets set in the Regulation (EU) 2023/851 require a limit of 95g CO₂/km for passenger cars and 147 g CO₂/km for vans from 2020 to 2024. These target levels still refer to the NEDC (New European Driving Cycle) emission test procedure (European Commission n.d.). However, after the Volkswagen Diesel scandal,

the EU decided to introduce the WLTP (Worldwide harmonized Light vehicles Test Procedure). Since 2021, the CO₂ emission targets for manufacturers are based on the WLTP procedure, which also includes a real-world test cycle, using on-board fuel consumption monitoring (OBFCM) devices, giving more realistic figures for car emissions and fuel consumption (European Commission n.d.). Therefore, Regulation (EU) 2023/851 sets the targets for new passenger cars to 93,6g CO₂/km and for new vans to 153,9g CO₂/km for the period from 2025 to 2029 under the stricter WLTP procedure. By 2030, CO₂ emissions from cars should be cut by 55% and vans by 50% and from 2030 to 2034, the CO₂ emission targets should be further reduced to 49,5g CO₂/km for new passenger cars and to 90,6g CO₂/km for new vans (Regulation (EU) 2023/851, European Commission n.d.).

Regarding the incentives for zero and low emission vehicles (ZLEV), from 2025 to 2029, a different ZLEV crediting system will apply, which allows for a relaxation of the manufacturer's specific emission target, if its share of new ZLEVs (vehicles with emissions between 0 and 50g CO₂/km (WLTP)) registered in a given year exceeds 25% ZLEV regarding passenger cars and 17% ZLEV regarding vans, among others (European Commission n.d.).

The new Regulation (EU) 2023/851 also introduces a 100% CO₂ emission reduction target for both, passenger cars and vans, by 2035 (Regulation (EU) 2019/631, Regulation (EU) 2023/851). Accordingly, from 2035 onwards, the EU fleet-wide CO₂ emission target for both cars and vans is a 100% reduction, meaning a reduction to 0g CO₂/km for newly registered passenger cars and vans (European Commission n.d.). The new Regulation (EU) 2023/851 target would mainly imply to opt for electric vehicles, or cars and vans with other zero-emission vehicles such as synthetic fuels (EEA 2022b).

Furthermore, to also reduce the GHG emissions of the existing fleet of passenger cars and vans, a

new separate EU-ETS II for other sectors like road transport, among others will be introduced, based on the new Directive (EU) 2023/959 (Antolini 2023a). The new EU-ETS II (Directive (EU) 2023/959) includes provisions to start emission trading for road transport emissions in 2027, with monitoring and reporting beginning in 2025 (Directive (EU) 2023/959).

2. The monitoring of average CO₂ emissions levels and results

The European Environment Agency (EEA) publishes annually the data of the trends of the average CO₂ emission levels of newly registered passenger cars and vans. The EEA's 2022 provisional data of newly registered passenger cars and vans underlined a continuous growth in the number to newly registered EVs in Europe, which is considered being the main driver of reducing CO₂ emissions for newly registered passenger cars (see Antolini 2023a). However, in 2019, the CO₂/km average emissions from new passenger cars reached 122.3g CO₂/km and was still well above the target for the years 2020 to 2024, with 95g CO₂/km (EEA 2021a, 2021b). EEA individualised three reasons for the increase in average CO₂ emissions for new passenger cars in the years 2017–2019, including the shift from diesel to petrol cars, the increase of sales of larger and heavier sport utility vehicles (SUVs), powered by petrol, and the general increase of weight of passenger cars (EEA 2021a). The SUVs average emission level of 134g CO₂/km was significantly higher than the CO₂/km average of 122.3g CO₂/km in 2019, and also the average mass of new passenger cars increased by 30kg from 2018 to 2019 (EEA 2021a, 2022c).

However, 2020 saw a significant 12% decrease in the average CO₂ emissions, to 107.5g CO₂/km (EEA 2022d). The main reason for this decrease was a surge in the share of EV under new registrations, tripling from 3.5% in 2019 to 11.6%, and an otherwise overall reduction in the registrations

of new vehicles due to the COVID-19 pandemic (EEA 2022b, 2022c). The average CO₂ emissions from all new passenger cars registered in Europe further fell by -12.5% between 2020 and 2021 representing the greatest annual emission reduction since monitoring began in 2010 (EEA 2022e). At the same time, the new registrations of battery electric (BEV) and plug-in hybrid electric cars (PHEV) further increased to 17.8% in 2021 (European Commission 2022). The uptake of electric vans also increased, from 2.1% of total new registrations in 2020 to 3.1% in 2021 and to 6.1% in 2022 (European Commission 2023, EEA 2023b). EEA figures underline that also in 2022, the main driver of the CO₂ emissions reduction of newly registered passenger cars was the continued growth in the share of electric car registrations, reaching 23% in 2022, out of which 13.4% were full electric cars (EEA 2023c, see also Antolini 2023a). However, the EVs' share in the total fleet of passenger cars in the EU still remains low with 5.4% (European Commission 2023a). This overall progress in reducing CO₂ emissions of newly registered passenger cars in recent years can be attributed to the continued growth of the share of electric vehicles registrations (Antolini 2023a). Therefore, the speed of decarbonisation of road transport will largely depend on the renewal of the vehicle fleet and on modal shift to other sustainable transport modes (EEA 2023d, see also Antolini 2023b).

3. The European Court of Auditors reports on the new passenger cars' CO₂ emissions

Although the share of EVs of newly registered passenger cars is increasing, the GHG emissions from transport will have to decrease by further 23% by 2030, compared to 2005 (EEA 2023d, see also Antolini 2023b). The EEA's latest projections in the report "Trends and projections in Europe 2023" conclude that the existing measures will not be sufficient to reach the 2030 target (EEA 2023d). This conclusion is

now also confirmed by the European Court of Auditors' (ECA) findings in its report "Reducing carbon dioxide emissions from passenger cars. Finally picking up pace, but challenges on the road ahead", released on 24 January 2024 (ECA 2024a). The European Court of Auditors aims at providing the European Commission and stakeholders with information to make the implementation of the Regulation (EU) 2023/851 more efficient and to effectively reduce the new passenger cars' CO₂ emissions towards meeting the 2030 and 2050 climate targets (ECA 2024a).

The ECA report analyses the EU's progress on CO₂ emission reduction from passenger cars and shows that 11 years after the first Regulation on passenger cars' CO₂ emissions reduction entered into force, the CO₂ emissions from new passenger cars are finally decreasing significantly (ECA 2024a). While the European Court of Auditors' report finds that the real-world CO₂ emissions from cars with combustion engines have not significantly dropped, the passenger cars' CO₂ emissions reduction has been achieved thanks to the significant uptake of electric vehicles (ECA 2024a).

Regarding the data collection and analysis of data process, the ECA confirms the Commission's calculations of EU-wide and manufacturers' average emissions, targets, and excess-emission premiums (ECA 2024a). However, ECA also observed that there were delays in EU Member States' submission of the 2020 data, and some issues affected the completeness and accuracy of the data. The many exchanges between the European Environment Agency (EEA) and Member States made the clearing process of the provisional data a lengthy and difficult process (ECA 2024a).

Furthermore, the report states that although the European Commission collected and verified the passenger cars' CO₂ emissions data in line with the Regulations, there is no guarantee that the manufacturers released accurate data on the CO₂

emissions (ECA 2024a). The ECA concludes that this situation makes the uptake of zero-emission vehicles even more imperative to reaching the EU's climate goals (ECA 2024a).

The uncertainty regarding the manufacturers' released data is partially due to the limited information the Commission has on the checks of type-approval authorities, according to the ECA (2024a). The EU's Auditors visited three EU Member States to gain a better understanding of the type-approval process. Out of three visited Member States, in two Member States, the type-approval authorities did not carry out the required manufacturer checks (ECA 2024a). While Germany was compliant, it was found that type-approval authorities in Italy and the Netherlands did not carry out sufficient tests to ensure that the CO₂ levels declared by manufacturers were accurate (ECA 2024a). Therefore, the ECA concludes that a lack of attendance from Dutch and Italian authorities "limits the assurance that the vehicles' CO₂ emissions declared by manufacturers on certificates of conformity are correct" (ECA 2024a). It was also found that the European Commission lacked knowledge of how (or if) the EU Member States were carrying out these type-approval checks. This leads to insufficient and limited data the Commission could use to propose improvements (ECA 2024a).

Furthermore, according to the ECA, the Commission did not use the information on CO₂ emissions from pollutant emissions testing to assess the risk of incorrect CO₂ values (ECA 2024a). The European Court of Auditors found that in the 2009–2019 period, the average real-world emissions of new vehicles did not drop, mainly because manufacturers focused on reducing emissions in the laboratory NEDC tests rather than on the road (ECA 2024a). Therefore, the increasing gap between laboratory and real-world emissions did largely offset the intended benefit of the Regulation (EC) 443/2009.

The increasing gap between laboratory and real-world emissions increased from 17% in 2009 to around 38% in 2018 according to Dornoff et.al. (2020). Therefore, WLTP became mandatory for type-approving new vehicles from September 2017 and for the measuring of new cars' CO₂ emissions in 2021 (ECA 2024a). The ECA confirms that the WLTP test cycle provides better data and better reflects the actual CO₂ emissions under driving conditions (ECA 2024a). Finally, since 2022, the Commission has been collecting real-world emissions information and can thereby gather realistic information on CO₂ emissions for new vehicles (ECA 2024a). Nevertheless, the reduction in CO₂ emissions observed since 2020 is mainly due to the significant uptake of EVs, whereas the CO₂ emissions from new combustion vehicles and plug-in hybrids remain concerning (ECA 2024a).

According to ECA (2024b), real-world CO₂ emissions from conventional cars, which still account for nearly three-quarters of new vehicle registrations, have not dropped significantly (ECA 2024b). Over the last decade, CO₂ emissions have remained constant for diesel cars, while they have marginally decreased (-4.6 %) for petrol cars (ECA 2024b). Technological progress in terms of engine efficiency is outweighed by increased vehicle mass (about +10% on average) and more powerful engines (+25% on average), according to ECA (2024b). The same applies to hybrid cars, whose real-world CO₂ emissions tend to be much higher than those recorded in the laboratory. To improve this situation, the proportional use of electric and combustion engines will be adjusted, but only from 2025 (ECA 2024b).

Since only full EVs have driven the reduction in average on-the-road CO₂ emissions witnessed in recent years, the existing measures will not be sufficient to reach the 2030 CO₂ emissions reduction target, as the CO₂ emission reduction targets for new passenger cars and the EU's

climate ambitions up to 2030 are not sufficiently well aligned (ECA 2024a).

Against this backdrop, the ECA recommends the Commission follow up with Member States to ensure they are carrying out required emissions conformity assessments. The European Court of Auditors recommends to the European Commission to increase the level of assurance that vehicle CO₂ emissions do correspond to manufacturer-declared levels on certificates of conformity; to make better use of electronic tools for collecting and verifying car data; and to address key elements that affect the CO₂ emissions from new passenger cars (ECA 2024a). The key will be to ensure a sufficient uptake of zero-emission vehicles toward 2030 and beyond. ECA is concerned that 70% of the charging infrastructure in the EU is concentrated in just three Member States, including the Netherlands, France, and Germany and that the EVs come at a higher cost compared to conventional passenger cars (ECA 2024b). To achieve the uptake of EVs it will be crucial to address the main limiting factors for an uptake, including the EVs' affordability, the deployment of sufficient recharging infrastructure, and securing the supply of raw materials to produce batteries for EVs (ECA 2024a). In the next years it will be crucial to increase the affordability of electric vehicles as otherwise the consumers may prefer to keep their old polluting combustion engine powered vehicles for longer (ECA 2024b). In addition, a "real-world CO₂ emissions" cap should be introduced for all combustion engine cars, including hybrid vehicles (ECA 2024b).

4. The European Commission and EEA accept ECA report' s recommendations

While the European Commission assesses every year whether vehicle manufacturers comply with their CO₂ targets, the assessment relies on the monitoring data for each new vehicle, which is provided by national authorities (European

Commission 2024b). There exist provisions that require the monitoring and assessment of the fuel consumption and CO₂ emissions of vehicles on the road to ensure that the laboratory test results remain representative of the real-world situation on the road. Manufacturers not meeting their target are obliged to pay a fine.

In a response to the ECA' s report, the Commission agrees that further efforts are needed to accelerate the monitoring data collection and publication, while continuing to ensure the reliability of the data findings and related conclusions (European Commission 2024b). While underlining its support for the EU Member States as well as the automobile manufacturers the Commission is ready to address aspects of the monitoring process where efficiency gains may be achieved, including a further extension of the use of electronic tools. The Commission has been developing delegated and implementing acts to ensure the effective implementation of the Regulation (EU) 2023/851 (European Commission 2024b). The Commission agrees that further efforts would be needed to ensure the CO₂ results determined for individual vehicles and declared by vehicle manufacturers on the Certificate of Conformity (CoC) are accurate and reliable (European Commission 2024b). While the prime responsibility for the declared values on the CoC lies with the vehicle manufacturers, the granting type-approval authorities in the Member States must periodically perform checks on Conformity of Production, verifying that the data in certificates of conformity are correct. The Commission assesses every five years the procedures put in place by the approval authorities (European Commission 2024b). Regarding the data collection and clearing, the entire process is lengthy, but the Commission intends to highlight that a thorough verification of the data is crucial to ensure the robustness of the final datasets and the conclusions based on them. The datasets have

significantly increased in size and complexity since the legal deadlines were first established. In addition, in the past years, additional data monitoring and calculations had to be added to the annual monitoring decisions. The Commission underlines that work is ongoing to further improve the reporting tools and streamline the data checks, which should help to speed up the monitoring process (European Commission 2024b). Regarding the ECA's conclusion on the EVs registrations driving the newly registered passenger cars' CO₂ emission cuts, the Commission agrees with the ECA's findings and that at the same time, there was no significant progress regarding the average fuel efficiency of conventional vehicles due to increases in mass and engine power (European Commission 2024b). Regarding the ECA's recommendations, the Commission accepts the ECA recommendation that it should follow up with EU Member States to ensure that type-approval authorities carry out the required checks on manufacturers to provide assurance on the data included on Certificates of Conformity (European Commission 2024b). The Commission also accepts the recommendation to assess the feasibility of providing consumers with information on real-world fuel consumption tailored to their specific needs, targeting December 2025 as implementation date (European Commission 2024b). The Commission is willing to take this recommendation into account during the preparation of future actions in line with the principles of Better Regulation. The Commission also accepts the recommendation to closely monitor the implementation of the proposed methodology for testing CO₂ emissions of vehicles already in circulation, where these tests are carried out by the type-approval authorities. The Commission will make corrections, if necessary, with the target implementation date of December 2025 (European Commission 2024b). Regarding the recommendation to make better use of electronic tool for

collecting and verifying car data, the Commission accepts the ECA's recommendation and is willing to take it into account with a target implementation date of December 2025 (European Commission 2024b). The Commission also accepts the recommendation to assess the possibility of streamlining the procedure for clearing provisional data with Member States and manufacturers, with the target implementation date of December 2026 (European Commission 2024b). The Commission also accepts to refocus CO₂ emission reduction targets on key elements that affect CO₂ emissions from new passenger cars. It is willing to consider it during the preparation of future actions to replacing the current EU and manufacturer level targets with the target implementation date of December 2025 (European Commission 2024b). The Commission also accepts the introduction of a CO₂ "real-world emissions" cap at manufacturer level, that should not be exceeded for combustion engine cars, and includes all types of hybrid, with the target implementation date of December 2026 (European Commission 2024b).

Finally, regarding the ECA's recommendation for the European Environment Agency (EEA), the EEA has announced to accept the recommendation to make all the reporting and checking features in the EEA's new e-reporting platform Report net3 tool available to reporting countries and manufacturers. Thereby they can upload and test their data with a target implementation date of December 2025 (European Commission 2024b).

5. Conclusion

The European Court of Auditors' report confirms the findings of the EEA's latest projections in the report "Trends and projections in Europe 2023" that the reduction of CO₂ emissions from new passenger cars are mainly driven by the increased share of EVs as newly registered passenger cars. ECA also agrees that existing

measures to reduce CO₂ emissions from new passenger cars will fall short of achieving the 2030 CO₂ emissions reduction target.

The ECA emphasizes the necessity of ensuring a substantial adoption of zero-emission vehicles beyond 2030. To achieve this, addressing key limiting factors is crucial, including enhancing the affordability of electric vehicles, establishing adequate charging infrastructure, and securing a stable supply of raw materials for battery production.

Against this backdrop, the ECA has given recommendations to the European Commission and the EEA to improve the current practices.

The European Commission and EEA have accepted the ECA's recommendations and will proceed with the implementation of improvements to the current practices in the next two years with the aim to make the implementation of the Regulation (EU) 2023/851 more efficient and to achieve the target to effectively reduce the new passenger cars' CO₂ emissions towards meeting the 2030 and 2050 GHG emission reduction targets.

References

Antolini, Andrea (2023a): Road/Railways - Environmentally friendly vehicles: European Environment Agency's 2022 provisional data on CO₂ emissions from newly registered passenger cars and vans confirms positive influence of electromobility on CO₂ emission level. In: https://www.jttri.or.jp/2023_topic_europe_0901.pdf, 2023/09/27, accessed 2 February 2024

Antolini, Andrea (2023b): Common - Environmental issues: The EEA's latest estimates and projections of GHG emission levels in Europe - is the transport sector on track for 2030 and 2050 targets? In: https://www.jttri.or.jp/2023_topic_europe_1219-1.pdf, 2023/12/19

COM (2019) 640 final: COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN

ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS The European Green Deal. COM/2019/640 final. In: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A640%3AFIN>,

11.12.2019, accessed 2 February 2024

Council of the EU (2023a): Fit for 55. In: <https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/>, updated 2 June 2023, accessed 2 February 2024

Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system, OJ L 130, 16.5.2023, pp. 134-20), accessed 5 February 2024

Dornoff, Jan/ Tietge, Uwe and Peter Mock: (2020): On the way to "real-world" CO₂ values: The European passenger car market in its first year after introducing the WLTP. In: ICCT (The International Council on Clean Transportation, ICCT) <https://theicct.org/publication/on-the-way-to-real-world-co2-values-the-european-passenger-car-market-in-its-first-year-after-introducing-the-wltp/>, May 19, 2020, accessed 5 February 2024

European Commission (n.d.): CO₂ emission performance standards for cars and vans. In: https://ec.europa.eu/clima/policies/transport/vehicles/regulation_en, no date, , accessed 2 February 2024

European Commission (2023a): European Alternative Fuels Observatory. European Union (EU27) Summary. In: <https://alternative-fuels-observatory.ec.europa.eu/transport-mode/road/european-union-eu27>, 22 November 2023, accessed 5 February 2024

- European Commission (2024b): Replies of the European Commission to the European Court of Auditors' Special Report. In: https://www.eca.europa.eu/Lists/ECARepplies/COM-Replies-SR-2024-01/COM-Replies-SR-2024-01_EN.pdf, 2024, accessed 5 February 2024
- ECA (European Court of Auditors, ECA) (2024a): Reducing carbon dioxide emissions from passenger cars. Finally picking up pace, but challenges on the road ahead. Special Report 01/2024. In: https://www.eca.europa.eu/ECAPublications/SR-2024-01/SR-2024-01_EN.pdf, accessed 5 February 2024
- ECA (European Court of Auditors, ECA) (2024b): Reducing cars' emissions: easier said than done. In: <https://www.eca.europa.eu/en/news/NEWS-SR-2024-01>, 24/01/2024, accessed 5 February 2024
- European Environment Agency (EEA) (2021a): Trends and projections in Europe 2021. In: <https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2021>, EEA Report No. 13/2021, accessed 28 August 2023
- European Environment Agency (EEA) (2021b): CO₂ performance of new passenger cars in Europe. In: <https://www.eea.europa.eu/ims/co2-performance-of-new-passenger>, 18 Nov 2021, accessed 28 August 2023
- EEA (European Environment Agency, EEA) (2022a): Transport and environment report 2022. Digitalisation in the mobility system: challenges and opportunities. In: EEA Report No 07/2022, <https://www.eea.europa.eu/publications/transport-and-environment-report-2022/transport-and-environment-report/view>, Luxembourg: Publications Office of the European Union, 2022, accessed 28 August 2023
- EEA (European Environment Agency, EEA) (2022b): New registrations of electric vehicles in Europe. In: <https://www.eea.europa.eu/ims/new-registrations-of-electric-vehicles>, 26 Oct 2022, accessed 2 February 2024
- European Environment Agency (EEA) (2022c): CO₂ performance of new passenger cars in Europe. In: <https://www.eea.europa.eu/ims/co2-performance-of-new-passenger>, 26 Sep 2022, accessed 2 February 2024
- EEA Report No 10/2022. In: <https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2022/download>, 2022, accessed 2 February 2024
- European Environment Agency (EEA) (2022e): Greenhouse gas emissions from transport in Europe. In: <https://www.eea.europa.eu/ims/greenhouse-gas-emissions-from-transport>, 26 Oct 2022, accessed 2 February 2024
- EEA (European Environment Agency, EEA) (2023a): Greenhouse gas emissions from transport in Europe. In: <https://www.eea.europa.eu/en/analysis/indicator/s/greenhouse-gas-emissions-from-transport>, 24 Oct 2023, accessed 2 February 2024
- European Environment Agency (EEA) (2023b): Average carbon dioxide emissions from new cars registered in Europe decreased by 12% in 2020, final data shows. In: <https://www.eea.europa.eu/highlights/average-carbon-dioxide-emissions-from/>, 07 Feb 2023, accessed 2 February 2024
- European Environment Agency (EEA) (2023c): Average emissions from new cars and vans in Europe continue to fall, according to provisional data. In: <https://www.eea.europa.eu/en/newsroom/news/average-emissions-from-new-cars-and-vans>, 20 June 2023, accessed 2 February 2024
- EEA, (European Environment Agency, EEA) (2023d): Trends and projections in Europe 2023. EEA Report 07/2023. In: <https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2023>, 2023, accessed 2 February 2024
- Regulation (EC) 443/2009: Regulation (EC) No 443/2009 of the European Parliament and of the

Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO₂ emissions from light-duty vehicles (Text with EEA relevance). In: OJ L 140, 5.6.2009, p. 1-15, No longer in force, Date of end of validity: 31/12/2019, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009R0443>,

5.6.2009, accessed 2 February 2024

Regulation (EU) 510/2011: Regulation (EU) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO₂ emissions from light-duty vehicles Text with EEA relevance. In: OJ L 145, 31.5.2011, p. 1-18, No longer in force, Date of end of validity: 31/12/2019, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011R0510>,

31.5.2011, , accessed 2 February 2024

Regulation (EU) 2019/631: Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO₂ emission performance standards for new passenger cars and for new light commercial vehicles and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011. In: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32019R0631>, OJ L 111,

25.4.2019, accessed 2 February 2024

Regulation (EU) 2023/851: Regulation (EU) 2023/851 of the European Parliament and of the Council of April 19, 2023, amending Regulation (EU) 2019/631 as Regards Strengthening the CO₂ Emission Performance Standards for New Passenger Cars and Light Commercial Vehicles in Line with the Union's Increased Climate Ambition. In: OJ L 110, 25.4.2023, p. 5-20, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R0851&qid=1685954558646>, 25.4.2023, accessed 2 February 2024