

【欧州】 【自動車】

Road/Railway - Environmentally friendly vehicle: EEA' s final data for 2020 shows trifold increase of low and zero emission vehicle registrations

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【概要 : Summary】

While GHG emissions decreased in most sectors between 1990 and 2020, the transport sector' s GHG emissions continued to increase. In particular the road transport' s GHG emissions increased by almost 28% between 1990 and 2019. Although climate policies were introduced and less carbon intensive vehicles were deployed, average emissions from new passenger cars increased again in 2017, 2018 and 2019. The average CO₂ emissions from new passenger cars reached 122.3g CO₂/km in 2019. While this result remains below the 2015–2019 target of 130g CO₂/km, it is well above the 2020–2024 target of 95g CO₂/km. Considering all existing policy measures, the CO₂ emissions of the transport sector are projected to be 3.5% higher in 2030 than in 1990 and they will fall by only 22% by 2050, compared to 1990 levels. This decrease will not be enough to comply with the European Green Deal targets for reaching carbon neutrality in the EU by 2050 and to reduce GHG emissions from transport by 90% by 2050.

However, according to the final data published by the European Environment Agency (EEA), after an increase of CO₂ emissions in the period 2017–2019, final data for 2020 shows that the average CO₂ emissions measured from all new passenger

cars registered in Europe fell by 12% in 2020 compared with 2019 levels. This is by far the greatest annual decrease in CO₂ emissions since monitoring began in 2010. The average CO₂ emissions decreased from 122.3 gCO₂/km in 2019 to 107.5g CO₂/km in 2020, which leaves a gap of 12.5g CO₂/km to reach the 2020–2024 target of 95g CO₂/km. As in previous years, in 2020, petrol cars were the most sold type of new passenger cars in the EU, followed by diesel vehicles. However, what really made a difference in 2020 compared to the years before was the steep increase in the number of low- and zero-emission vehicles registered, increasing from 3.5% in 2019 to 11.6% in 2020. The EEA' s final data for 2020 shows that while the COVID-19 pandemic caused an overall shrinking of the market for new cars, the total number of new electric cars registered in 2020 increased to over 1 million.

Considering the about 25% share of the transport sector in the EU' s total GHG emissions, the reduction of the transport sector' s GHG emissions by introducing more low- and zero-emission vehicles will also be crucial to achieving the overall targets of the European Green Deal.

【記事 : Article】**1. Background: The transport sector's CO₂ emissions**

According to the EEA's annual GHG inventory report of 2022, currently, GHG emissions from transport account for about 25% of the EU's total GHG emissions and road transport represents the greatest share of GHG emissions of all transport means with 72% of the transport sector's total GHG emissions in 2019 (EEA 2022a). Passenger cars and vans are collectively responsible for around 15% of the EU's total CO₂ emissions, with passenger cars being responsible for around 12%, and vans ('light commercial vehicles') are respectively responsible for 2.5% of total the EU's total CO₂ emissions (European Commission n.d.). While GHG emissions decreased in most sectors between 1990 and 2020, the transport sector is a notable exception with still increasing GHG emission levels (EEA 2022a). Overall, the transport sector's GHG emissions have increased by more than 33% between 1990 and 2019 and road transport emissions were 27.8% higher in 2019 compared to 1990 (EEA 2022b). CO₂ emissions from passenger cars in the 27 EU Member States (EU-27) increased by 5.8% between 2000 and 2019 (EEA 2022b). Although the energy efficiency of passenger cars improved by measures to reduce the energy consumption per passenger-kilometre, and by using biofuels, the main driving factor contributing to the 5.8% increase of CO₂ emissions from passenger cars was the 16.6% growth in passenger transport volumes, combined with a dominant and slightly increasing share of car transport among land-based transport modes (EEA 2022b). While until 2019, the electrification of the vehicle fleet had no significant influence on the reduction of CO₂ emissions from road transport, this is expected to change in the years to come (EEA 2022b).

The European Green Deal calls for reaching carbon neutrality by 2050 and a 90% reduction in GHG emissions from transport by 2050 (COM/2019/640

final). Accordingly, the mid-term emission reduction target for 2030 had to be adjusted and reduction targets had to be increased from 40% to a new 55% GHG emission reduction target based on the European Climate law (Regulation (EU) 2021/1119). However, according to the European Commission, considering all existing policy measures, the transport sector's CO₂ emissions are estimated to be 3.5% higher in 2030 than they were in 1990. They are then expected to fall by only 22% by 2050 compared to 1990 levels (European Commission n.d.). Although road transport is projected to perform slightly better, with emissions decreasing by 4% by 2030 and by 35% by 2050, compared with 1990, it leaves a huge gap to reach the 2050 90% GHG emission reduction target for transport (EEA 2022b, European Commission n.d.). The transport sector's contribution to GHG emission reduction measures will also be crucial to achieving the overall EU emissions reduction targets of the European Green Deal. While the transport sector's GHG emissions dropped substantially in 2020 due to the impact of the COVID-19 pandemic, estimates of 2021 GHG emissions indicate a rebound in transport emissions last year of 7.7% (EEA 2022c).

Based on the new Green Deal targets, it will be of great importance to reduce the GHG emissions from road transport (EEA 2021a). Furthermore, also the CO₂ emissions performance standards for new passenger cars and light commercial vehicles under Regulation (EU) 2019/631 need to be revised and CO₂ emissions targets have to be strengthened. The European Commission presented its "Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) 2019/631 as regards strengthening the CO₂ emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition" COM/2021/556 final in the "Fit for 55" Package on 14 July 2021 (COM/2021/556 final).

2. Monitoring CO₂ emissions under Regulation (EU) 2019/631 and COM/2021/556 final proposal for more ambitious CO₂ emission reduction targets

In the past, the GHG emissions from road transport were regulated under Regulation (EU) 443/2009 for passenger cars and under Regulation (EU) 510/2011 for light commercial vehicles. These regulations were replaced and repealed by Regulation (EU) 2019/631 as of 1 January 2020, setting new CO₂ emission performance standards for new passenger cars and for new light commercial vehicles (vans) in the EU after the year 2020 (European Commission n.d.). The Regulation (EU) 2019/631 sets EU fleet-wide CO₂ emission targets applying from 2020, 2025 and 2030. It also includes a mechanism to incentivise the uptake of zero- and low-emission vehicles. The Regulation (EU) No 2019/631 requires countries to record information for each new passenger car registered in their territory (EEA 2022d). Every year, each country shall submit to the Commission all the information related to their new registrations, including details such as manufacturer name, type approval number, type, specific CO₂ emissions under NEDC and WLTP protocols, masses of the vehicle, wheelbase, track width, engine capacity and power, fuel type and mode, eco-innovations, and electricity consumption (EEA 2022d). Data for EU-27 and UK are reported in the main database. Since 2018 Iceland is also included in the database, and Norway was included in 2019 (EEA 2022g).

Instead for the period 2020–2024, Regulation (EU) 2019/631 confirms the EU fleet-wide CO₂ emission targets set under Regulations (EC) No 443/2009 and (EU) No 510/2011, for passenger cars 95g CO₂ /km and vans 147g CO₂ /km (Regulation (EU) 2019/631, European Commission n.d.). Specific emission targets are set annually for each manufacturer. They are based on the EU fleet-wide targets and on the average mass of the manufacturer's new vehicles registered each

year. According to EU legislation, vehicles must be tested to verify that they comply with the required environmental, climate, safety, and security standards. To check that vehicles meet the official requirements for CO₂ emissions, standardised measurements in laboratories are used. Until September 2017, these tests were based on the New European Driving Cycle (NEDC). Since then, the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) applies as the new type-approval test procedure. The WLTP was developed to be more representative of real-world driving conditions. From 2021 onwards, the WLTP will fully replace the NEDC for the purpose of the CO₂ emission standards.

From 2021 onwards, the emission targets for manufacturers will be based on the new WLTP emission test procedure (European Commission n.d.). For manufacturers of passenger cars, 2020 is a phase-in year as the specific emission targets will apply only to the 95% least emitting new cars in their fleet, among others (European Commission n.d.).

Regulation (EU) 2019/631 also includes targets for the period 2025–2030. Starting in the years 2025 and 2030, Regulation (EU) 2019/631 sets stricter EU fleet-wide CO₂ emission targets, which are defined as a percentage reduction from the 2021 starting points. Cars must achieve reductions of 15% from 2025 on and a 37.5% reduction from 2030 on. Vans must reach a 15% reduction from 2025 on and a 31% reduction from 2030 on, among others (European Commission n.d.). However, in the light of the Green Deal's 2050 net-zero GHG emission target, and the intermediate target of an at least 55% net reduction of GHG emissions by 2030, on 14 July 2021, the European Commission adopted among others a new proposal to revise Regulation (EU) 2019/631. The proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) 2019/631 as regards strengthening the CO₂ emission performance standards for new

passenger cars and new light commercial vehicles in line with the Union's increased climate ambition (COM/2021/556 final) sets more ambitious CO₂ emission reduction targets for passenger cars and vans from 2030 onward and will replace Regulation (EU) 2019/631 (European Commission n.d.). The Commission proposes EU fleet-wide CO₂ emission reduction targets for new passenger cars and vans as compared to the 2021 target. From 1 January 2030, the CO₂ emission reduction targets for new passenger cars is 55% and 50% for vans. Thereafter, from 1 January 2035, the CO₂ emission reduction targets for new passenger cars will be 100% for cars, and 100% for vans (European Commission n.d.). Therefore, with this target of a 100% CO₂ emission reduction by 2035 compared to 2021 levels, all new passenger cars registered as of 2035 will have to be zero-emission vehicles. Regarding the proposal COM (2021) 556 final, on 8 June 2022, the European Parliament's plenary adopted the European Commission's proposal to reach zero-emission road mobility by 2035 with an EU fleet-wide target of a 100% reduction of the CO₂ emissions for new passenger cars and light commercial vehicles by 2035, compared to 2021 (European Parliament 2022a, Regulation (EU) 2021/1119). Also, the European Member States' Environment ministers reached a general approach on the CO₂ emission performance standards of passenger cars and vans and agreed to introduce a 100% CO₂ emissions reduction target by 2035 in their general approach. Although the Council and the European Parliament seem to support the same target for 2035, the final version of the future law had still to be agreed in the trilogue negotiations.

The Council agreed in its general approach on a technology-open solution by stating that from 2035 onwards, vehicles should be running exclusively on "CO₂ emissions neutral fuels" in conformity with EU law. Instead, the European Parliament wanted to abolish combustion engine driven cars and vans by 2035. (Conseil de l'Union

Européenne 2022). On 27 October 2022, the Council of the European Union and the European Parliament announced to have found an agreement on the proposal COM (2021) 556 final, resulting in a legislation which effectively prohibits the sale of new petrol and diesel cars running on combustion engine technology by 2035. The European Commission will make a proposal for registering vehicles running exclusively on CO₂-neutral fuels after 2035 (Council of the EU 2022).

3. Final data of average CO₂ emissions of cars and vans in Europe in 2020

After a steady decline in CO₂ emissions between 2010 and 2016, by almost 22g CO₂/km, average emissions from new passenger cars increased again in 2017, 2018 and 2019. Although the average CO₂ emissions from new passenger cars reached 122.3g CO₂/km in 2019 (EEA 2022e) and remained below the 2015–2019 target of 130g CO₂/km, it is still well above the 2020–2024 target of 95g CO₂/km (EEA 2022e).

The EEA individualised various reasons for the increase in CO₂ emissions, including the increasing number of sport utility vehicles (SUVs) in the road transport sector, which reached 38% of all newly registered passenger cars in the EU, Iceland, Norway, and the UK in 2019. Since SUVs are typically heavier than other passenger cars with more powerful engines and petrol combustion engines, which also have a higher fuel consumption. They had an average CO₂ emission level of 134g CO₂/km (EEA 2022e). Accordingly, also the total CO₂ emissions for all new passenger cars increased. Another reason for the increase of CO₂ emissions is the increase in the average mass of new passenger cars, excluding SUVs. This average mass increased by around 22kg from 2018 to 2019, leading also to an increased fuel consumption and therefore higher CO₂ emissions (EEA 2022e).

According to the EEA's final data for 2020, average CO₂ emissions measured during type

approval from all new passenger cars registered in Europe fell by 12% in 2020 compared with 2019 levels. After a slight increase in the period 2017–2019, which showed average CO₂ emissions going up to 122.3 gCO₂/km (EEA 2022e). The 2020 CO₂ emissions stood at 107.5g CO₂/km, which is 14.5g CO₂/km below the average emissions in the previous year 2019 (European Commission 2022). This is the greatest decrease in CO₂ emissions since monitoring began in 2010 (EEA 2022e).

As in previous years, petrol cars were the most sold type of new passenger cars in 2020, constituting nearly half of all registrations. Diesel vehicles accounted for 27% of new registrations, marking a decrease of 4 percentage points from 2019. The growth in the sport utility vehicle (SUV) segment, observed in recent years, continued in 2020. SUVs represented about 42% of new cars registered in 2020. In this segment, electric vehicles (EVs) represented around 10% of registrations, according to EEA's final data of 2020 (EEA 2022e).

The main reason for this decrease is an increased share of EV registrations. According to EEA (2022g), the number of newly registered electric cars (battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV)) in the EU-27, Iceland, Norway, and the United Kingdom reached 11.6% in 2020 and thereby more than tripled from 3.5% in 2019 (EEA 2022f). Of these, 6.2% were full electric vehicles and 5.4% were plug-in hybrid electric vehicles (EEA 2022f).

EEA's final data for 2020 shows that despite the shrinking overall market for new cars due to the COVID-19 pandemic, the total number of new electric cars registered in 2020 increased to over 1 million (EEA 2022f).

Non-plug-in hybrid electric vehicles, which are exclusively fuelled by conventional fuels, are not included in the data shown. Data from Iceland are included from 2018 and Norwegian data are included from 2019 onward (EEA 2022g). The largest increases of EV registrations from 2019

to 2020 took place in Norway, Iceland, and Sweden, which are also those countries with the highest percentage of electric vehicles in their total fleet of newly registered cars with 75%, 46% and 33%, respectively (EEA 2022e).

In 2020, most individual car manufacturers and pools met their annual binding targets. This was facilitated, among other things, by modalities such as the 95% phase-in, the use of super-credits and eco-innovation savings (EEA 2022e). The pool with the lowest average CO₂ emissions in 2020 was PSA-OPEL (88.5g CO₂/km), closely followed by the pools FCA-TESLA-HONDA, KIA, RENAULT-NISSAN-MITSUBISHI, HYUNDAI, and TOYOTA-MAZDA, with average CO₂ emissions between 89 and 94gCO₂/km (EEA 2022e). Among individual manufacturers with more than 300,000 registrations in 2020, PSA AUTOMOBILES SA achieved the lowest average CO₂ emissions at 81g CO₂/km, closely followed by Renault SAS, TOYOTA MOTOR EUROPE NV SA and AUTOMOBILES PEUGEOT, with average CO₂ emissions ranging from 88 to 95gCO₂/km (EEA 2022e).

While most manufacturers complied with their emission targets, six individual passenger car manufacturers, two pools of passenger car manufacturers, and one manufacturer of light commercial vehicles were found to have exceeded their CO₂ emissions target in 2020. As a result, they will be required to pay excess emission premiums totalling nearly EUR 510 million, which will be added to the EU general budget (European Commission 2022).

Regarding the CO₂ emission development for new vans, about 1.4 million new vans were registered in Europe in 2020 with average CO₂ emissions being 1.9% lower than in 2019 (European Commission 2022). The share of electric vans increased from 1.4% in 2019 to 2.3% in 2020 (EEA 2022f).

4. Conclusion

While most sectors were able to reduce their GHG emissions in the past three decades, the transport sector is a notable exception, and

remains the second largest source of GHG emissions in the EU-27. The total transport GHG emissions increased by more than 33% between 1990 and 2019 and road transport emissions increased by almost 28%. GHG emissions from road transport increased in both, passenger, and freight transport, despite climate policies and the deployment of less carbon intensive vehicles on the market. The transport sector remains responsible for a quarter of the EU's total GHG emissions, with road transport representing the greatest share.

To reach the 2030 and 2050 climate targets, an increase in the share of electric vehicles or other zero-emission vehicles in the EU will be necessary. Therefore, the European Commission presented the proposal COM (2021) 556 final for the revision of Regulation (EU) 2019/631 in the “Fit for 55” Package, among others.

Since average CO₂ emissions from new passenger cars registered in Europe slightly increased in 2017–2019, up to 122.3 gCO₂/km, the 2020 average CO₂ emissions showed a significant decrease of 12% compared with 2019 levels and fell to 107.5 gCO₂/km. This result is already much closer to the Regulation (EU) 2019/631 set fleet-wide target of 95g CO₂/km for the years 2020–2024. It shows the effect of measures to stimulate the demand for zero- and low-emission vehicles like EVs, and investments in recharging infrastructure. In contrast to the hard to decarbonise sectors of aviation and maritime transport, if only new zero-emission vehicles with a 100% GHG emission reduction limit were finally introduced by 2035, road transport could have a realistic potential to significantly decrease its GHG emissions and to partake in reaching the European Green Deal's overall target of climate neutrality by 2050.

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