【欧州】【自動車】

Road/Railways – Environmental friendly vehicles: EEA's final report confirms increase of CO_2 emissions of passenger cars and vans in 2018

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【概要：Summary】

The EU transport sector's CO_2 emissions were 29% above 1990 levels despite a decline between 2008 and 2013. In 2017, the EU's road transport accounted for almost 72% of all CO_2 emissions in the transport sector. In particular, passenger cars and light commercial vehicles (vans) were responsible for respectively for 44% and 9% of the transport sector's CO_2 emissions. In order to reduce CO2 emissions in the road transport sector, the EU regulation (EC) No. 443/2009 for passenger cars and No. 510/2011 for vans were introduced to set mandatory CO_2 emission performance standards for new passenger cars, and new light commercial vehicles. In accordance with these regulations, the European Environment Agency (EEA) collects annually the parameters of new passenger cars since 2010, including CO_2 emissions. Since 2013, the EEA collects also data about new vans. In its reports, the EEA evaluates the annual performance of the new vehicles and their progress toward meeting the CO_2 emission reduction targets. On 8 June 2020, the EEA published the final data on the CO_2 emissions of passenger cars and vans for the year 2018. This final EEA report provides the data on the average CO_2 emissions of newly registered passenger cars and vans in the EU and Iceland for 2018. It also takes into account corrections proposed by the manufacturers and presents the final corrected data for CO_2 emissions from passenger cars and vans in 2018. The final data underline that the CO_2 emissions for both, passenger cars and vans, are even slightly higher than the preliminary data, which were presented in 2019. Accordingly, the automobile manufacturers need to further increase their efforts if they still want to reach their 2020 CO_2 emission target for vans (147g CO2/km) and their target of 95g CO_2/km for new passenger cars in 2021.

【記事：Article】

1. Background

The EU plans to meet the net zero GHG emissions target by 2050 under the European Green Deal and to reach the climate target and commitments under the Paris Agreement. This requires a significant CO_2 emission reduction also in the transport sector and in particular in the road transport sector. The transport sector is responsible for almost 25% of the EU's entire GHG emissions. Out of this, road transport is by far the biggest emitter of GHG emissions, accounting for about 72% of the transport sector's total GHG emissions.

In accordance with the EU regulation (EC) No. 443/2009 for passenger cars and No. 510/2011 for vans, the European Environment Agency (EEA) collects annually the parameters of new vehicles,

including CO_2 emissions. Since 2010, the EEA has collected data on the CO_2 emissions of new passenger cars registered in all EU Member States, and since 2013, the EEA has been also collecting the data about new vans. The EEA uses the data to evaluate the annual performance of the new vehicle fleet and its progress to meeting the CO_2 emissions targets. The final data for 2018 on CO2 emissions from passenger cars and vans was presented in report on 8 June 2020. This latest EEA report replaces the provisional data published by the EEA in June 2019 and takes into account corrections proposed by the manufacturers.

2. The change from NEDC to WLTP

In the past years, passenger cars and van manufacturers met their specific CO_2 emission targets, partially also because they were still measured under the requirements of the New European Driving Cycle (NEDC). While the NEDC was still fully applicable in 2015 and 2016, in September 2017, the new World Harmonised Light Vehicle Test Procedure (WLTP) became mandatory for all new vehicle types. The WLTP has been introduced to decrease the divergence between laboratory test emission measurements and real world emissions. As of September 2018, the WLTP became applicable for all vehicles. Although since September 2018 the WLTP is fully applied also to all newly registered passenger cars and vans, and the NEDC test procedure-based CO_2 emission measuring is phased out, it will still be necessary to determine NEDC-based CO_2 emission figures for some time. This is due to the fact that the EU CO_2 emission regulations for cars and vans are based on emissions measured using the NEDC, and since some Member States have taxation systems in place, which are based on NEDC-based CO2 figures. Therefore, for 2018, there was still a very limited amount of records of CO_2 emissions measured using WLTP.

According to the EEA report, the average CO_2 emissions and the targets until 2020 will still be calculated using the NEDC values. For vehicles that are type approved in accordance with the WLTP, a technology-based vehicle simulation model, CO2MPAS has been developed and put in place to correlate the WLTP CO_2 values into the corresponding NEDC values. However, from 2021 onwards the CO_2 emission targets will be expressed in WLTP values and compliance will be checked using WLTP values only.

It can be expected that the full application of the WLTP and real world emission tests will show an even more serious level of CO_2 emissions for passenger cars and also for vans. As a result, the automobile manufacturers will have to significantly improve their efforts in order to meet future CO_2 emission reduction targets.

3. The EEA's annual CO_2 emissions data for new passenger cars and vans

Regulation (EC) 443/2009 set the CO_2 reduction framework for passenger cars with a target of 130 grams of CO_2 per kilometre (g/km) by 2015 and 95g CO_2/km by 2021, phased in from 2020 for the EU fleet-wide average emission target for new passenger cars. The Regulation gives manufacturers also additional incentives to produce vehicles with extremely low emissions (below 50g/km) among others. For new light commercial vehicles or vans, Regulation (EU) No 510/2011 set the average CO_2 emissions target at 175g CO_2/km by 2017 and at 147g CO_2/km by 2020.

The EEA's latest and final report on CO_2 emissions from passenger cars and vans in 2018, entitled "Monitoring CO2 emissions from new passenger cars and new vans in 2018" (EEA Report No 02/2020), published on 8 June 2020, provides the final data on the average CO_2 emissions of newly registered passenger cars and vans for 2018. It describes their development towards their CO_2 emission targets in 2021 and 2020, respectively, including corrections offered by the automobile manufacturers and based on data reported by the EU Member States to the EEA for the year 2018.

According to this latest EEA report, after a steady decline from 2010 to 2016, by almost 22 g CO_2/km,

average CO_2 emissions from new cars increased by 0.4 g CO_2/km in 2017. In 2017, the average CO2 emissions of new passenger cars sold in the EU showed that the CO2 emissions rose by 0.4 g CO_2/km to 118.5 g CO_2/km, up from 118.1 g CO_2/km in 2016. The 2017 increase in CO2 emissions for new passenger cars can be attributed to an increase in the number of the petrol passenger cars' share compared to diesel cars, mainly as a result of the Diesel scandal.

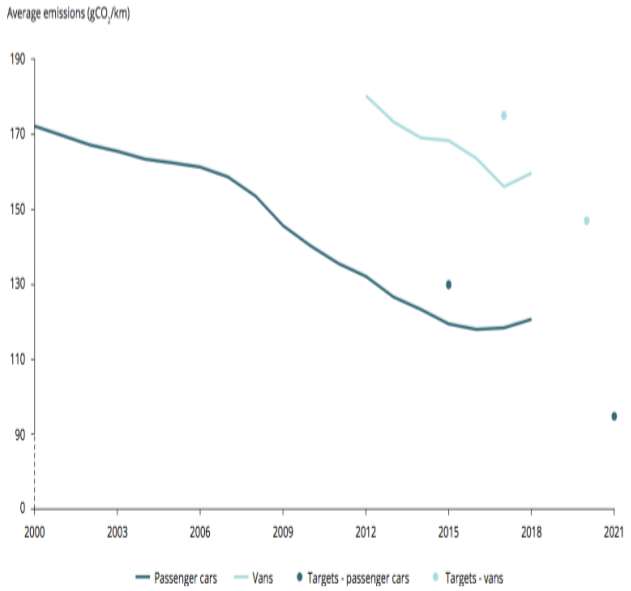

Fig. 1: Average CO_2 emissions of new passenger cars and vans in the EU-28 and Iceland

https://www.eea.europa.eu/publications/co2-emissions-from-cars-and-vans-2018, 8 June 2020

In 2018, the average CO2 emissions for passenger cars increased again and even more than in 2017, by 2.3 g CO_2/km. Thereby, the average CO2 emissions for passenger cars reached 120.8 g CO_2/km in 2018. While this is 7% below the 2015 target of 130 g CO2/km, it shows a considerable gap of 27%, which must still be filled in order to reach the passenger cars' target of 95g CO_2/km that applies from 2021 onwards.

This final data of 2018 on the average CO_2 emissions for passenger cars of 120.8 g CO2/km shows an even higher average of CO2 emissions from new passenger than the EEA's preliminary 2018 data, which were released on 24 June 2019. The preliminary data showed an average of CO2 emissions for passenger cars registered in the EU and Iceland of 120.4g CO2/km in 2018. According to the EEA report, the decreasing share of new registrations of diesel car registrations in 2018 (-26%) together with an increasing share of petrol cars with comparatively higher emissions contributed to an overall increase in the average CO2 emissions. Amongst the petrol cars, Sport utility vehicles (SUVs) had the highest increase of their contribution to the total average CO2 emissions (+8.5 g CO2 /km). An increase in sales of SUVs was observed in Europe in recent years, with one out of three cars newly registered in 2018 being a SUV. Compared to regular cars like as hatchback or sedan, SUVs are typically heavier and have more powerful engines and have larger frontal areas. These are all features that increase fuel consumption. This increase of CO_2 emissions from passenger cars based on the consumers' decision to switch from diesel to petrol cars, rather than switching to low- or zero emission passenger cars like EVs could ultimately undermine the EU's efforts to significantly cut CO2 emissions from road transport.

Similarly, average emissions of new vans had decreased by 24 g CO_2/km between 2012 and 2017. However, also the average of CO2 emissions of newly registered vans increased in 2018. In 2018, the newly registered vans emitted on average 157.9 g CO_2/km, which is 1.7 g CO_2/km more than in 2017 (156.1 g CO_2/km). Accordingly, following a sharp decrease of CO_2 emissions for vans until 2017, this 2018 data shows the first increase in average CO_2 emissions from new vans since the Regulation came into force in 2011.

The vast majority of registered vans are powered by diesel and in the majority of countries, the proportion of diesel vans is above 90%. The share of petrol vans is only 3.5%, but it has increased in the last years, up from 1.9 % in 2016 and 2.4 % in 2017. Gas fuelled vans constituted 1.1% of the new fleet.

According to the EEA report, there are many factors affecting the increase in CO_2 emissions from new

vans in 2018, including an increase in the mass, engine capacity and size of the vehicle. Therefore, also in case of vans, the average CO_2 emissions still need to further significantly decrease if manufactures want to meet their respective future target of 147g CO_2/km for vans by 2020.

4. The automobile manufacturers' results

Data on automobile manufacturer's individual performances shows that in 2016, all car and van manufacturers met their CO_2 specific emission targets. In 2017, the largest automobile manufacturers, Toyota Motor Europe had the lowest average CO_2 emissions of 103g CO_2/km for new passenger cars registered in 2017, followed by Automobiles Peugeot 105g CO_2/km and Automobiles Citroen 106g CO_2/km. However, three automobile manufacturers (Automobili Lamborghini, Mazda Motor Corporation and Société des Automobiles Alpine), representing together 1.4% of all new passenger car sales in 2017, exceeded their specific emission targets for 2017. Other automobile manufacturers would also have exceeded their specific emission target, but they were able to meet their obligations as members of pools or thanks to derogations.

In 2018, based on their average specific CO_2 emissions, 55 manufacturers achieved their targets individually or as part of a pool. Additional 13 manufacturers achieved their derogation targets and 25 manufacturers fall within the scope of the de minimis threshold, which covers manufacturers with less than 1,000 registrations.

In 2018, all manufacturers that individually registered more than 100,000 cars registered 14.3 million new cars in the EU-28 and Iceland, i.e. 95% of the total number of new registrations.

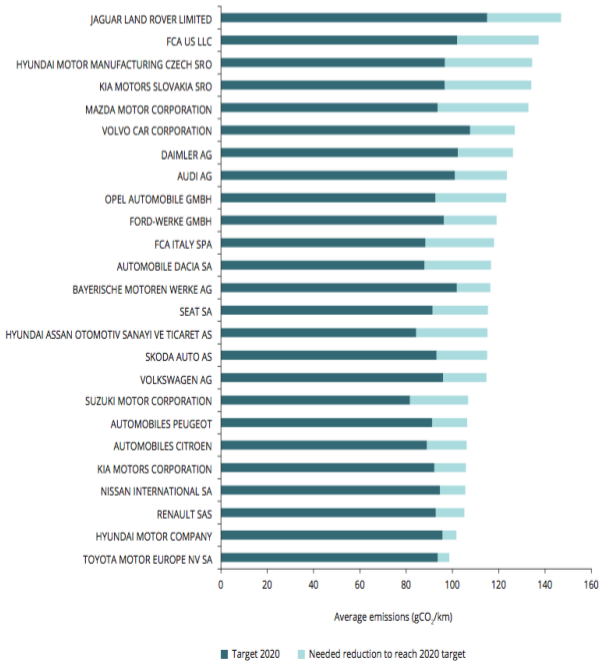

Fig. 2: Distance to 2020 targets for car manufacturers based on their 2018 fleet and emissions

Derogations are not taken into account

https://www.eea.europa.eu/publications/co2-emissions-from-cars-and-vans-2018

In 2018, for the second year in a row, Toyota Motor Europe had the lowest average CO_2 emissions (102 g CO_2 /km) of all manufacturers and managed to reduce average CO_2 emissions again by 1g CO_2/km compared to 2017. More than half of its fleet had emissions below 95g CO_2/km. The Toyota Motor Europe fleet comprised 96% petrol cars, with a high proportion of hybrids. Also Automobiles Citroën and Automobiles Peugeot achieved again good results and achieved also average emissions below 110g CO_2/km, mainly due to having one of the lightest fleets (1,265kg and 1,200kg, respectively). However, compared to 2017, their emissions increased by 2.5g CO_2/km and 3.6g CO_2/km respectively. For Automobiles Citroën, the average CO_2 emissions of both, diesel and petrol cars, increased by 1.5-2.0g CO_2/km. The number of diesel cars, which, on average, emit almost 6.5g CO_2/km less than the petrol ones, decreased from 44% to 34% of their new fleet. The electric cars increased by 36% limiting the increase of the emission to 2.5g CO_2/km. Regarding

Automobiles Peugeot, both the average CO_2 emissions of diesel and petrol cars increased by more than 3 g CO_2/km. Compared to previous years the number of diesel cars, which on average emit also 6.5 g CO_2/km less than petrol ones, decreased from 51% to 45% of their fleet. The number of electric cars increased by 20%. More significant emission reductions were achieved by Suzuki Motor Corporations (-4.9g CO_2/km) and Nissan International SA (-1.8g CO_2/km). For the second year in a row, the average specific emissions of the majority of large manufacturers increased in 2018.

Regarding vans, in every year since the CO_2 emissions monitoring for vans commenced, Automobile Dacia SA was the vans manufacturer with the lowest CO_2 emissions, and in 2018 for the fifth year in a row, Automobile Dacia SA, which on average has the lightest vehicles, achieved the lowest average CO_2 emissions. In 2018 however, an increase of the average emission by 1.4g CO_2/km was observed also for this manufacturer. The next two lowest emitting manufacturers are Automobile Citroen and Automobile Peugeot, with average emissions of 132.2g and 135g CO_2/km, respectively. However, for both of them, emissions increased by 1-2g CO_2/km in the last year, and the average mass increased by 15-30 kg. Since the beginning of the monitoring of CO_2 emissions from new vans, year 2018 was the first year for Fiat Group when its average emissions increased (by 0.7g CO_2/km).

Average CO_2 emissions of all the larger manufacturers, with the exception of Opel, Toyota, Renault, Nissan, Opel Automobile, increased in 2018 compared to 2017. The largest increases in average CO_2 emissions were observed for Ford-Werke GmbH (+4.9g CO_2/km), Volkswagen (+4.2g CO_2/km) and Mitsubishi Motors Thailand (+2.0g CO_2/km).

5. E-mobility

Electric vehicles (EV) have gradually increased their share in new passenger car sales in Europe over the past years. However, the market share and penetration of zero- and low-emission vehicles, including electric cars, remained low in 2018. The plug-in hybrid and battery electric cars doubled their share in the passenger cars' market from 1.0% in 2016 to 2.0% in 2018. This includes both battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV). Electrified cars' increase in their share of new passenger car sales was triggered in particular by the need to reduce CO_2 emissions and, particularly in urban areas, air pollutants such as NO_X and PM.

Iceland recorded the highest electric car market shares of 15% in the EEA report. Within the EU28, Sweden had the highest share of new electric cars in 2018 of around 8% of new cars being PHEVs or BEVs. More than other manufacturers, Toyota moved away from conventional cars, especially diesel, and promoted more hybrid powertrains. Toyota also announced its plans to completely phase out diesel cars by the end of 2018, due to limited demand and widespread uptake of hybrid alternatives (HEV).

6. Conclusion

The CO2 emission increase in the two consecutive years 2017 and 2018 is concerning since the average CO2 emissions will still need to further decrease significantly in order to reach the respective future target of 95g CO_2/km for passenger cars by 2021 and the 147g CO_2/km for vans by 2020. This is a clear and concerning signal that the automobile manufacturers need to take more decisive action in order to achieve better improvements in CO_2 emission reduction measures and to manufacture more efficient cars.

The annual average CO_2 emissions from passenger cars and vans in the years 2017 and 2018 confirm that the EU will need further efforts to meet the respective future target of 95g CO_2/km for passenger cars by 2021 and the target of 147g CO_2/km for vans set for the year 2020. The utilisation of the WLTP from 2018 onwards also for new vehicles could lead to a further increase in the results of CO_2 emission levels.

Due to the increase in CO_2 emissions in the last two

years, in 2018, most car manufacturers were still far away from meeting their 2020/2021 targets. This CO_2 emission increase for passenger cars in two consecutive years is concerning when considering that the target of 95g CO_2/km needs to be achieved by 2021. The automobile manufactures will have to make decisive efforts to further significantly reduce the CO_2 emissions of their passenger cars sold in the EU and to supply the market with competitive low- and zero emission passenger cars. Toyota is the closest to reaching the 2020/21 targets. Toyota comes closest, but still would have to reduce its average emissions by around 5g CO_2/km. Hyundai Motor Company would need a further reduction of 7.3g CO_2/km. For all other manufacturers the distance to the 2020/21 target would be higher of up to 39g CO_2/km in the case of Mazda Corporation. Vans manufacturers are generally much closer to their 2020 targets. Some of them had already met their 2020 target in 2018. However, also in case of vans, the downward trend of average CO_2 emissions stopped in 2016 and these emissions have been increasing in the years 2017 and 2018. The negative trend for passenger vehicles was mainly caused by the shift to petrol cars, the introduction of heavier new models, a higher average mass of new cars and the increase in the market share of SUVs. The average mass of petrol cars grew by around 5% in 2018 compared to 2010 level. Vehicle mass is a critical parameter in car design as it is linked closely to fuel consumption.

While engine downsizing and the uptake of electric vehicles always have a positive effect on reducing CO_2 emissions, the increase of SUVs has systematically led to an increase of CO_2 emissions. Therefore, the recent surge in SUV sales is one of the key factors that also contributed to the rise of new passenger car emissions in 2018.

Some of the vans' manufacturers have already achieved average CO_2 specific emissions below their 2020 target, including Automobile Peugeot, Automobile Citroën, Ford-Werke GmbH and Iveco. Manufacturers such as Nissan International, Volkswagen AG and Toyota Motor Europe are already very close to their 2020 targets and they need to reduce their average CO_2 emissions by less than 4g CO_2/km in the next 2 years. Other manufacturers will have to make more significant improvements to achieve their 2020 targets.

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