EUROPEAN
COMMISSION

Brussels, 26.10.2021
COM(2021) 961 final

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

Quality of petrol and diesel fuel used for road transport in the European Union (Reporting year 2019)

{COM(2021) 950 final}

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1. INTRODUCTION

Pursuant to Article 7a of Directive 98/70/EC[1] relating to the quality of petrol and diesel fuels (henceforth the "Fuel Quality Directive") and Article 5 of Council Directive (EU) 2015/652 laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC[2], Member States are required to report annually on the greenhouse gas (GHG) intensity of fuels and energy supplied in their territories. This reporting obligation applied for the first time for the reporting year 2017, following the application and transposition of Council Directive (EU) 2015/652. This annual report comprises the data reported for the year 2019.

Furthermore, pursuant to Article 8(3) of Directive 98/70/EC Member States are required to report on national fuel quality data for the preceding calendar year.

This annual report summarises the information provided by Member States in relation to the above-mentioned reporting requirements. It is based on the data submitted by Member States to the European Environment Agency (EEA) for the year 2019.

2. VOLUMES AND LIFE CYCLE GREENHOUSE GAS INTENSITY OF FUEL AND ENERGY TYPES

Article 7a of the Fuel Quality Directive, in conjunction with the Council Directive (EU) 2015/652, sets out reporting requirements concerning the following:

- the total volume of each type of fuel or energy supplied for road transport and non-road mobile machinery (including inland waterway vessels when not at sea), agricultural and forestry tractors, and recreational craft when not at sea;
- the life cycle GHG emissions per unit of energy, including the provisional mean values of the estimated indirect land use change (ILUC) emissions from biofuels[3];
- the feedstock and the biofuel production pathway used for each of the biofuels supplied on the territories of Member States.

The Fuel Quality Directive obliges Member States to require fuel suppliers to reduce the life cycle GHG intensity of transport fuels, i.e., the life cycle GHG emissions per unit of energy from fuel and energy supplied, by a minimum of 6 % by 31 December 2020 compared with the fuel baseline standard for 2010 of 94.1 gCO2eq/MJ[4]. ILUC GHG emissions are not taken into account in assessing compliance with the minimum 6% reduction target. The Renewable

[1] Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC, OJ L 350 of 28.12.1998, p. 58.

[2] Council Directive (EU) 2015/652 of 20 April 2015 laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels, OJ L 107 of 25.4.2015, p. 26.

[3] Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources, OJ L239 of 15.9.2015, p. 8.

[4] Council Directive (EU) 2015/652 of 20 April 2015 laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels, OJ L 107 of 25.4.2015, p. 26.

Energy Directive (EU) 2018/2001[5] foresees different measures to address ILUC including a cap on food- and feed-based biofuels, with its delegated act[6] setting out detailed criteria for determining high ILUC-risk feedstock for biofuels to be gradually phased-out by 2030 and the criteria for certifying low ILUC-risk biofuels, bioliquids and biomass fuels.

In the year 2019, all 28 Member States as well as Norway and Iceland provided data on greenhouse gas emission reductions in the appropriate format.

2.1 Greenhouse gas emissions and distance to 2020 target

According to the data provided, the average GHG intensity of the fuels and energy supplied in the 28 reporting Member States in 2019 was 90 gCO_{2eq}/MJ, which is 4.3% lower than the 2010 baseline of 94.1 gCO2eq/MJ. This corresponds to a saving of 54 Mt carbon dioxide equivalent (CO_{2eq}) during the year 2019. The progress achieved by fuel suppliers has been limited between the years 2018 and 2019 with an improvement of 0.6 percentage points of the reported average GHG intensity of the fuels.

Reported data for 2019 confirms that EU fuel suppliers in the 28 reporting Member States were on average behind their objective of reducing the GHG intensity of transport fuels by 6% by 2020, compared with 2010 (see *Figure 1*). It is to be noted that, in 2019, the use of upstream emission reductions (UER)[7] were reported for the first time by Hungary and the United Kingdom, contributing to a reduction of the overall GHG intensity of about 0.2 percentage points to reach 4.3% in total. The UER claimed by a supplier have to be quantified and reported in accordance with the requirements set out in Council Directive (EU) 2015/652. More detailed information on approaches to quantify, monitor and report on UER can be found in a guidance note[8]. UER are expected to further contribute to the achievement of the reduction target in the year 2020.

Furthermore, progress varies greatly across Member States (see Figure 1). In 20 Member States, the reductions in 2019 still remain lower than the optional intermediate target of 4% that Member States could require fuel suppliers to comply with already for the year 2017. Sweden and Finland are the only Member States having already exceeded the 6% reduction target for 2020, while Croatia, the United Kingdom and the Netherlands have achieved the largest progress with more than 1.5 percentage points between 2018 and 2019. At the same time, Sweden, Poland and Bulgaria have reported somewhat higher GHG intensity in 2019 than in the previous year. Further information can be found in the EEA Technical Report No 2/2021 on 'Greenhouse gas intensities of transport fuels in the EU in 2019'.

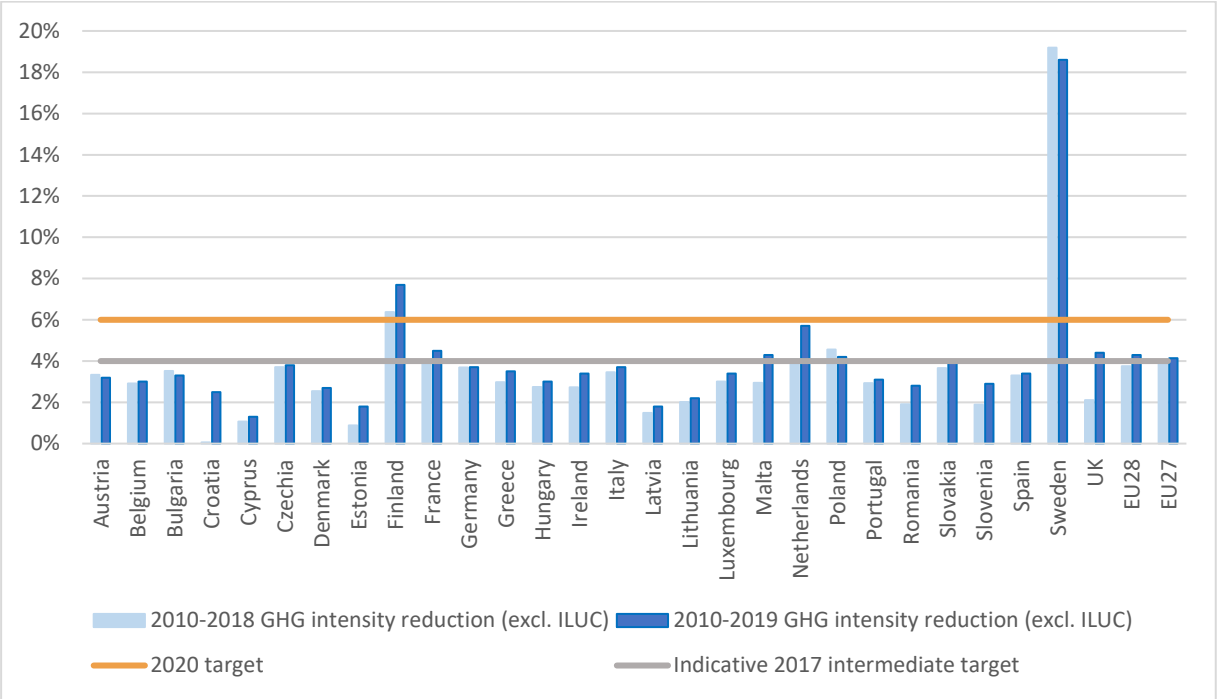
[5] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, OJ L 328, 21.12.2018, p. 82–209

[6] C(2019) 2055 final: https://ec.europa.eu/energy/sites/ener/files/documents/2_en_act_part1_v3.pdf

[7] 'Upstream emissions' means all greenhouse gas emissions occurring prior to the raw material entering a refinery or a processing plant where the fuel is produced.

[8] https://ec.europa.eu/clima/sites/default/files/guidance_note_on_uer_en.pdf

Figure 1: Reductions in GHG intensity of fuels achieved by EU fuel suppliers in Member States, 2010-2019 *(Source: EEA)*



As a result, almost all Member States need to take further action swiftly to ensure that the 2020 target is met. There are several ways of action that Member States can take in this regard, for example by further expanding the use of electricity in road transport, supporting the increased use of biofuels (in particular advanced biofuels), incentivizing the development of renewable fuels of non-biological origin and reducing upstream emissions occurring before refining processes. Member States remain obliged to ensure that suppliers respect the 6% reduction target after the year 2020 and to monitor and report on their GHG emissions intensity after that date.

Furthermore, the Commission has put forward on 14 July 2021, as part of the package of measures to deliver on the European Green Deal and the increased climate ambition, a revision of the Renewable Energy Directive[9] proposing to reduce the GHG emission intensity of transport fuels by 13% by 2030 compared with the 2010 baseline. This proposal, to be discussed in co-decision process, would repeal the 6% target set out in the Fuel Quality Directive in order to streamline legislation and avoid double regulatory requirements.

Taking ILUC emissions into account[10], the average GHG intensity of the fuels consumed in 2019 in the EU was 2.6 % lower than in 2010. This corresponds to a saving of 33 Mt CO_{2eq} during the year 2019. According to Article 7d of Directive 98/70/EC laying down the calculation of life cycle greenhouse gas emissions from biofuels, ILUC emissions are not taken into account in assessing compliance with the minimum 6% reduction target.

[9] https://ec.europa.eu/info/sites/default/files/amendment-renewable-energy-directive-2030-climate-target-with-annexes_en.pdf

[10] For this calculation, the provisional estimated indirect land-use change emissions from biofuels were taken into account as listed in Annex V of the Fuel Quality Directive.

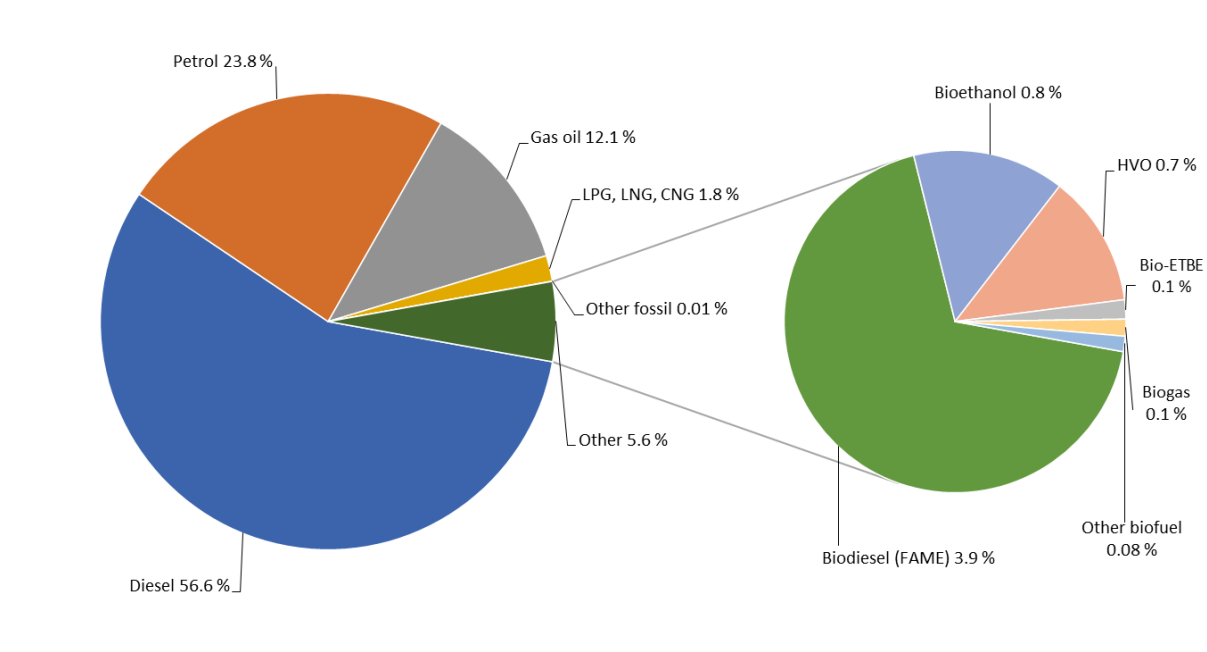
2.2 Fuel supply

This section provides the data submitted by Member States on all fossil fuels, biofuels and fuels of non-biological origin within the scope of the Fuel Quality Directive for road transport and non-road mobile machinery.

Total fuel supply reported in 2019 was 13 675 petajoules (PJ), representing a small decrease of 3% compared to 2018. The fuel supply remained largely dominated by fossil fuels (94.4%) followed by biofuels (5.6%) and a very minor share (0.01%) of electricity (see *Section 2.4*). The only renewable fuel of non-biological origin reported for 2019 was renewable non-bio methanol reported by the United Kingdom at a very small percentage in relation to the total energy quantity.

The fossil fuel supply in 2019 remained dominated by diesel (56.1%; 7 665 PJ), followed by petrol (23.8%; 3 258 PJ) and gas oil (12.6%; 1 729 PJ). Liquefied petroleum gas and natural gas had a combined share of 1.8% (250 PJ) (see *Figure 2*).

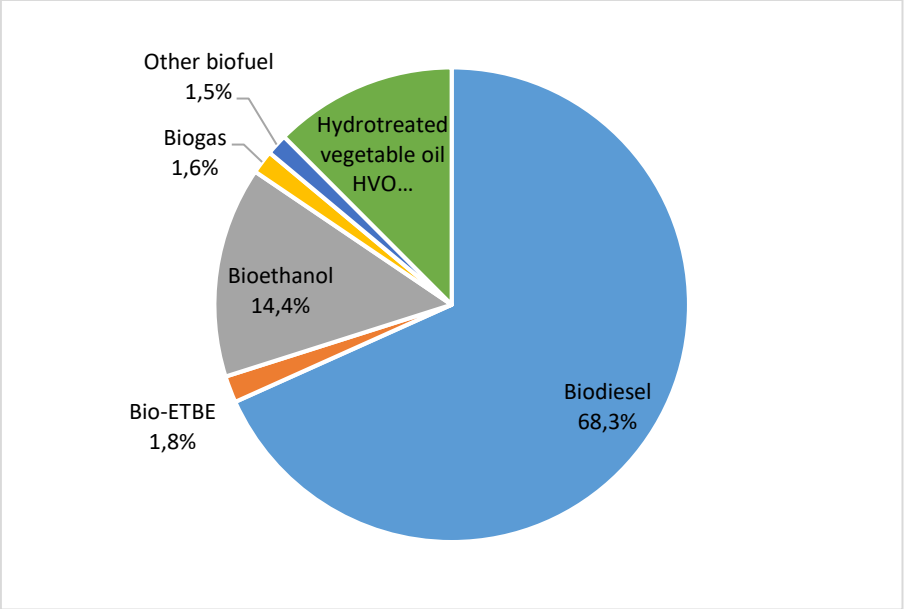
Figure 2: Fuel energy supply shares per fuel type in 2019 *(Source: EEA)*



2.3 Biofuel consumption

The total biofuel consumption increased slightly from 732 PJ to 771 PJ between 2018 and 2019. It continues to be dominated by biodiesel (fatty acid methyl ester, FAME) (68.3% of the total biofuel consumption; 527 PJ), followed by bioethanol (14.4%; 111 PJ) and hydrotreated vegetable oil (HVO; 12.5%; 96 PJ). Bio-ethyl tert-butyl ether (bio-ETBE) and biogas accounted for 3.4% of the total biofuel consumption (26 PJ). All other biofuels represented a much smaller share (see Figure 3). The proportion remains stable compared to 2018. Detailed information for all biofuels and pathways can be found in the EEA Technical Report No 2/2021.

Figure 3: Biofuel energy supply shares per fuel type in 2019 *(Source: EEA)*



2.4 Electricity consumption

The reporting of electricity consumption by fuel suppliers is voluntary and twelve Member States (compared to ten in 2018) reported data on electricity consumed by electric vehicles and motorcycles (see *Table 1*). The total reported quantity of electricity consumed by electric vehicles remained relatively stable, standing at 1 506 362 GJ (including powertrain efficiency).

Table 1: Electricity consumed by electric vehicles and motorcycles in 2019 as a reported contribution by fuel suppliers to their GHG reduction target (*Source: EEA*)

Member State	Quantity of energy		GHG intensity	
	excluding powertrain efficiency (GJ)	including powertrain efficiency (GJ)	reported by Member State (g CO_2e/MJ)	reported by Member State (g CO_2e/kWh)
Bulgaria	128 502	51 401	522.9	1 882
France	1 467 058	586 823	10.8	39
Germany	1 209 600	483 840	147	529
Hungary	5 779	2 312	139.5	502
Ireland	92 426	36 970	127.5	459
Italy	229 605	91 842	110.3	397
Netherlands	532 307	212 923	154.2	555
Portugal	42 430	16 972	71	256
Slovakia	2 652	1 061	46.4	167
Slovenia	1 854	742	-	-
Sweden	2 431	972	13.1	47
United Kingdom	51 261	20 504	5.6	20

3. OVERVIEW OF THE 2019 FUEL QUALITY DATA IN THE EU

According to Article 8 of the Fuel Quality Directive, all Member States, as well as Norway, submitted reports on national fuel quality data for the year 2019.

This section provides the data for petrol and diesel sales, and the bio-components included therein, for road transport reported by all EU Member States. It excludes other fossil fuels, other biofuels and fuels of non-biological origin, as well as fuels used for non-road mobile machinery.

3.1 Petrol and diesel and biocomponent content

The share of diesel as compared with petrol sales has increased over the years, from 55.6% of total sales in 2001 to 72% in 2019. This reflects to a large degree the increasing dieselisation of Europe's vehicle fleet during that period. However, this share remains stable since 2017 (see *Table 2*).

Table 2: Diesel and petrol fuel sales (in million litres and their respective shares) in 2017, 2018 and 2019

	2017	2018	2019
Diesel fuel sales	270 668 (72.3%)	271 018 (72.3%)	272 026 (72%)
Petrol fuel sales	103 766 (27.7%)	103 856 (27.7%)	105 866 (28%)

Diesel fuel consumption is dominant in most EU Member States except for Cyprus, Greece and the Netherlands.

The majority of petrol sales in 2019 comprised fuels with a petrol grade research octane number (RON) of 95, the share of which slightly decreased compared to 2018. The share of $95 \leq RON < 98$ sales increased, and the share of $RON \geq 98$ sales remained at a similar level as in 2018 (see *Table 3*).

Table 3: Share of petrol sales according to RON numbers

	2017	2018	2019
RON 95	85.7%	82%	80.2%
95 ≤ RON < 98	8.3%	13.7%	15.1%
RON ≥ 98	5.8%	4.2%	4.6%
RON = 91	0.1%	0.1%	0.1%

All diesel sold in the EU is marketed as containing biodiesel and nearly all petrol is marketed as containing bioethanol. In 2019, 77.1% of petrol fuel sold in the EU had up to 5% ethanol content by volume (E5) which is by 7.2 percentage points less than in 2018, while 22 % of petrol fuel had up to 10% ethanol content (E10) which is almost double as much as in 2018, and 0.3% contained more (E+[11]). Of the diesel fuel sold, 99.2 % contained up to 7% FAME (B7) and 0.8% contained more (B+[12]) (see *Table 4*).

[11] E+ is petrol fuel with > 10% (% v/v) ethanol content

[12] B+ is diesel fuel with > 7 % (% v/v) biodiesel content

Table 4: Use of biocomponents in petrol and diesel fuels sold in the EU in 2017-2019

Fuel type		2017	2018	2019
Petrol	**E0**	12.2%	4.1%	0.6%
	E5	71.9%	84.3%	77.1%
	E10	15.7%	11.4%	22.0%
	E+	0.1%	0.2%	0.3%
Diesel	**B0**	0.0%	0.0%	0.0%
	B7	83.8%	99.2%	99.2%
	B+	16.2%	0.8%	0.8%

3.2 Compliance of sold fuels with quality limits

Overall in the EU, a high compliance with the fuel quality limits is observed. The very large majority of key fuel parameters in the samples taken in 2019 were reported within the tolerance limits.

Lithuania, Slovenia and Sweden verified and reported full compliance for both petrol and diesel fuels. Five Member States verified and reported full compliance for petrol (Ireland, Lithuania, Malta, Slovenia and Sweden), and eleven for diesel (Austria, Croatia, Denmark, Estonia, Finland, Lithuania, Romania, Luxembourg, Portugal, Slovenia and Sweden). One Member State (Belgium) reported more than 200 non-compliances for petrol and 88 for diesel in 2019, yet this represents a small fraction of the overall number of samples taken in Belgium, which is around 8000.

Member States reported a total of 424 cases of non-compliance for petrol and 134 for diesel for 2019. For petrol, the most common parameters falling outside the specifications were summer vapour pressure (in seventeen Member States), research octane number (RON, in ten Member States), motor octane number (MON, in three Member States) and sulphur content (in four Member States). For diesel, the most common parameters falling outside the specifications were the sulphur content (in thirteen Member States) and the FAME content (in eleven Member States).

All Member States described the actions taken when non-compliant samples were identified. These actions included informing the competent authorities, initiating investigations, imposing penalties and fines, and resampling. In a small number of cases, no action was taken where the non-compliant parameters were found to be very close to the tolerance limits.

There was therefore no need for the Commission to launch any investigation in this area. It can be concluded that the fuel quality monitoring system in place ensures that high quality fuels are sold in the EU in accordance with the requirements of the Fuel Quality Directive.