

Fuel quality monitoring in the EU in 2020

Fuel quality monitoring under the Fuel Quality Directive

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Amendments

This report was amended on 23 March 2022. Czechia was renamed Czech Republic.

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Contents

1	Background and structure of the report	1
2	Quality of fuels	2
2.1	Fuel sales	2
2.2	Use of biocomponents	4
2.3	Monitoring systems and sampling methods	7
2.4	Exceedances of fuel quality limits	10
2.5	Quality of Member States' reporting in 2020	12
3	Summary of Member States' submissions	13
3.1	Austria	13
3.2	Belgium	15
3.3	Bulgaria	18
3.4	Croatia	21
3.5	Cyprus	24
3.6	Czech Republic	26
3.7	Denmark	30
3.8	Estonia	32
3.9	Finland	35
3.10	France	38
3.11	Germany	41
3.12	Greece	45
3.13	Hungary	48
3.14	Iceland	50
3.15	Ireland	52
3.16	Italy	54
3.17	Latvia	56
3.18	Lithuania	59
3.19	Luxembourg	61
3.20	Malta	63
3.21	Netherlands	65
3.22	Norway	67
3.23	Poland	69
3.24	Portugal	72
3.25	Romania	74
3.26	Slovakia	76
3.27	Slovenia	78
3.28	Spain	80
3.29	Sweden	82
3.30	United Kingdom (Northern Ireland)	85

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1 Background and structure of the report

Fuel and fuel combustion products are affecting human and animal directly and indirectly - for example by inhaling gaseous pollutants or by consuming harmful substances deposited in soil, food and crops.

To minimise the negative effects on health and the environment from the use of petrol and diesel fuels, EU Member States must report information relating to the quality of petrol and diesel fuels sold for road transport in their territories. More specifically, Member States must sample fuels each year and analyse their technical characteristics to ensure that they are consistent with the requirements of Article 8 of Directive 98/70/EC relating to the quality of petrol and diesel fuels (the Fuel Quality Directive, FQD).

This report is structured into two main chapters. Chapter 2 provides an overview of the information for the EU while chapter 3 describes the different national fuel quality monitoring systems. Country specific information can be found in both chapters - in chapter 2 in form of several overviews and in chapter 3 as country fact sheets. Details on the parameters reported in accordance with Article 8 and their effects on the environment and human health can be found in EEA-Report No 05/2019 ⁽¹⁾.

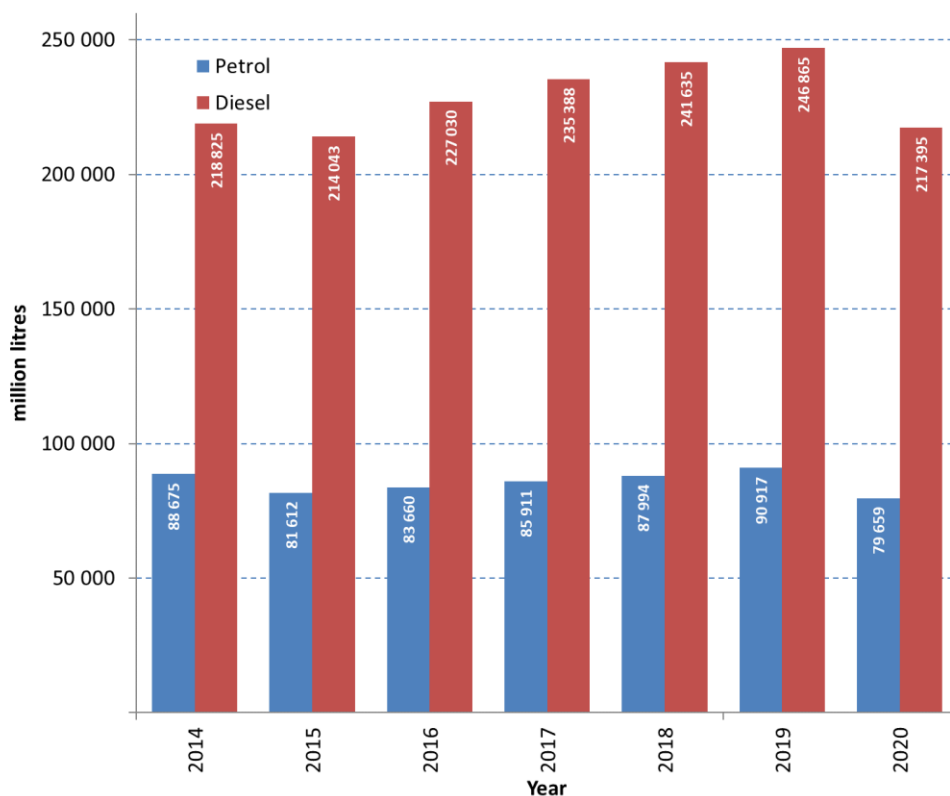
⁽¹⁾ <https://www.eea.europa.eu/publications/quality-and-greenhouse-gas-intensities-1>

2 Quality of fuels

2.1 Fuel sales

Sales of fuels used for road transport in the EU (EU-27) continue to be dominated by diesel: 73.2 % (217 395 million litres) of fuel sold was diesel and 26.8 % was petrol (79 659 million litres) in 2020 ⁽²⁾. Petrol and diesel sales in 2020 decreased around 12 % when compared with 2019 (Figure 2.1).

Figure 2.1 EU-27 petrol and diesel fuel sales in 2020 (million litres)



The proportion of diesel in total fuel sales has increased over the years, from 71.2 % of total sales in 2014 to 73.2 % in 2020 (Figure 2.2). This reflects to an increase of freight tonnes kilometres in Europe ⁽³⁾ (the increase of 2 % is observed mainly between 2014 and 2016 that then remains stable until 2020). While sales of diesel fuel increased by 12.8 % between 2014 and 2019 and sales of petrol fuels also increased by 2.5 % during the same period, there is a decrease in both diesel and petrol fuel sales in 2020 by 11.9 % and 12.4 % respectively. This is most likely a consequence of the pandemic of covid-19.

The majority of petrol sales in 2020 comprised of fuels with a petrol grade research octane number (RON) of 95, which accounted for 79.3 % of the total petrol fuel sales; 14.3 % of sales were 95 < RON < 98; and 6.4 % were RON ≥ 98. There was an insignificant proportion of RON 91 grade sales (0.05 %).

⁽²⁾ Fuels other than petrol and diesel are disregarded here, as the reporting under Article 8 of the Fuel Quality Directive (FQD) is limited to petrol and diesel, for which fuel specifications are laid down in Annexes I and II of the FQD.

⁽³⁾ EU transport in figures – Statistical pocketbook 2021 (<https://op.europa.eu/en/publication-detail/-/publication/14d7e768-1b50-11ec-b4fe-01aa75ed71a1/language-en>)

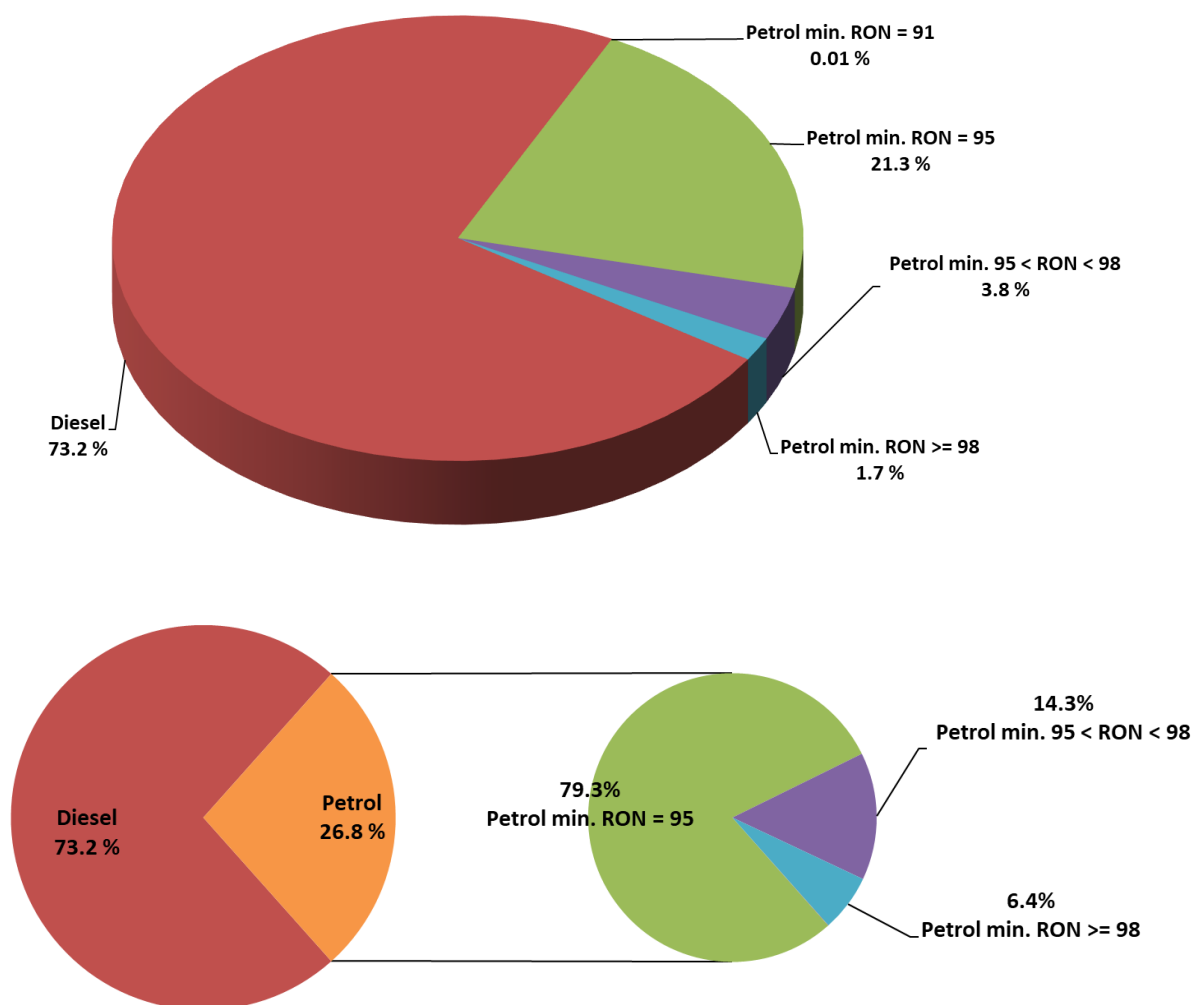
There are no significant changes in the distribution of fuel grades between 2019 and 2020. Sales of petrol with min. RON = 95, slightly increased from 77.8 % in 2019 to 79.3 % to 2020 ⁽⁴⁾, sales of petrol with min. $95 \leq \text{RON} < 98$ slightly decreased from 16.7 % in 2019 to 14.3 % in 2020 and sales of petrol with $\text{RON} \geq 98$ increased from 5.4 % (2019) to 6.4% (2020).

In detail, Hungary stopped selling petrol with min. RON = 95 in 2020 and even though Slovenia and Slovakia introduced this grade in 2020 in their national sales, the total amount of petrol with min. RON = 95 was 1.5 % higher in 2020 than in 2019.

In 2020, petrol with min. $95 \leq \text{RON} < 98$ was introduced by Latvia while Greece and Slovakia stopped selling this fuel grade. Latvia and Slovenia substituted the fuel grade $\text{RON} \geq 98$ with $95 \leq \text{RON} < 98$ however sales of $\text{RON} \geq 98$ increased by 1.0 %.

To an extent (approximately 2 %) slight changes of the fuel grade types can be explained by the changed geographical scope between 2019 (EU-28) and 2020 (EU-27).

Figure 2.2 EU-27 petrol and diesel fuel sales, 2020 (% litres)



⁽⁴⁾ All comparisons between figures of 2019 and 2020 refer to EU-27 for both reference years.

Diesel fuel consumption is dominant (> 60 % of total fuel sales) in most Member States, apart from Cyprus, Greece and the Netherlands (Table 2.1).

The ten Member States with the highest volumes of fuel sold account for 80 % of total EU sales, while the remaining 17 Member States with the lowest volumes account for 20 % of total EU fuel sales.

Table 2.1 Fuel sales by Member State and fuel type in 2020

Member State	Minimum RON = 91	Minimum RON = 95	95 ≤ RON < 98	RON ≥ 98	Total petrol	Total diesel
million litres						
Austria	13	0	1 694	120	1 827	7 479
Belgium	0	0	1 701	475	2 176	6 708
Bulgaria	0	0	552	46	598	2 655
Croatia	0	510	0.1	40	550	1 944
Cyprus	0	350	0	34	384	385
Czech Republic	0	1 909	0	57	1 966	5 737
Denmark	24	1 521	0	138	1 683	3 086
Estonia	0	0	144	115	259	724
Finland	0	1 261	0	492	1 753	2 893
France	0	9 917	0	0	9 917	33 382
Germany	0	20 508	0	1 171	21 679	41 751
Greece	0	2 095	0	432	2 527	3 069
Hungary	0	1 525	0	325	1 849	4 290
Ireland	0	1 079	0	0	1 079	3 222
Italy	0	7 581	0	0	7 581	25 462
Latvia	0	187	31	0	218	1 172
Lithuania	0	0	306	13	319	2 086
Luxembourg	0	275	0	91	366	1 511
Malta	0	91	0	3	94	167
Netherlands	0	0	4 778	160	4 938	6 915
Poland	0	5 355	0	504	5 858	20 113
Portugal	0	0	935	94	1 029	4 066
Romania	0	0	1 200	176	1 377	5 627
Slovakia	0	617	0	92	709	2 248
Slovenia	0	524	36	0	559	1 934
Spain	0	5 204	0	439	5 642	23 046
Sweden	0	2 631	0	90	2 721	5 723
EU27	37	63 138	11 376	5 108	79 659	217 395

2.2 Use of biocomponents

In 2020 close to 100 % of all diesel and petrol fuels sold in the EU contained biocomponents ⁽⁵⁾ (Figure 2.3). Only Latvia reported 638 million litres of diesel with 0 % biofuel content ⁽⁶⁾ that has a share of 0.3 % out of total sales of diesel. Malta and Slovakia reported 186 million litres of petrol in total with 0 % biofuel content that have a share of 0.2 % out of total sales of petrol ⁽⁷⁾.

Of petrol sold in the EU in 2020, 65.7 % was of the product type E5 (i.e., up to 5 % ethanol content by volume and in which the ethanol is derived from biofuels or is of biogenic origin). A total of 33.3 % was E10 (i.e., up to 10 % ethanol content by volume). Petrol with no ethanol content (previously reported as

⁽⁵⁾ This includes bioethanol directly blended into petrol or converted to ETBE and then blended into petrol.

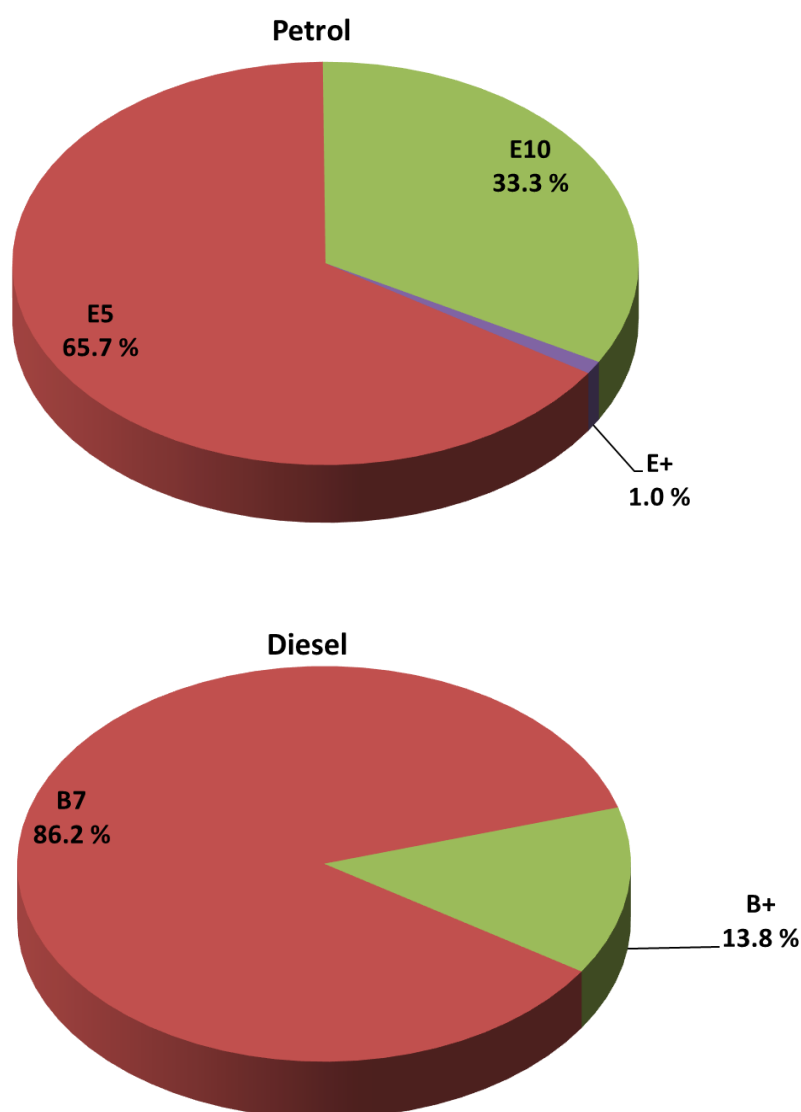
⁽⁶⁾ Valid only for a 5-month winter period (1 November to 1 April) due to arctic or severe winter climate (following standard LVS EN 590+A1:2017 "Automotive fuels – Diesel – Requirements and test methods").

⁽⁷⁾ Due to the low share of these fuels, they were left out of Figure 1.3.

E0) is included in E5 this year due its decreasing share ⁽⁸⁾. Only 1.0 % of petrol was E+ (i.e., > 10 % ethanol content by volume). This refers mainly to E85, used in engines modified to accept a higher content of ethanol. Such flexi-fuel vehicles are designed to run on any mixture of petrol and ethanol with up to 85 % ethanol by volume.

Of diesel sold in the EU in 2020, 86.2 % was of the B7 product type (i.e., containing up to 7 % fatty acid methyl esters, FAME) and 13.8 % was of the B+ product type (i.e., containing more than 7 % FAME). Diesel with no FAME content (previously reported as B0) is included in B7 and has a share of 0.3 % coming from Latvia.

Figure 2.3 Use of biocomponents in petrol and diesel fuels sold in the EU-27 in 2020 (% litres)



The share of ethanol-containing petrol (E5 and E10) in the EU has increased over the last five years, from about 89 % in 2014 to 99 % in 2020, as illustrated in Figure 2.4. The share of non-ethanol-containing petrol (E0) has decreased even further reaching only 0.3 % compared to 2019 (0.7 %) as Cyprus has introduced ethanol in petrol in 2020.

⁽⁸⁾ 0.2 % - coming from Malta and Slovakia.

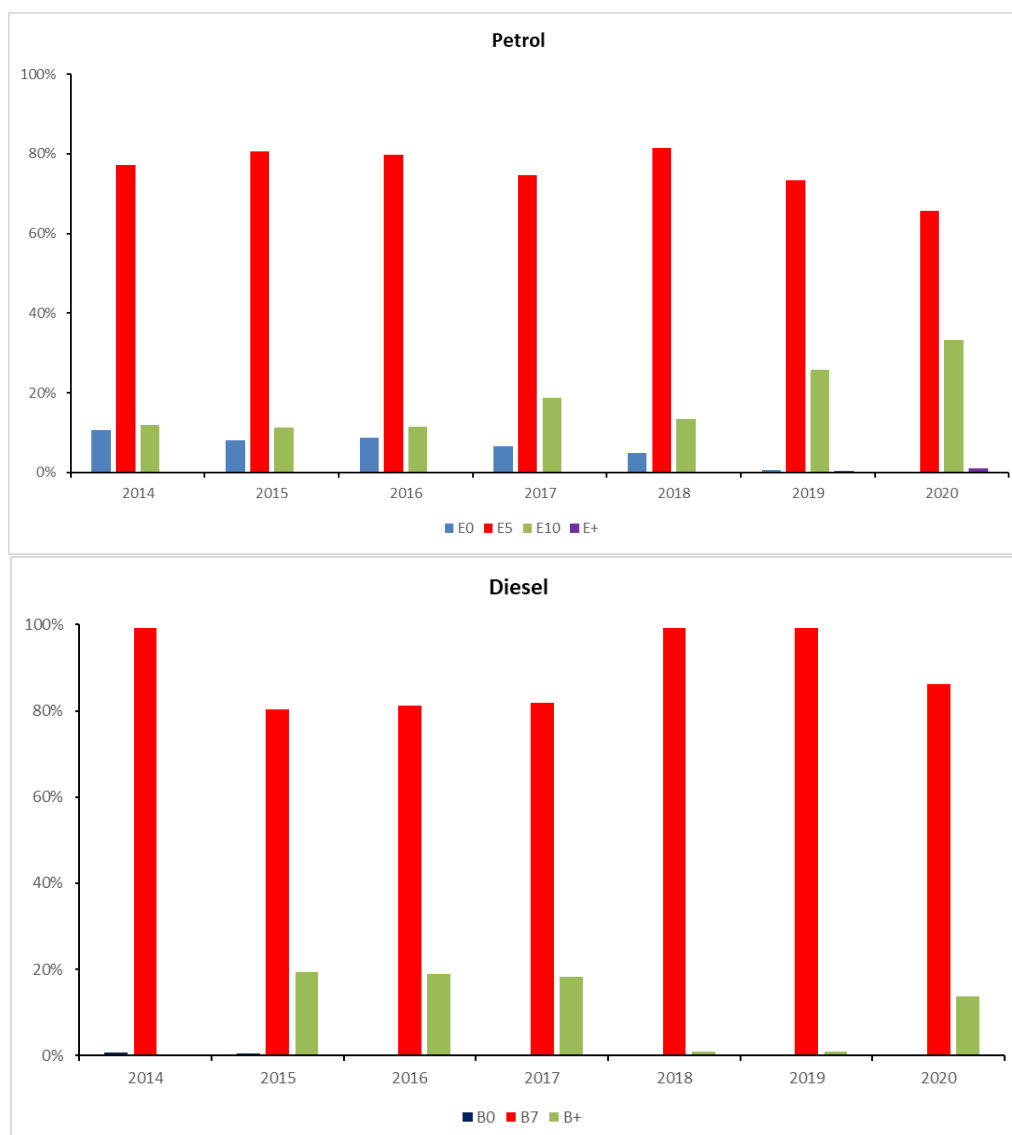
The decrease of the use of fuel grades with biofuel content with up to 5 % (E5) between 2019 and 2020 is due to the change in the geographical scope (almost 4 % effect) and due to the increase of Member States that sold petrol fuel grades with up to 10 % of biofuel content. In detail, 11 Member States sold fuel grades with E10 in comparison to 16 Member States in 2020 (Cyprus, Denmark, Hungary, Latvia, and Slovakia were added).

Almost all diesel contained different levels of biodiesel over the same period. Share of B+ changes significantly between 2014 and 2020 because of changes in the French legislation allowing the share of biodiesel to be above 7 % between 2015 and 2017. For 2020, the share of B+ increases again due to the contribution now of Belgium and Spain. The only Member State that uses diesel without any biofuel content is Latvia (and only for a 5-month winter period).

Whereas the use of different biocomponents results in lower overall greenhouse gas (GHG) emissions, the reductions achieved depends greatly on the feedstock used to produce biofuels as well as on the actual production pathways. Details on this topic can be found in the EEA indicator and ETC reports on Article 7 of the FQD ⁽⁹⁾.

⁽⁹⁾ <https://www.eea.europa.eu/ims/greenhouse-gas-emission-intensity-of>
<https://www.eionet.europa.eu/etcs/etc-cme/greenhouse-gas-intensities-of-transport-fuels-in-the-eu-in-2019>

Figure 2.4 Biocomponents in petrol and diesel sold in the EU from 2014 to 2020 (% litres)



Note: E+, petrol with > 10 % ethanol content; E0, petrol with no ethanol content; E5, petrol fuel with up to 5 % (percentage volume/volume (% v/v)) ethanol content; E10, petrol with up to 10 % ethanol content; B+, diesel fuel with > 7 % (% v/v) biodiesel content; B0, diesel with no biodiesel content; B7, diesel fuel with up to 7 % (% v/v) biodiesel content. From 2020, E0 is included in E5 and B0 in B7, as explained in the reporting template.

2.3 Monitoring systems and sampling methods

Table 2.2 summarises the main information on the operation of the relevant fuel quality monitoring system (FQMS) by Member States, including model used, country size and sampling method, as well as the number of samples required.

The information contained in this table is described in more detail below.

Table 2.2 Fuel quality monitoring system summary

Member State	FQMS model	Country size	Summer and winter sampling	Total samples required ^(a)	
				Petrol	Diesel
Austria	Statistical model A	Small	Yes	108	100
Belgium	National system	Small	Yes	National system	National system
Bulgaria	Statistical model A	Small	Yes	108	100
Croatia	Statistical model C	Small	Yes	107	100
Cyprus	Statistical model C	Small	Yes	110	100
Czech Republic	Statistical model C	Small	Yes	103	100
Denmark	Statistical model C	Small	Yes	111	100
Estonia	Statistical model C	Small	Yes	200	100
Finland	Statistical model A	Small	Yes	200	100
France	Statistical model A	Large	Yes	411	200
Germany	Statistical model B	Large	Yes	827	400
Greece	Statistical model A	Small	Yes	200	100
Hungary	Statistical model C	Small	Yes	200	100
Ireland	Statistical model C	Small	Yes	100	100
Italy	Statistical model A	Large	Yes	200	200
Latvia	Statistical model C	Small	No	200	200
Lithuania	Statistical model C	Small	Yes	104	100
Luxembourg	National system	Small	Yes	National system	National system
Malta	Statistical model C	Small	Yes	103	100
Netherlands	Statistical model A	Small	Yes	103	100
Poland	Statistical model B	Large	Yes	438	400
Portugal	Statistical model C	Small	Yes	108	100
Romania	Statistical model A	Small	Yes	200	100
Slovakia	Statistical model C	Small	Yes	200	100
Slovenia	Statistical model C	Small	Yes	107	100
Spain	Statistical model A	Large	Yes	217	200
Sweden	National system	Small	Yes	National system	National system

Note: Large country, total automotive road fuel sales of > 15 million tonnes per annum; small country, total automotive road fuel sales of < 15 million tonnes per annum. (a) Based on EN 14274:2003.

2.3.1 Statistical models

Member States have to indicate whether their monitoring system is set up using the European Standard EN 14274:2013 statistical model A, B or C (see descriptions in Table 2.3) and whether it is based on the large or small country framework. Alternatively, they have to indicate if they are using their own nationally defined system.

Twenty-four Member States used one of the three statistical models defined by the European Standard EN 14274:2013. Three Member States (Belgium, Luxembourg, and Sweden) used a national monitoring system.

Table 2.3 Main types of statistical models used by Member States

Statistical model	Description
European Standard EN 14274	
European Standard EN 14274 A: macro-regions	In this model, the regions within the country are grouped (preserving some geographical identity) into macro-regions so that they have similar total sales volumes relative to each other, as well as approximately the same number of supply sources. This approach is recommended, as it is designed to capture fuel variations efficiently and therefore requires a smaller number of samples. If geographical or other circumstances (e.g., force majeure) do not allow fulfilment of the requirements for the design of this preferred model, model B shall be considered the next best model. The minimum overall number of samples per grade and per season is 50 per small country and 100 per large country.
European Standard EN 14274 B: non-macro-regions	If the construction of macro-regions (based on fuel supply patterns) is not possible within a country, then the country shall be divided into regions using only geographical and administrative criteria. To ensure that fuel variability is reliably captured, a large number of samples per grade is required: 100 for small countries and 200 for large countries.
European Standard EN 14274 C: non-region model	If the country is small and it can be demonstrated that a division into macro-regions or non-macro-regions is not possible, having considered the procedures and provisions given in this European Standard, then the country shall be considered one region for sampling purposes. A total of 50 samples per grade and per season is required.
National model	Some countries have implemented their own models for the FQMS in accordance with their national legislation.

2.3.2 Information on summer and winter fuel grade sampling

Member States are also requested to define the summer/winter periods implemented in their territories and applying to their FQMS reporting. Apart from Latvia, all Member States provided information for both summer and winter fuel grades. Sampling in both summer and winter periods ensures representability of the samples taken and is also relevant for the vapour pressure of petrol, for which the FQD sets a limit value of up to 60 kPa ⁽¹⁰⁾, during the summer period only. Vapour pressure derogations up to the year 2020 have been granted to 9 Member States ⁽¹¹⁾ upon their request, either due to the effect of ethanol blending (for Bulgaria and Spain) or due to low ambient summer temperature (for Denmark, Estonia, Finland, Ireland, Latvia, Spain, Sweden and United Kingdom) ⁽¹²⁾.

2.3.3 Minimum number of samples

The minimum number of samples specified in EN 14274 refers to the minimum number of samples taken from fuel-dispensing sites to determine fuel quality at the point of use.

For fuel grades with market shares of 10 % and above, the minimum number of fuel-dispensing sites that should be sampled and tested in any country is given in Table 2.4.

For each fuel grade with a market share of < 10 %, considering petrol and diesel separately, the minimum number of fuel-dispensing sites to be sampled should be calculated in proportion to the number of samples for the corresponding parent grade, using the following equation:

$$N_{\text{grade } i} = \text{market share}_{\text{grade } i} / \text{market share}_{\text{parent grade}} \times N_{\text{parent grade}}$$

⁽¹⁰⁾ According to Annex I and III of FQD for petrol.

⁽¹¹⁾ https://ec.europa.eu/clima/policies/transport/fuel_en#tab-0-1

⁽¹²⁾ Guidance note on notifications of exemptions from the vapour pressure requirements for petrol pursuant to Article 3(4) and (5) of Directive 98/70/EC relating to the quality of petrol and diesel fuels (https://ec.europa.eu/clima/sites/default/files/transport/fuel/docs/guidance_note_vapour_pressure_en.pdf)

Table 2.4 Minimum number of samples per fuel grade in each winter and summer period

Fuel grade	Country size	Statistical model		
		A	B	C
Petrol	Small	50	100	50
Petrol	Large	100	200	N/A
Diesel	Small	50	100	50
Diesel	Large	100	200	N/A

2.4 Exceedances of fuel quality limits

Most key fuel parameters in the samples taken in 2020 were within the tolerance limits. In total, 282 non-compliances for petrol and 90 for diesel were reported for 2020 (Table 2.5).

One Member State (Belgium) reported 93 non-compliances for petrol and 70 for diesel in 2020. Despite this large number of non-compliances, it represents only a small fraction of the overall number of samples taken in Belgium, which is 9 238.

Twenty Member States reported fewer than 10 non-compliances for petrol, eight of which have reported full compliance (Bulgaria, Lithuania, Luxembourg, Malta, Netherlands, Romania, Slovenia and Sweden). Exceedances of the summer vapour pressure were reported in 15 Member States, exceedances of the research octane number (RON) were reported in six Member States, exceedances of the motor octane number (MON) were reported in five Member States, exceedances of the aromatics (hydrocarbon analysis) were reported in five Member States and exceedances of sulphur content were reported in one Member State (France).

Twenty-six Member States reported fewer than 10 non-compliances for diesel (all except Belgium), seventeen of which reported full compliance (Austria, Croatia, Denmark, Finland, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovenia and Sweden). Of the seven fuel parameters that require testing and analysis ⁽¹³⁾, the most common parameters falling outside the specifications were the sulphur content and the FAME content (in six Member States for both parameters).

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

⁽¹³⁾ Cetane number, density at 15 °C, distillation 95%-point, polycyclic aromatic hydrocarbon (PAH) content, Sulphur content, FAME content and manganese content. Note that manganese is a metallic additive used for octane boosting in petrol only. However, the FQD limits the manganese content in all fuels, although it has no application in diesel; hence, most Member States do not routinely test for manganese content in diesel.

Table 2.5 Number of non-compliances for petrol and diesel fuels by country in 2020

Member State	Samples taken (and samples required in brackets)		Number of non-compliances in 2020 (figures for 2019 in brackets)		Parameters outside tolerance limits for non-compliant samples
			Petrol	Diesel	
Austria	106 (108)	100 (100)	5 (12)	0 (0)	Vapour pressure, Aromatics
Belgium	4 951 (National system)	4 287 (National system)	93 (234)	70 (88)	RON, Vapour pressure, Oxygen content, Ethanol, Diesel Distillation 95 %-point, Diesel Sulphur content, FAME content
Bulgaria	127 (108)	112 (100)	0 (3)	1 (2)	Diesel Sulphur content
Croatia	203 (107)	202 (100)	7 (2)	0 (0)	Vapour pressure
Cyprus	482 (110)	281 (100)	2 (4)	1 (3)	Vapour pressure, Diesel Sulphur content,
Czech Republic	875 (103)	1 104 (100)	19 (12)	2 (2)	Vapour pressure, RON, MON, Diesel Sulphur content
Denmark	109 (111)	100 (100)	5 (10)	0 (0)	Aromatics
Estonia	253 (200)	174 (100)	2 (2)	3 (0)	Vapour pressure, Cetane number, Diesel Sulphur content, FAME content
Finland	209 (200)	104 (100)	1 (1)	0 (0)	Aromatics
France	437 (411)	226 (200)	10 (22)	3 (2)	Vapour pressure, Oxygen content, MON, Sulphur content, FAME content
Germany	858 (827)	418 (400)	22 (5)	2 (2)	MON, Aromatics, Oxygenates (Ethanol), RON, Vapour pressure, FAME Content
Greece	119 (200)	109 (100)	12 (4)	7 (14)	Vapour pressure, Diesel Sulphur content, FAME Content
Hungary	120 (200)	120 (100)	1 (3)	0 (1)	Vapour pressure
Ireland	100 (100)	100 (100)	4 (0)	0 (3)	Vapour pressure
Italy	253 (200)	335 (200)	7 (1)	0 (1)	RON, Vapour pressure
Latvia	80 (200)	48 (200)	5 (5)	0 (1)	Vapour pressure, RON, Aromatics
Lithuania	108 (104)	100 (100)	0 (0)	0 (0)	-
Luxembourg	124 (National system)	62 (National system)	0 (2)	0 (0)	-
Malta	110 (103)	104 (100)	0 (0)	0 (1)	-
Netherlands	100 (103)	100 (100)	0 (4)	0 (3)	-
Poland	591 (438)	426 (400)	4 (4)	0 (1)	RON, MON
Portugal	133 (110)	156 (100)	15 (14)	0 (0)	MON
Romania	208 (200)	200 (100)	0 (3)	0 (0)	-
Slovakia	245 (200)	221 (100)	6 (4)	0 (4)	Vapour pressure, Manganese
Slovenia	144 (107)	185 (100)	0 (0)	0 (0)	-
Spain	228 (217)	200 (200)	15 (11)	1 (3)	Vapour pressure, FAME content
Sweden	766 (National system)	794 (National system)	0 (0)	0 (0)	-
Total			235 (362)	90 (131)	

2.5 Quality of Member States' reporting in 2020

The EEA is responsible for the quality assurance/quality control (QA/QC) of the data submitted at EU level and is assisted in these checks by the European Topic Centre for Air Pollution and Climate Change Mitigation (ETC/CME).

In 2020, 27 EU Member States plus Iceland, Norway and Northern Ireland ⁽¹⁴⁾ submitted their fuel quality reports in accordance with the requirements of Article 8 of the FQD.

24 countries submitted their first report within the deadline (August 31, 2021). The latest submission was received on 29th of September 2021. No outstanding unresolved issues remain.

During the QA/QC procedure, the ETC/CME reviewers posed in total 55 questions to countries, relating to the completeness and consistency of their submitted data sets. The most common findings communicated to countries following the quality checks performed on the information reported were:

- no fuel sales reported in the regional sampling sheets;
- national fuel sales and numbers of samples not consistent with the corresponding regional data;
- missing values for various fuel parameters;
- exceedances of certain fuel quality parameters (e.g., summer vapour pressure, sulphur content), without specifying the number of samples outside the tolerance limits or providing any explanations or a description of the action taken;
- analytical and statistical values (e.g., maximum, minimum, median, mean) reported for the full year not consistent with the corresponding summer/winter;
- missing values in case of national limits.

Most of these issues could be solved directly with the countries during the communication process, by their completing missing information, correcting erroneous values or providing the necessary clarifications to comments. Following the QA/QC procedure, 13 countries submitted revised data sets. The last resubmission was received on the 9th of November 2021.

⁽¹⁴⁾ See Withdrawal Agreement including the protocol on Northern Ireland <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02020W/TXT-20201218&from=EN>

3 Summary of Member States' submissions

3.1 Austria

3.1.1 Country details

Responsible organization:	Umweltbundesamt GmbH Wien (Austrian Environment Agency — AEA)
Country size:	Small
Summer period:	1 May to 30 September
Fuel quality monitoring system (FQMS) used:	EN 14274 statistical model A
Location of sampling:	Refueling stations / Fuel dispensing sites

3.1.2 Fuel quality monitoring service

Sampling

The organization responsible for sampling is Agrar Market Austria (AMA), analyzing and reporting activities are performed by the Austrian Environment Agency (AEA). Samples are taken from filling stations that are selected at random while the proportion of small and large marketers is constant. Within one year three campaigns are undertaken – two in winter (begin and end of the year) and one in summer. All parameters are tested according to the “methods and Limits” sheet.

Fuel Quality Monitoring System administration

The FQM Directive is/was implemented by the formerly Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (now BMNT - Federal Ministry of Sustainability and Tourism). Both companies, the Agrar Market Austria (AMA) and the Austrian Environment Agency (AEA) are commissioned by the Ministry to perform the FQM in Austria. The samples were taken from the filling stations three times a year (AMA campaigns) and brought to the AEA for analyzing. Reporting starts when all samples of the previous year were tested. After analyzing the samples, non-compliant fuels are reported to the Ministry where further legal actions are taken. In the beginning, Austria set up a Model C because the ministry stated that there is only one company responsible for supplying the Austrian market and the fuel therefore is more or less homogeneous (OMV Refinery) and the FQMS at that time couldn't find evidence that it was different. But in 2009 we shift to the Model A since it could prove that there are two different supplying refineries which deliver Austrian filling stations with fuels – some amounts to come from another Refinery from Germany (OMV Burghausen). The differentiation was possible with the beginning of blending ETBE, and ethanol were for the first-time differences within Austrian fuels sold were detectable. Since then, there are two macro-regions defined (WEST and EAST) and samples taken are split, respecting population and numbers of filling station.

National legislation that transposed the Fuel Quality Directive

The transposition of the FQD in national law, as well as the RED, was done by an amendment of the Austrian Fuel Ordinance which was published in 2012 (BGBl. II Nr. 398/2012).

Reporting periods

There are no arctic weather conditions in Austria. The transition period is defined between the 1st and the 31st of October and between the 1st of March and the 30th of April. Samples taken within the transition periods are regarded as "winter"- samples. They are part of the FQMS.

3.1.3 Sales

Table 3.1 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Regular unleaded petrol (minimum RON = 91) E5 (Normal)	6.23	12 845 433	9 642	3	0	19 of 19
Unleaded petrol (minimum 95 < RON < 98) E5 (Super)	5.39	1 693 695 926	1 267 076	50	50	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus)	7.27	120 166 966	90 259	3	0	19 of 19
Total petrol		1 826 708 325	1 649 871	56	50	
Diesel fuel B7 (Diesel)	5.91	7 479 319 943	6 245 157	50	50	6 of 7
Total diesel		7 479 319 943	6 245 157	50	50	

3.1.4 Exceedances of the fuel quality limits

Petrol fuel grades.

Table 3.2 and Table 3.3 summarizes the parameters for which exceedances were reported for petrol fuels.

Table 3.2 Unleaded petrol (minimum RON = 91) E5 (Normal)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure, DVPE	kPa	< 60	-	64.05	1	3

Table 3.3 Unleaded petrol (minimum 95 < RON < 98) E5 (Super)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 60	28.7	63.5	3	50
Aromatics	% V/V	< 35	26.4	39.3	1	100

Diesel fuel grades.

No exceedances of the diesel fuel quality limits were reported.

3.2 Belgium

3.2.1 Country details

Responsible organization:	Fapetro
Country size:	Small
Summer period:	1 July to 30 September
FQMS used:	National system
Location of sampling:	Refueling stations and terminals

3.2.2 Fuel quality monitoring service

Sampling

The NBN ISO EN 17020 certified organization, Fapetro, is responsible for the reporting of the fuel quality in Belgium. Samples are taken at refueling stations, depots, and pumps with private owners. Only samples for refueling stations and depots are reported here. Petrol at depots is not taken due to blending issues. Belgium is willing to provide further detailed information, used procedures, analysis etc. at any time. The partition of taken samples is adapted to the volume of fuel sold on the Belgian market. Belgium controls a lot more parameters than imposed by the European Commission to ensure the quality of the sold fuel and to protect the customer. A template can be obtained, showing in detail the analyzed parameter and method, standard for every fuel type. Belgium uses the NBN EN ISO 4259-2 standard for the interpretation of the analysis results from 1 January 2009. Samples were taken in compliance with NBN EN ISO 14275 and NBN ISO 3170, latest version. All the samples are analyzed by laboratories that are NBN EN ISO 17025 certified. All the used test methods are accredited or the demand for accreditation is in progress.

Fapetro also conducts yearly audits in the laboratories to reassure itself of the quality of the reported analyzed samples. Pump labelling is regulated by national legislation. Requirements and test methods are described in the following standards: NBN EN 228 for petrol and NBN EN 590 for diesel.

Fuel quality monitoring system administration

All the information can be found in the answer above and procedures on demand.

National legislation that transposed the Fuel Quality Directive

Transposition in national law was affected by the Ministerial decree from 24 January 2002, latest version and need to be seen in relation with the ISO 17020 procedures of Fapetro.

Reporting periods

Seasonal periods in Belgium are as follows:

- summer: from 1 July to 30 September,
- winter: from 1 January to 1 November and 31 May to 31 December.

Transition periods are defined as being the months of October and April.

Regarding the results provided for petrol, Fapetro wants to draw special attention to the Belgian annex of the NBN EN ISO 228 mainly for the parameter vapour pressure.

National specifications for the vapour pressure are:

- in summer (kPa): min 45,0 - max 60,0,
- in winter (kPa): min 65,0 - max 95,0,
- 2 transition periods: the months April and October (kPa): min 45,0 - max 95,0.

In 2020, due to the Covid-19 crisis and the oil products demand drop, a 2-months prolongation of the transition period was granted to companies and the first transition period was April, May and June.

Second transition period was October as usual.

Vapour pressure is analyzed throughout the year in Belgium, as well as in summer as in winter.

The transition periods are used to give the fuel producers the ability to adapt the production of the fuel quality to meet the specifications of the summer or winter fuel quality. In 2020, the summer transition period started in April and lasted until the end of June.

Data in sales includes samples and volumes during the transition periods.

3.2.3 Sales

Table 3.4 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E10 (E10)	9.67	1 700 660 453	1 266 992	875	631	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (E5)	13.58	475 065 241	353 923	836	646	19 of 19
Total petrol		2 175 725 694	1 620 915	1 711	1 277	
Diesel fuel B+ (B7)	10.64	6 707 876 790	5 587 661	864	1 934	7 of 7
Total diesel		6 707 876 790	5 587 661	864	1 934	

3.2.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.5 and Table 3.6 summarize the parameters for which exceedances were reported for petrol fuels.

Table 3.5 Unleaded petrol (minimum 95 < RON < 98) E10 (E10)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Research octane number	-	> 95	94	99.8	1	366
Vapour pressure, DVPE	kPa	< 60	56.7	80.75	34	876
Ethanol	% v/v	< 10	0.8	11.21	7	1 598

Table 3.6 Unleaded petrol (minimum RON ≥ 98) E5 (E5)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure, DVPE	kPa	< 60	47.9	84.25	29	836
Oxygen content	% (m/m)	< 2.7	1.50	3.50	4	836

Diesel fuel grades

Table 3.7 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.7 Diesel fuel B7 (B7)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Distillation 95 % point	°C	< 360	305.8	400	8	2 798
Sulphur content	mg/kg	< 10	3	17.7	4	2 798
FAME content	% v/v	< 7	0.05	8.7	58	2 798

3.3 Bulgaria

3.3.1 Country details

Responsible organization:	Ministry of Environment and Water, State Agency for Metrology and Technical Surveillance of the Ministry of Economy
Country size:	Small
Summer period:	16 April to 15 October
FQMS used:	EN 14274 statistical model A
Location of sampling:	Refueling stations and terminals

3.3.2 Fuel quality monitoring service

Sampling

The Directorate-General for Quality Control of Liquid Fuels (DG QCLF) staff inspects liquid fuels in a refinery, petroleum depots and terminals, refueling stations and road tankers for liquid fuels transport. In fulfillment the requirements of standard BDS EN 14274 were planned minimum 120 locations for inspection to provide 50 petrol samples and 50 diesel fuel samples during the summer and the winter period. The number of samples of petrol RON ≥ 98 was calculated by means of a formula, according to BDS EN 14274, where the market share of petrol RON ≥ 98 for 2020 was 7.7 %.

The locations were chosen by regions, proportionally determined depending on the annual fuels consumption in a region, on a random basis, from the locations' database. Each location has a unique identification number.

Liquid fuels samples were collected every week, according to the requirements of standards BDS EN ISO 3170 and BDS EN 14275. Testing samples taken for liquid fuels quality control, in accordance with the requirements of standard BDS EN 14274, was performed only in the accredited permanently sited laboratory by set of parameters pursuant to the European Directive 98/70/EC and methods determined in standards BDS EN 228 and BDS EN 590.

The full scope of accreditation of DG QCLF laboratories is available on the link:

<https://www.nab-bas.bg/registar.html>

Fuel quality monitoring system administration

Responsible organizations for management and implementation of the FQD are the Ministry of Environment and Water and the State Agency of Metrological and Technical Surveillance (SAMTS) – Directorate-General for “Quality control of Liquid Fuels” (DG QCLF).

Directorate General “Quality control of liquid fuels” of of SAMTS takes samples of transport and heating liquid fuels, and the Executive Agency “Maritime administration” takes samples from vessels and send them for testing in an accredited laboratory. Control is carried out by inspections of the quality of distributed fuels, inspections of their accompanying documents and by imposing administrative measures when infringements are established.

The Bulgarian monitoring system was created with the help of the European standard BDS EN 14274:2003 for small size country. Until 2014 was used statistical model “B”, from 2015 – statistical model “A”.

DG QCLF is a public body responsible to take actions where non-conformities are found concerning the liquid fuels' control carried out. Periodically, the DG QCLF provides data on the SAMTS website on the number of inspections, the number of non-compliance cases, the number, and the type of imposed administrative measures taken for the reference period.

Source of information on the consumption of fuels in the country and by regions is the National Revenue Agency.

Bulgaria provides Annual Fuel Quality Monitoring Data Report by the 31st of August.

National legislation that transposed the Fuel Quality Directive

The European legislation for the liquid fuels quality was introduced in the Bulgarian legislation by the Clean Ambient Air Act, The Law of Renewable Energy Sources, as well as by the Regulation on the liquid fuels quality requirements, conditions, order, and way of their control. The Clean Ambient Air Act and the Regulation on the liquid fuels quality requirements, conditions, order, and way of their control introduced the requirements of EN 228 and EN 590. The Law of Renewable Sources sets minimum requirements for blending transport liquid fuels with biocomponent. According to Article 47 of the Law of Renewable Energy Sources, persons who place on the market liquid fuels are obliged on release for consumption to provide diesel fuel with minimum 6 % (V/V) biodiesel and minimum one percent by volume of biodiesel to be a new generation biofuel and petrol with minimum 9 % (V/V) content of bioethanol or ethers, produced from biomass).

Reporting periods

Seasonal periods in Bulgaria are as follows:

- summer: from 16 April to 15 October;
- winter: from 16 October to 15 April.

With the Regulation on the liquid fuels quality requirements, conditions, order, and way of their control were introduced transition periods:

- for petrol: winter-summer transition period from 16 April to 31 May;
- for petrol: summer-winter transition period from 16 October to 30 November;
- for diesel: summer-winter transition period from 16 October to 30 November.

By implementing Decision of 7 April 2014, the European Commission approved the request of the Republic of Bulgaria for derogation from the maximum vapour pressure of petrol containing bioethanol for the summer period, according to Article 3 (4) and (5) of Directive 98/70/EC for liquid fuels quality. This Decision enables to be placed on the market petrol containing ethanol with maximum vapour pressure 60 kPa in the summer period with the respective vapour pressure waiver permitted, as referred to in Annex III of the Directive, on condition that the used ethanol is biofuel.

Results included in the Report are for samples taken and tested in the summer and winter periods, apart from three samples of petrol RON 95 and six samples of diesel fuel taken in a transition period from petroleum depots, because in Bulgarian legislation there are not transition periods for manufacturers and importers concerning seasonal specifications of fuels.

3.3.3 Sales

Table 3.8 Total sales and sample number

Fuel grade (name)	Biofuel content (v/v %)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E10 (Unleaded petrol RON 95 E10)	10.0	551 557 223	413 667	71	46	19 of 19
Unleaded petrol (minimum RON ≥ 98) E10 (Unleaded petrol RON ≥ 98 E10)	10.0	46 279 057	34 709	6	4	19 of 19
Total petrol		597 836 280	448 377	77	50	
Diesel fuel B7 (Diesel fuel B7)	7.0	2 654 790 756	2 256 572	65	47	7 of 7
Total Diesel		2 654 790 756	2 256 572	65	47	

3.3.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

Table 3.9 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.9 Diesel fuel B7 (Diesel fuel B7)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Sulphur content	mg/kg	< 10	5	13	1	112

3.4 Croatia

3.4.1 Country details

Responsible organization:	Ministry of Economy and Sustainable Development
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations and terminals

3.4.2 Fuel quality monitoring service

Sampling

The fuel quality monitoring system in Croatia is based on the European Standard EN 14274, utilizing the statistical model C (small country) and we have national sampling. Ministry of Economy and Sustainable Development receives annual reports from distributors to the 31st of March of current year for the previous year.

The control and sampling are performed by the legal entity that is certified according to the Croatian Accreditation Agency (ISO/IEC 17020). Analysis of fuel samples is performed by the legal entity that is certified according to the Croatian Accreditation Agency (ISO/IEC 17025).

The samples of petrol fuels, diesel fuel, and gas oil are taken each month during the year at refueling stations and terminals, according to the “Fuel quality monitoring program” which is under the responsibility of Ministry of Economy and Sustainable Development. Ministry of Economy and Sustainable Development sets out “Fuel quality monitoring program” of current year for the next year. According to the national legislation which transposed the Fuel Quality Directive, the distributors are penalized in case of any exceedance of prescribed fuel quality. Enforcement is under the responsibility of Market Inspection (State Inspectorate, Republic of Croatia). Penalties are included in the Air Protection Law (OG No. 127/19). According to the national legislation which transposed the Fuel Quality Directive, the distributors are penalized in case of not submitting data to the National database established by Ministry of Economy and Sustainable Development. Enforcement is under responsibility of Environmental Inspection (State Inspectorate, Republic of Croatia). Penalties are included in the Air Protection Law (OG No. 127/19).

Fuel quality monitoring system administration

Control and sampling – Inspection body type A accredited by norm ISO/IEC 17020 (legal entity that is certified by the Croatian Accreditation Agency); Analysis of fuel samples – Laboratory accredited by norm ISO/IEC 17025 (legal entity that is certified by the Croatian Accreditation Agency); Types of locations at which sampling is carried out-terminals and petrol stations; Samples of petrol fuels, diesel fuel, gas oil and heating oil are taken according to the “Fuel quality monitoring program” which is under the responsibility of Ministry of Economy and Sustainable Development.

Ministry of Economy and Sustainable Development sets out “Fuel quality monitoring program” in the current year for the next year; Frequency of sampling and selection of sampling points in accordance with “Fuel quality monitoring program”; Sampling from Terminals by norm HRN EN ISO 3170; Sampling from petrol stations by norm HRN EN ISO 14275; Determining (analyze) the sulphur content by the norm HRN EN ISO 8754 or 14596.; Reference method used for the precision of the testing method and the interpretation of test results: By the norm HR EN ISO 4259; Number of National refineries: 2; Number of distribution terminals: 14; The Republic of Croatia submitted the annual Fuel Quality Monitoring data report on the 30th of June for the years 2013, 2014 and 2015 considering the fact that Republic of Croatia has become a full Member State in July 2013.

National legislation that transposed the Fuel Quality Directive

The Fuel Quality Directive (the Directive 98/70/EC, the Directive 2003/17/EC, the Directive 2009/30/EC, the Directive 2011/63/EU, the Directive 2014/77/EC, the Directive (EU) 2015/1513 of the European Parliament, the Council Directive (EU) 2015/652 and the Directive (EU) 2016/802) was transposed into Croatian legislation by the Regulation on the quality of liquid petroleum fuels and the manner of monitoring, reporting and the methodology used to calculate GHG emissions in the life of delivered fuels and energy (Official Gazette No 57/2017).

Reporting periods

Seasonal periods in Croatia are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 October to 30 April

Samples were taken and tested regardless of the transition periods.

In 2020, 405 samples were taken and tested for the purposes of FQMS including 203 samples of petrol (RON 95 and RON 100) and 202 samples of diesel fuel. According to the national legislation which transposed the Fuel Quality Directive, the distributors are penalized in case of any exceedance of prescribed fuel quality. Enforcement is under responsibility of Market Inspection (State Inspectorate, Republic of Croatia). Penalties are included in the Air Protection Law (OG No. 127/19). According to the national legislation which transposed the FQM Directive, the distributors are penalized in case of not submitting data to the National database established by Ministry of economy and sustainable development. Enforcement is under responsibility of Environmental Inspection (State Inspectorate, Republic of Croatia). Penalties are included in the Air Protection Law (OG No. 127/19).

3.4.3 Sales

Table 3.10 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) (RON=95)	5.0	509 736 661	384 851	96	97	19 of 19
Unleaded petrol (minimum 95 < RON < 98) (RON=98)	5.0	148 885	112			
Unleaded petrol (minimum RON ≥ 98) (RON=100)	5.0	40 432 548	30 526	3	7	19 of 19
Total Petrol		550 318 095	415 490	99	104	
Diesel fuel B7 (B7)	7.0	1 944 123 465	1 642 784	92	110	7 of 7
Total Diesel		1 944 123 465	1 642 784	92	110	

3.4.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.11 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.11 Unleaded petrol (minimum RON = 95) E5 (RON = 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure	% v/v	< 60	51.5	67.5	7	94

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.5 Cyprus

3.5.1 Country details

Responsible organization:	Ministry of Energy, Commerce, and Industry
Country size:	Small
Summer period:	16 April to 15 October
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.5.2 Fuel quality monitoring service

Sampling

The Ministry of Energy, Commerce, and Industry (MECI) is responsible for sampling, analysis and reporting. Analysis of samples is conducted by the Mobile Lab of the MECI and the laboratory of Cyprus Petroleum Storage Company (CPSC).

Samples of all fuel grades were taken in the vast majority from petrol stations; also, samples were taken from vehicles and other private installations of large consumers by the Inspectors of the MECI daily. The statistical and analytical results of the 2020 FQMS Report, include samples from retail sites. The Mobile Lab of the MECI carried out almost all the tests required for monitoring the fuel quality for 2020, at the petrol stations. The Laboratory of the CPSC conducted several tests especially for verification purposes and also for parameters that cannot be measured in the mobile lab.

Fuel quality monitoring system administration

The Energy Service of the Ministry of Energy, Commerce and Industry is the competent authority for monitoring the fuel quality of the government of the Republic of Cyprus. Most of the data and analysis included in this report are from samples of petrol and diesel that are taken from retail stations - installations in area under the effective control of the government of the Republic of Cyprus. Samples were taken by the Inspectors of the Ministry from Retail sites (petrol refueling stations) on a daily surveillance program prepared by the Chief Inspector and/or his Assistant.

Where non-compliant samples are identified, the Chief Inspector who is appointed by the Minister of Energy, Commerce, and Industry, is responsible for forbidding the sale of off-specification fuels from retail sites, or the use of off-specification fuels from private installations/vehicles and for initiating penal prosecution to the person who is responsible for the retail site/installation/ tank. Cyprus is considered as a single region.

The supply-import of petrol and diesel is carried out by four of the six companies and distribution and retail are carried out by the six marketing companies. Cyprus has no refinery.

National legislation that transposed the Fuel Quality Directive

The provisions of the FQD that correspond to the fuel specifications have been transposed into national legislation by Law 148(I)/2003 as amended by Decrees (KDP) P.I.252/15 plus P.I.200/16, P.I.326/13, P.I.328/13 and P.I.6/2014.

Reporting periods

Seasonal periods in Cyprus are as follows:

- summer: from 16 April to 15 October;
- winter: from 16 October to 15 April.

The transition period from summer to winter and vice versa is set to 6 weeks. Samples are taken and tested during these transition periods. Changes in vapour pressure within the transition periods are monitored (if the results are gradually complied with the seasonal specifications) and reported within

the annual fuel quality report. Although samples are taken also in winter period, the results of vapour pressure reported here, refer only to the summer period, as required.

3.5.3 Sales

Table 3.12 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Unleaded Gasoline-Petrol RON 95)	5.0	350 333 449	257 597	124	122	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Unleaded Gasoline-Petrol RON 98)	5.0	32 772 228	24 097	116	113	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Unleaded Gasoline-Petrol RON 100)	5.0	1 069 000	786	3	4	18 of 19
Total Petrol		384 174 677	282 480	243	239	
Diesel fuel B7 (Eurodiesel)	7.0	384 543 303	320 452	139	142	7 of 7
Total Diesel		384 543 303	320 452	139	142	

3.5.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.13 and **Error! Reference source not found.** summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.13 Unleaded petrol (minimum RON = 95) E5 (Unleaded Gasoline – Petrol RON 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 60	53.3	74.9	2	124

Diesel fuel grades

Table 3.14 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.14 Diesel fuel B7 (Eurodiesel)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Sulphur content	mg/kg	< 10	3.2	125	1	254

3.6 Czech Republic

3.6.1 Country details

Responsible organization:	Ministry of Industry and Trade of the Czech Republic
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.6.2 Fuel quality monitoring service

Sampling

The System of the Fuel Quality Monitoring has been carried out since 2001 under management and evaluation of control monitoring data by the department of Gas Industry and Liquid Fuels at the Ministry of Industry and Trade of the Czech Republic. Since the Czech Republic's accession to the European Union in May 2004, the National Fuel Quality Monitoring System was able to accept conditions of the European Control System and to be compatible with its hierarchy. Additionally, it has been developed in accordance with current requirements of FQMS.

The fuel quality monitoring has been conducted in accordance with FQMS of the European standard EN 14274:2013 and its national Czech version ČSN EN 14274:2013 with the use of regional model C, in consistent with the Czech national legislation.

The monitoring system of the fuel quality is coordinated by the Ministry of Industry and Trade of the Czech Republic (MIT) in the whole country. The Czech Trade Inspection Authority (CTIA), which comes under the jurisdiction of the Ministry of Industry and Trade of the Czech Republic, performed the sampling of liquid and gas fuels at service stations, in cooperation with Accredited Inspection and Certification Authority SGS for laboratory testing of all samples, which were used in transport sector over the year 2020. The fuel samples were tested monthly throughout of the year 2020. The controlling process of all fuel samples has been carried out by the last amended the European standards EN 228 + A12017 and EN 590 and also the last amendment of the Czech standard ČSN EN 228:2013 + A12018 and ČSN EN 590:2014.

Fuel quality monitoring system administration

The fuel sampling was performed according to the requirements of national and European legislation and standards of Fuel Quality Monitoring System in generally. The FQMS is used as control system in accordance with the Czech Standard ČSN EN 14274:2013 and together its versions of European Standards EN 228:2012 + A12017 for petrol and EN 590:2013 for diesel as amended by their national status ČSN EN 228:2013 + A12018 and ČSN EN 590:2014. If the Czech Trade Inspection Authority controller has been found out some lack in the fuel quality at the service station, the sale of fuels has been banned until rectification has been done along with the possibility of financial sanction, in accordance with Act No. 311/2006 Coll. for fuels and petrol stations later amended.

The national legislation is transposed by the rules in accordance with the obligations of the FQD Directive. The Czech Trade Inspection Authority (CTIA) is the administrative government institution, which comes under the jurisdiction of the Ministry of Industry and Trade of the Czech Republic. The collected annual data from the fuel quality monitoring of the previous calendar year (2020) have been provided by the CTIA in form of annual report to the coordinating office - Department of Gas Industry and Liquid Fuels of the Ministry of Industry and Trade of the Czech Republic (MIT). This department of MIT is responsible for corresponding work agenda and for reporting to the European Commission on behalf of the EEA from the Czech Republic. Since the Czech Republic's accession to the European Union in May 2004, the national Fuel Quality Monitoring System was able to accept conditions of the European Control system and to be compatible with its hierarchy. Additionally,, it has

been developed in accordance with the current requirements of FQMS. The fuel quality monitoring has been conducted in accordance with FQMS of the European standard EN 14274:2013 and its national Czech version ČSN EN 14274:2013 with the use of regional model C, in consistence with the Czech national legislation and Czech standards for petrol and diesel, and their final amendment versions. Currently, there are two refineries and around 13 distribution terminals in the Czech Republic. Data of annual fuel analyses were taken from the service stations, which were sold the liquid and gas fuels at the Czech trade in the previous year. These information are provided by Department of Data Support and Analyses, Unit of MIT in cooperation with the Czech Statistical Office. (A new deadline has been entered for submitting the final report for the Member States of EU by Directive (EU) 2015/1513, but the Czech Republic doesn't face any problems with the change).

National legislation that transposed the Fuel Quality Directive

The Directive FQD is transposed by the national legislation in accordance with the continual guidelines of European legislation. The fuel quality has been monitored by Decree No. 133/2010 Coll on requirements for fuels, monitoring of the composition and fuels quality and their records later amended. Decree No. 133/2010 Coll was replaced by Decree No. 516/2020 Coll on requirements of fuels and the implementation of other provisions of the Fuel Act in December 2020. In the sequel combined with the Act for fuels and petrol stations No. 311/2006 Coll., later amended, in accordance with Trade Licensing Act No. 455/1991 Coll., as amended and Act No. 353/2003 Coll On Excise Duties as amended, and next Acts like Air Protection Act No. 201/2012 Coll later amended and the national legislation for energy, too. The Ministry of Industry and Trade of the Czech Republic is responsible for the implementation of Directive 2009/30/EC amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce emissions of greenhouse gas as subsequently amended and coordination of all work at the national level monitored in the year 2020, which is shown in details in the tabular requirements of this template for reporting to the European Commission.

Reporting periods

Seasonal periods in Czech Republic are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 October to 30 April.

In 2020, 2 241 samples were checked including alternative fuels at the service stations in the whole country. In total 1 970 samples of the basic fuel quality plus 11 samples in wintertime were checked. Specifically, 454 samples of petrol and 572 samples of diesel were checked in summertime and 413 samples of petrol and 541 samples of diesel plus 11 samples of artic diesel in wintertime or similar winter conditions. The results of sampling of the transition periods have been included in two basic seasonal periods - in the spring and in the fall.

3.6.3 Sales

Table 3.15 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (BA-95)	6.61	1 908 519 000	1 424 900	431	400	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (BA-98)	4.86	56 774 000	42 700	22	13	19 of 19
Unleaded petrol (minimum RON ≥ 98) E+ (E85)	75.8	515 000	400			0 of 19
Total Petrol		1 965 808 000	1 468 000	453	413	19 of 19
Diesel fuel B7 (motorova nafta)	6.85	5 737 391 000	4 789 000	572	541	7 of 7
Total Diesel		5 737 391 000	4 789 000	572	541	7 of 7

3.6.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.16 and Table 3.17 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.16 Unleaded petrol (minimum RON = 95) E5 (BA-95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure, DVPE	kPa	< 60	53.1	84.4	17	431

Table 3.17 Unleaded petrol (minimum RON ≥ 98) E5 (BA-98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Research Octane Number	-	> 95	94.7	100.2	1	35
Motor Octane Number	-	> 85	84.5	88.7	1	35

Diesel fuel grades

Table 3.18 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.18 Diesel fuel B7 (Motorova nafta)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Sulphur content	mg/kg	< 10	3	25.2	2	1 113

3.7 Denmark

3.7.1 Country details

Responsible organization:	Danish Environmental Protection Agency
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.7.2 Fuel quality monitoring service

Sampling

Sampling and analysis were carried out by an accredited laboratory for the Danish Petroleum Association (DD). The results are sent to the Danish Environmental Protection Agency (EPA). The laboratory where the tests are carried out is accredited according to EN 14274 and EN 14275 standards.

Samples were taken from service stations. Sampling is carried out three times a year: spring, summer, and autumn. About 50 % of the samples are taken east of, and 50 % west of, the Great Belt. The populations east and west of the Great Belt are approximately equal.

The laboratory sends a proposal to sampling places for approval by the Danish EPA. The Danish EPA makes sure that sampling takes place at all petrol companies and all over the country.

Fuel quality monitoring system administration

Sampling and analysis were carried out by an accredited laboratory of the EOF. Results are sent to the Danish EPA. The Danish EPA is responsible for reporting fuel quality in accordance with the FQD and for acting in case of non-compliance. Denmark is a small sized country, using statistical model C. Denmark is considered one region.

There are 18 terminals and 2 refineries in Denmark. Some samples are not analyzed for RON, MON, oxygen and oxygenates, because of their little impact on the environment, and lead (lead has not been added to Danish petrol for many years).

- More than 99 % of the fuels used for road transport in Denmark are distributed from two Danish refineries or from terminals owned by members of the DD, and these should meet the DD specifications. These specifications are in accordance with DS/EN 228 for petrol and DS/EN 590 for diesel and the current Danish Statutory Order regarding the quality of petrol and diesel fuel.
- More than 99 % of the fuels used for road transport in Denmark are delivered from terminals that are certified in accordance with ISO 9000 or equivalent quality management systems.
- More than 99 % of the fuels used for road transport in Denmark are distributed from terminals where 'Certificates of Quality' exist for every import/batch approved according to DS/EN 228 for petrol or DS/EN 590 for diesel and the current Danish Statutory Order regarding the quality of petrol and diesel.
-

National legislation that transposed the Fuel Quality Directive

Part of the Directive is implemented in Danish Statutory Order No 1024 of 23 August 2017.

Reporting periods

Seasonal periods in Denmark are as follows:

- summer: from 1 June to 31 August;
- winter: from 1 September to 31 May.

Denmark has been granted a Vapour Pressure Waiver because of the low ambient summer temperature. Samples taken during the transitional periods (spring and autumn) cover the winter period. Samples are not taken during the transition period.

3.7.3 Sales

Table 3.19 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Regular unleaded petrol (minimum RON = 91) E10 (Oktan 92 unleaded)	10.0	23 840 000	17 880	3	2	19 of 19
Unleaded petrol (minimum RON = 95) E10 (Oktan 95 unleaded)	10.0	1 521 311 000	1 140 983	50	50	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Oktan 98+ unleaded)	5.0	138 050 000	103 537	2	2	19 of 19
Total Petrol		1 683 201 000	1 262 400	55	54	
Diesel fuel B7 (Diesel B7)	7.0	3 086 155 000	2 592 370	50	50	6 of 7
Total Diesel		3 086 155 000	2 592 370	50	50	

3.7.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.20 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.20 Unleaded petrol (minimum RON = 95) E10 (Oktan 95 unleaded)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Aromatics	% V/V	< 35	26.4	37.3	5	100

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.8 Estonia

3.8.1 Country details

Responsible organization:	Estonian Environmental Research Centre (Ministry of Environment)
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.8.2 Fuel quality monitoring service

Sampling

Sampling is done according to standard EN 14275 by Estonian Environmental Research Centre, which is also responsible for analysis and reporting of results. Samples are taken only from retail fuel stations. Sampling points are selected so that most of the refueling stations are covered within the period of two years. Frequency of sampling is done the way that summer/winter period samples are evenly distributed through the respective period.

Fuel quality monitoring system administration

The Estonian Ministry of Environment is responsible for managing and implementing the FQD. Fuel sampling and analysis are contracted privately with the Estonian Environmental Research Centre and annual report deadline is in the middle of June. When non-compliant samples occur, the public body responsible for acting is the Estonian Tax and Customs Board. This body is informed immediately by e-mail and by post. If necessary, new samples are taken by Tax and Customs Board. The system has been designed in 2004-2005 using EN 14274 model C.

In Estonia no national refineries exist, but six (6) distribution terminals for gasoline and diesel fuel and three (3) for liquified gas.

National legislation that transposed the Fuel Quality Directive

Elements of the FQD requirements are described in Ministry of the Environment Regulation No 73 of 20 December 2016.

Reporting periods

Seasonal periods in Estonia are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 December to 28/29 February.

Estonia has been granted a Vapour Pressure Waiver because of the low ambient summer temperature (maximum is 70 kPa). Transition periods are from 1 October to 30 November and from 1 March to 30 April. Samples are taken also during the transition periods, but those results are excluded from reporting FQD.

3.8.3 Sales

Table 3.21 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E10 (RON 95)	7.20	144 336 501	106 809	75	53	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (RON 98)	1.28	114 672 332	84 858	75	50	19 of 19
Total Petrol		259 008 832	191 667	150	103	
Diesel fuel B7 (Diesel B7)	2.88	723 712 174	600 681	110	64	7 of 7
Total Diesel		723 712 174	600 681	110	64	

3.8.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.22 and Table 3.23 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.22 Unleaded petrol (minimum 95 < RON < 98) E10 (RON 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure, DVPE	kPa	< 70	62.2	85.4	1	128

Table 3.23 Unleaded petrol (minimum RON ≥ 98) E5 (RON 98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure, DVPE	kPa	< 70	63.5	87.9	1	125

Diesel fuel grades

Table 3.18 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.24 Diesel fuel B7 (Diesel B7)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Cetane number	--	> 51	46.3	76.7	1	174
Sulphur content	mg/kg	< 10	0	467	1	174
FAME Content	% v/v	< 7	0	9.2	1	174

3.9 Finland

3.9.1 Country details

Responsible organization:	Finnish Customs Laboratory
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	EN 14274 statistical model A
Location of sampling:	Refueling stations

3.9.2 Fuel quality monitoring service

Sampling

Finnish Customs oversees the practical realization of the supervision. The Customs' national organization takes fuel samples according to the sampling plan, which is approved by the Ministry of the Environment for each monitoring year. The samples are analyzed at the Customs Laboratory or by subcontractors whose competence has been confirmed. The Finnish Customs also compiles the report and forwards it to the Ministry of the Environment for final approval and delivery.

Sampling is done in the whole country according to the sampling plan following the guidelines of the standard EN 14274:2013 model A. The country has been divided into 3 macro-regions with about the same sales volumes and variability factors. There are 2 refineries and 19 terminals in operation. The number of retail sites in macro-regions 1, 2 and 3 are about 650, 750 and 460 respectively, making a total of about 1 860. The sampling places are selected randomly, however, ensuring that all distribution chain companies are included. All samples are taken at retail sites.

The grades investigated are unleaded RON 95 E10 and RON 98 E5 sulphur free (max. 10 mg/kg) petrol and sulphur free (max. 10 mg/kg) diesel fuel. The fuels were furthermore divided into summer and winter grade. Since the sales, for RON 99 octane petrol is small (less than 2 % in 2018) it was excluded from the actual sampling. In addition, there was no quality under RON 95 octane on the market.

The sampling aims to comply, when applicable, with the requirements of standard EN 14275:2013. The sampling is done by trained personnel. One-litre metal containers and five litre plastic containers approved for this purpose are used as sampling containers. Before the vapour pressure analysis for petrol samples, the sampling containers are cooled according to the requirements of the method.

The **analyses** are conducted at the Customs Laboratory, which is a testing laboratory accredited by FINAS Accreditation Service. In 2020, subcontractors were used for octane and cetane numbers (EN ISO 5164 and EN ISO 5163 methods) of petrol and cetane number (EN ISO 5165 method) as well PAH content (EN 12916 method) of diesel. Except for the lead, manganese and FAME methods, all methods of analysis used (including those subcontracted) were reference methods according to the standards EN 228:2012 and EN 590:2013. FAME method is based on ATR technique. The lead method used by the laboratory (determination of lead content in petrol by energy dispersive X-ray fluorescence spectroscopy) is a so-called screening method. The sensitivity of the method used, however, is much better than the limit indicated in the quality requirements. The average lead content measured in the samples was clearly below the limit set in the quality requirements. If needed, the laboratory can confirm the lead content of the sample with the EN 237 method according to the directive (Petroleum products. Petrol.

Determination of low lead concentrations by atomic absorption spectrometry) in cases where the result is near or exceeds the quality limit. Sulfur of petrol and diesel (EN ISO 20846:2019 method), density of diesel (EN ISO 12185:1996 method) and vapour pressure of petrol (EN 13016-1:2018 method) methods have been accredited by FINAS Accreditation service. Other methods used by the laboratory have been tested and validated according to the quality procedure of Customs Laboratory. These test methods are EN ISO 3405 method (distillation of petrol and diesel), EN 12916 method (polycyclic aromatic hydrocarbons content of diesel), EN ISO 22854:2014 method (aromatics, olefins, benzene, oxygenates and oxygen contents of petrol). Manganese content of petrol was also examined by energy dispersive X-

ray fluorescence spectroscopy. The laboratory can confirm the manganese content according to the EN 16136 method, if necessary. The authenticity and accuracy of the methods used by the laboratory have been verified by the national Round Robin and international PT comparative studies. In 2020, the Customs Laboratory took part in the Round Robin Finland testing, which performs national inter-laboratory **fuel examinations** and PT tests organized by IIS (Institute for Interlaboratory Studies). The results of the parameters measured in the tests (sulphur, density, distillation, FAME content, vapour pressure, lead, manganese, aromatics, olefins, benzene, oxygenates and oxygen) were acceptable. In 2001–2019, the laboratory has also taken part in these tests with acceptable results.

Fuel quality monitoring system administration

The Ministry of the Environment is responsible for transposition of the Directive into the national legislation, approving annual sampling plans and giving general guidance. Finnish Customs is responsible for the practical implementation and fuel quality monitoring as explained above. The Customs Laboratory, for example, analyze the samples. However, subcontractors whose competence has been confirmed can be used.

In case of non-compliant samples, the analyses are repeated as soon as possible. If non-compliance is confirmed, the Customs contacts the fuel supplier/oil company to get a detailed account. If clear reason for non-compliance is not found, if there are no signs of intentional offending action, and the case is not a serious one, a written procedure is often considered appropriate and sufficient. When non-compliant samples are repeatedly found, remark or formal complaints may also be given. According to Paragraph 175 (Rectification of a violation or negligence) of the Environmental Protection Act 527/2014 a supervisory authority may prohibit a party from continuing or repeating a procedure violating existing regulations or order a party to fulfil its duty in some other way. Ministry of the Environment is informed about actions taken. If there is a risk that non-compliant fuel can cause damage to the vehicle (lead, sulphur) and the fuel is still on the market, it is possible to order the fuel supplier to remove the product from the market. According to Paragraph 183 (Decision to prohibit or require action on substances, preparations, products, equipment and machines) the Ministry of the Environment may prohibit the manufacturer, importer or other market supplier from continuing operations that are contradicting existing regulations; prohibit the trading, sale or other supply of products that are in violation of the existing regulations; require the offender to bring the product into compliance with the regulations or otherwise meet its obligations. If a product has been placed on the market, the Ministry may require the party acting contrary to the existing regulations to remove the product from the market.

National legislation that transposed the Fuel Quality Directive

In general, the fuel quality monitoring is based on the Environmental Protection Act (527/2014), the Government Decree on the quality requirements for petrol and diesel fuel (1206/2010: amendments 797/2015 and 1070/2018) and an agreement between the Ministry of the Environment and Finnish Customs (38/481/2001). The Government Decree is the principal transposition act.

Reporting periods

Seasonal periods in Finland are as follows:

- summer: from 1 June to 31 August;
- winter: from 1 September to 31 May.

A “low ambient summer temperature” derogation has been granted in 2011. The summer period is from 1st of June to 31st of August during which the maximum vapour pressure is 70 kPa. For details see Commission decisions K(2011) 714 final and K(2011) 3772 final and the Finnish notification letter on Fuel Quality Vapour Pressure Derogation. Original notification dated on 17th of February 2010, supplementary information on 26th of June 2010 and 6th of September 2010.

The sampling is split to winter and summer periods to take minimum sample amount in both periods. Samples are also taken during the transition periods in spring and autumn and the results are reported as part of the annual fuel quality report.

3.9.3 Sales

Table 3.25 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (Moottoribensiini 95 E10)	Max. 10.0	100 383 000	945 493	51	54	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Moottoribensiini 98 E5)	Max. 5.0	34 094 000	369 368	49	53	19 of 19
Total petrol		134 477 000	1 314 861	100	107	
Diesel fuel B7 (Dieselöljy)	Max. 7.0	238 898 000	2 459 263	50	55	6 of 7
Total diesel		238 898 000	2 459 263	50	55	

3.9.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.26 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.26 Unleaded petrol (minimum RON ≥ 98) E5 (Moottoribensiini 98 E5)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Aromatics	% V/V	< 35	30.9	36.1	1	102

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.10 France

3.10.1 Country details

Responsible organization:	Ministère de la Transition écologique et solidaire
Country size:	Large
Summer period:	May 1 to September 30
FQMS used:	EN 14274 statistical model A
Location of sampling:	Refueling stations

3.10.2 Fuel quality monitoring service

Sampling

At the Ministry of Ecological Transition, the DGEC (Directorate General for Energy and Climate) is responsible for the application of the directives relating to the quality of fuels and the sulfur content of marine fuels as well as for the implementation of the control system. The service provider who collects and analyzes the samples on behalf of the DGEC is the company SGS FRANCE selected by European call for tenders. The public contract was renewed in 2019 for a maximum period of 4 years, following a European call for tenders launched in 2018. The public contract will be renewed in 2022. The controls mainly aim to verify the conformity of the fuels distributed. They make it possible to identify deviations, analyze them and have the appropriate corrective measures adopted. Distributors are kept informed of any deviations identified by the DGEC and must provide explanations as well as corrective and preventive measures. During the measurement campaign (4 per year in metropolitan France and one in the overseas departments and territories) the DGEC may expressly request, in view of the anomalies and non-conformities observed, additional samples to be analyzed.

The General Directorate for Competition, Consumer Affairs and Fraud Control (DGCCRF) retains its role of ad hoc intervention and identifies infringements. In the event of serious or repetitive deviations, the DGCCRF is formally notified.

Within the meaning of articles 3.2.2 and 5.3.3 of standard NF EN 14274, France is classified as a large country (Large country) and now uses model A. The controlled regions are 5 macro-regions: Normandy-Ile de France Zone, North-East Zone, South Zone, South-West Zone and West Zone and another 3 overseas departments (DOM): Martinique, Guadeloupe, Guyana, Reunion, and Mayotte.

In 2020, France had 8 operating refineries (7 in mainland France and 1 in Martinique). As of 1st of January 2020, France had 187 civilian oil depots with a capacity of over 400 m³ and around 11 000 service stations in mainland France.

Fuel quality monitoring system administration

The organization responsible for sampling, analyzing, and reporting is SGS FRANCE (on behalf of the DGEC). France is a large sized country, using statistical model A. Eight macro-regions are defined, including the French overseas territories.

National legislation that transposed the Fuel Quality Directive

The fuel quality requirements, as laid down in the amended Fuel Quality Directive 2009/30/EC, have been transposed into ministerial decrees relating to the fuel characteristics (one decree for each fuel) and decisions laying down the methods of determining the fuel efficiency tests related to these characteristics. Ministerial Orders and Decisions are amended as necessary with each development of Directive 98/70/EC.

Reporting periods

Seasonal periods in France are as follows:

- summer: from 1 May to 30 September;

- winter: from 1 October to 30 April

For petrol, the transition periods are from 16 March to 30 April and from 1 to 31 October. Regarding diesel, there is no transition period.

In 2020, following the COVID 19 epidemic, strict containment measures were put in place from March 17, 2020, to May 11, 2020, and led to sharp reductions in fuel consumption which had repercussions throughout the logistics chain and did not allow a switch to summer period on May 1, 2020. In order not to block all oil logistics, France, in agreement with the committee, has authorized two derogatory decrees, on an exceptional and temporary basis, according to which distributors supply the market with an unleaded premium fuel and a premium unleaded 95-E10 (SP95-E10) whose volatility characteristics were in line with those of the D1 + A off-season, until June 30, 2020. The transition to summer specifications for France was, therefore, possible from July 1, 2020. No summer quality control of the essences was scheduled before July 1, 2020.

3.10.3 Sales

Table 3.27 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (SP95/SP98)	5.00	4 834 627 000	3 650 142	122	104	19 of 19
Unleaded petrol (minimum RON = 95) E10 (SP95-E10)	10.00	4 734 518 000	3 574 561	101	95	19 of 19
Unleaded petrol (minimum RON = 95) E+ (E85)	85.00	348 059 000	271 486	4	4	8 of 19
Total Petrol		9 917 204 000	7 496 189	227	203	
Diesel fuel B7 (B7)	7.00	33 114 011 000	27 981 340	124	104	7 of 7
Diesel fuel B+ (B10)	10.00	268 485 000	226 871	0	1	7 of 7
Total Diesel		33 382 496 000	28 208 211	124	105	

3.10.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.28 and Table 3.29 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.28 Unleaded petrol (minimum RON = 95) E5 (SP95/SP98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 60	52.1	66.7	3	122
Oxygen content	% m/m	< 5	0	3.48	1	226

Table 3.29 Unleaded petrol (minimum RON = 95) E10 (SP95-E10)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Motor Octane Number	--	> 85	84.2	89.7	1	198
Vapour pressure, DVPE	kPa	< 60	55.2	64.9	4	101
Sulphur content	mg/kg	< 10	0	13.8	1	198

Diesel fuel grades

Table 3.30 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.30 Diesel fuel B7 (B7)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
FAME Content	% v/v	< 7	0.5	7.6	3	208

3.11 Germany

3.11.1 Country details

Responsible organization:	German Environment Agency (Umweltbundesamt)
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model B
Location of sampling:	Refueling stations

3.11.2 Fuel quality monitoring service

Sampling

The organizations responsible for the sampling, analysis and reporting at regional level are the 16 governments of the federal state agencies. In detail the authorities and organizations listed below are involved. The responsibilities are coded as follows:

- (a)-control and sampling,
- (b)-analysis of fuel samples,
- (c)-enforcement and non-compliance action and
- (d)-implementation.

1	Baden-Württemberg:	Ministerium für Umwelt, Klima und Energiewirtschaft / Referat 44 (Betrieblicher Umweltschutz, Stofflicher Gefahrenschutz, Geologie, Bergbau)	(d)
		Regierungspräsidium Tübingen / Referat 112 (Produktsicherheit Investitionsgüter, ortsbewegliche Druckgeräte)	(a, c)
		Private laboratory	(b)
2	Bayern:	Bayer. Staatsministerium für Umwelt und Verbraucherschutz	(d)
		Bayer. Landesamt für Umwelt	(c)
		Private laboratory	(a, b)
3	Berlin:	Senatsverwaltung für Umwelt, Verkehr und Klimaschutz	(d, c)
		Private laboratory	(a, b)
4	Brandenburg:	Ministerium für Soziales, Gesundheit, Integration und Verbraucherschutz des Landes BB	(d)
		Landesamt für Arbeitsschutz, Verbraucherschutz und Gesundheit des Landes Brandenburg	(a, c)
		Private laboratory	(b)
5	Bremen:	Die Senatorin für Klimaschutz, Umwelt, Mobilität, Stadtentwicklung und Wohnungsbau	(d, a)
		Gewerbeaufsicht des Landes Bremen	(a, c)
		Private laboratory	(a, b)
6	Hamburg:	Behörde für Umwelt und Energie, Amt für Immissionsschutz und Abfallwirtschaft, Referat für Raffinerien, Tanklager und Reinigungsbetriebe	(d, c)
		Private laboratory	(a, b)
7	Hessen:	Hessische Ministerium für Umwelt, Klimaschutz, Landwirtschaft und Verbraucherschutz, Mainzer Straße 80, 65189 Wiesbaden	(d)
		Regierungspräsidium Darmstadt	(c)
		Private laboratory	(a, b)
8	Mecklenburg-Vorpommern:	Ministerium für Landwirtschaft und Umwelt M-V	(d)
		Landesamt für Umwelt, Naturschutz und Geologie M-V	(a, c)
		Staatliche Ämter für Landwirtschaft und Umwelt	(a, c)
		Private laboratory	(a, b)

9	Niedersachsen:	Niedersächsisches Ministerium für Umwelt, Energie, Bauen und Klimaschutz	(d, a)
		Landkreise und kreisfreie- und große selbstständige Städte	(a, c)
		Private laboratory	(a, b)
10	Nordrhein-Westfalen:	Ministerium für Umwelt, Landwirtschaft, Natur- und Verbraucherschutz NRW	(d)
		Untere Immissionsschutzbehörden: Kreise und Kommunen	(c)
		Private laboratory	(a, b)
11	Rheinland-Pfalz:	Ministerium für Umwelt, Energie, Ernährung und Forsten	(d)
		Struktur- und Genehmigungsdirektion Nord sowie Struktur- und Genehmigungsdirektion Süd	(a, c)
		Private laboratory	(b)
12	Saarland:	Ministerium für Umwelt und Verbraucherschutz	(d)
		Landesamt für Umwelt und Arbeitsschutz	(c)
		Private laboratory	(a, b)
13	Sachsen:	Sächsisches Staatsministerium für Energie, Klimaschutz, Umwelt und Landwirtschaft	(d)
		Landesdirektion Sachsen	(a, c)
		Private laboratory	(b)
14	Sachsen-Anhalt:	Ministerium für Umwelt, Landwirtschaft und Energie (Magdeburg)	(d)
		Landesverwaltungsamt Sachsen-Anhalt	(d)
		Landkreise	(a, b, c)
		Private laboratory	(a, b)
15	Schleswig-Holstein:	MELUND (Ministerium für Energiewende, Landwirtschaft, Umwelt, Natur und Digitalisierung des Landes Schleswig-Holstein)	(d)
		LLUR (Landesamt für Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein) (a, c)	(a, c)
		Private laboratory	(a, b)
16	Thüringen:	Thüringer Ministerium für Umwelt, Energie und Naturschutz	(d)
		Thüringer Landesamt für Umwelt, Bergbau und Naturschutz	(d, a, c)
		Private laboratory	(a, b)

The results of the regional sampling are forwarded to the Umweltbundesamt (German Environment Agency — UBA), where data are collected and subsequently consolidated into a report. The sampling was carried out at refueling stations only. The frequency of the sampling is shown on the data sheets. Selection of the sampling points is the responsibility of each government of the 16 German states. The quality of petrol and diesel fuels is tested by the competent authorities of the federal states. The overall monitoring of fuel quality also falls within the responsibilities of the federal states' competent authorities, which are district administrations, lower administrative authorities, districts and non-district or independent municipalities. The method for selecting fuel stations may be rotation, random selection, or another way, considering population distribution and regional aspects. The test methods used to sample the different parameters are presented on the datasheets.

Fuel quality monitoring system administration

The competent authorities of the federal states monitor the quality of petrol and diesel fuels and are responsible for fuel quality monitoring in general. These authorities include district administrations, lower administrative authorities, districts, non-district municipalities and independent towns. DIN EN 14274 (Annex C) lays down that model B applies to Germany (non-macro region): Germany is divided into 16 federal states (Bundesländer) which do not comply with fuel distribution patterns. As Germany is categorized as a large country regarding FQMS, the minimum number of samples is 200 per fuel and period (summer, winter). The share in sampling for the various regions and the resulting number of samples is stipulated in the General Administrative Regulation on the 10th BImSchV, Annex 20. For fuels with less than 10 % market share DIN EN 14274:2013 (D) defines a smaller number of samples. Please find additional information on the number of samples for fuels with minor market shares for each

region at the link <http://www.verwaltungsvorschriften-im-internet.de/pdf/BMU-IGI6-20120904-SF-A020.pdf>.

The federal states must convey their results to the Federal Environment Agency until the 30th of April of the following year, where a general report is produced. The Federal Environment Agency passes this report on to the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and to the European Commission.

The governments of the German states and/or the lower ranking government agencies are responsible for acting in the case of non-compliant samples. The design of the system was defined in DIN EN 14274-2003. It was adopted into legislation by the 10th BImSchV in 2008.

By the end of 2020, there were 15 refineries producing petrol and diesel in Germany. The number of refueling stations in Germany was 14 449 by the end of 2020.

National legislation that transposed the Fuel Quality Directive

The elements of the Directive are transposed into the German “Tenth Ordinance Implementing the Federal Emission Control Act (ordinance on the quality and labeling of the qualities of fuels - 10th BImSchV)” i.e., Tenth Ordinance Implementing the Federal Emission Control Act (10th BImSchV) on the link http://www.gesetze-im-internet.de/bimschv_10_2010/index.html”

Reporting periods

Summer, winter, and transition periods are defined by the national annexes of EN 228 and EN 590.

Seasonal periods in Germany are as follows:

- summer: petrol from 1 May to 30 September; diesel from 15 April to 30 September;
- winter: petrol from 16 November to 15 March; diesel from 16 November to 28 February.

Transition periods are as follows:

- Petrol: from 1 October to 15 November and from 16 March to 30 April;
- Diesel: from 1 October to 15 November and from 29 February/1 March to 14 April.

Samples may be taken during the whole year, preferably in the summer or winter period. Transition period samples are excluded in case of petrol and included in case of diesel. The only seasonal parameter in the diesel standard is CFPP which is not reported in the EU-template, thus does not alter the statistics. For petrol, limit breaches might depend on whether transition period data is assigned to the summer or winter period which would induce flexibility on the number of limit breaches and thus is excluded from the EU-reporting.

3.11.3 Sales

Table 3.31 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Super E5)	5.0	17 499 814 666	13 124 861	212	187	19 of 19
Unleaded petrol (minimum RON = 95) E10 (Super E10)	10.0	3 008 365 333	2 256 274	214	190	19 of 19
Unleaded petrol (minimum RON >= 98) E5 (Super Plus)	5.0	1 170 564 000	877 923	31	24	19 of 19
Total Petrol		21 678 744 000	16 259 058	457	401	
Diesel fuel B7 (Diesel)	7.0	41 751 348 809	35 071 133	225	193	6 of 7
Total Diesel		41 751 348 809	35 071 133	225	193	

3.11.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.32 and Table 3.33 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.32 Unleaded petrol (minimum RON = 95) E5 (Super E5)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Motor Octane Number	--	> 84.5	83.2	88	1	399
Ethanol	% v/v	< 5.3	0.42	5.5	4	399
Aromatics	% v/v	< 35	19.9	36.7	4	399

Table 3.33 Unleaded petrol (minimum RON = 95) E10 (Super E10)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Research Octane Number	--	> 94.6	86.4	98.8	1	301
Vapour pressure, DVPE	kPa	< 61.3	55.2	73.9	9	213
Aromatics	% v/v	< 35	19.9	37.0	3	404

Diesel fuel grades

Table 3.34 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.34 Diesel fuel B7 (Diesel)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
FAME Content	% v/v	< 7.3	0.05	8.4	2	415

3.12 Greece

3.12.1 Country details

Responsible organization:	General Chemical State Laboratory, Directorate of Energy, Industrial and Chemical Products
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model A
Location of sampling:	Refueling stations

3.12.2 Fuel quality monitoring service

Sampling

Greece is classified as a small country under the criteria in Article 3.2 of the ELOT EN 14274 standard considering fuel sales levels. Model A applies to Greece. In this model, to plan fuel sampling activities, the country is divided into three geographical regions. Region A consists of Attica. Region B includes Thessaly, Macedonia, Epirus, Thrace and Thessaloniki. Region C includes Central Greece, Evia, the Ionian Islands, the Peloponnese, Crete and the Aegean Islands.

For Region A, the competent body for taking fuel samples is the Fuel Distribution and Storage Inspectorate (KEDAK) of the Ministry of Environment and Energy. For Regions B and C, the competent bodies for taking fuel samples are the inspection teams from the Chemical Services of the General Chemical State Laboratory, working in collaboration with the regional customs authorities.

Refueling stations are used as sampling locations. Sampling locations are chosen at random.

The number of samples to be tested in each period (summer and winter) for each grade of fuel with annual sales accounting for at least 10 % of the fuel market are at least 50.

Based on the sales percentage of various grades of fuels in each region, the Directorate of Energy, Industrial and Chemical Products sets the minimum number of fuel samples to be taken from refueling stations in the area. Optionally, the Directorate of Energy, Industrial and Chemical Products may issue a decision requiring that samples taken in each period include fuel samples from each refinery. Care is taken to ensure that samples are taken in a uniform manner across the entire year.

The competent bodies for sampling send the samples to the central fuel inspection laboratories of the General Chemical State Laboratory which are ISO 17025 accredited. The samples received from Regions A and C are examined by the Piraeus Chemical Service while the samples from Region B are examined by the Central Macedonia Chemical Service. The laboratories monitor compliance with the requirements of the Decision No. 316/2010 and Decision No.77/2016 relating to petrol and diesel fuels, based on analytical methods which are set out in the ELOT EN 228 and ELOT EN 590 standards, respectively. The central fuel inspection laboratories send the test results to the competent authorities for sampling and to the Directorate of Energy Industrial and Chemical Products. Where the fuel samples do not meet the specifications, the relevant sanctions shall be imposed by the competent authorities. The Directorate of Energy Industrial and Chemical Products use the results in the sample testing reports for statistical purposes to prepare and submit the annual report to the European Commission.

Fuel quality monitoring system administration

The Competent Authority for the system of monitoring fuel quality (automotive petrol and diesel) is the Directorate of Energy Industrial and Chemical Products of the General Chemical State Laboratory. The system was designed using model A of the ELOT EN 14274 standard considering fuel sales levels. Greek Organization for Standardization (ELOT) has adopted EN 14274 standard without changes. The system was implemented in Greece with the State Supreme Chemical Council Decision No. 316/2010 (Government Gazette 501/B/2012), as amended by the State Supreme Chemical Council Decision No.77/2016 (Government Gazette 4217/B/2016). Fuel sampling is carried out by public authorities. Where non-compliant samples have been discovered the sampling authority is responsible for acting.

Failure to comply with the provisions of the legislation result in the sanctions specified in article 10 of the State Supreme Chemical Council Decision No. 316/2010 (Government Gazette 501/B/2012), as amended by the State Supreme Chemical Council Decision No.77/2016 (Government Gazette 4217/B/2016). In Greece there are 4 refineries and approximately 7 000 refueling stations.

National legislation that transposed the Fuel Quality Directive

Fuel Quality Directive 2009/30 (apart from Articles 7(a) to 7(e) of Directive 98/70/EC, as amended by Article 1 of Directive 2009/30/EC) was transposed into Greek law with State Supreme Chemical Council Decision No 316/2010 (Government Gazette 501/B/2012), as amended by State Supreme Chemical Council Decision No 77/2016 (Government Gazette 4217/B/2016).

Reporting periods

Seasonal periods in Greece are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 October to 30 April.

The monitoring system is implemented twice a year: once for the summer period and once for the winter period.

3.12.3 Sales

Table 3.35 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (95 RON)	10.0	2 094 823 527	1 565 881	50	50	16 of 19
Unleaded petrol (minimum RON ≥ 98) E10 (Super unleaded (100 RON))	10.0	432 087 432	322 985	9	10	18 of 19
Total Petrol		2 526 910 959	1 888 866	59	60	
Diesel fuel B7 (Diesel fuel)	7.0	3 069 144 822	2 553 528	59	50	4 of 7
Total Diesel		3 069 144 822	2 553 528	59	50	

3.12.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.36 and Table 3.37 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.36 Unleaded petrol (minimum RON = 95) E10 (95 RON)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure, DVPE	kPa	< 60	54.3	75	10	46

Table 3.37 Unleaded petrol (minimum RON >= 98) E10 (Super unleaded (100 RON))

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 60	56.1	71	2	8

Diesel fuel grades

Table 3.38 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.38 Diesel fuel B7 (Diesel fuel)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Sulphur content	mg/kg	< 10	3.6	18.2	4	109
FAME Content	% v/v	< 7	6.2	8	3	104

3.13 Hungary

3.13.1 Country details

Responsible organization:	ÁMEI Zrt.
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.13.2 Fuel quality monitoring service

Sampling

Entity responsible for the sampling, testing, and reporting is ÁMEI Zrt. contracted by the Ministry of Innovation and Technology. Fuel samples were taken from retail stations, randomly selected from the list of fuel stations collected by the National Tax and Customs Administration (NAV). Our FQMS system is equivalent to the system proposed by CEN.

Fuel quality monitoring system administration

Ministry of Innovation and Technology is assigned to manage and operate the FQD. Fuel sampling and testing was contracted to ÁMEI Zrt. Annual data set is provided by the 31st of March of the consecutive year. Test results including non-compliant samples are quarterly reported to the relevant Ministry. Model C (small country) was considered for design and implementation. Hungary has one oil refinery and several distribution terminals. Since import via direct trucking to retail station is material, fuels at retail stations were sampled.

National legislation that transposed the Fuel Quality Directive

Based on the Directive, National Decree of 17/2017 of Ministry of National Development provides legal framework for running the FQMS monitoring system.

Reporting periods

Seasonal periods in Hungary are as follows:

- summer: from 1 May to 30 September;
- winter: from 15 November to 28/29 February.

Transition periods are from 1 March to 30 April and from 1 October to 14 November. No samples were taken during the transition periods.

3.13.3 Sales

Table 3.39 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E10 (ESZ-95)	10.0	1 524 731 035	1 147 513	50	50	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (ESZ-98)	5.0	324 621 000	243 725	10	10	19 of 19
Total Petrol		1 849 352 035	1 391 238	60	60	
Diesel fuel B7 (Dízel gázolaj)	7.0	4 290 179 180	3 590 451	60	60	6 of 7
Total Diesel		4 290 179 180	3 590 451	60	60	

3.13.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.40 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.40 Unleaded petrol (minimum 95 < RON < 98) E10 (ESZ-95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 60	48.5	80.9	1	100

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.14 Iceland

3.14.1 Country details

Responsible organization:	Environment Agency of Iceland
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	National system
Location of sampling:	Terminals

3.14.2 Fuel quality monitoring service

Sampling

Fjölver laboratory analyses all fuel samples. A sample to be tested is taken from each batch delivery that enters Iceland.

Fuel quality monitoring system administration

In Iceland, each fuel batch delivery is controlled and inspected by Fjölver laboratory. The results of tests of the fuel grades are directly compared with the agreed product requirements and are accepted if the results are within given national specifications. The data of delivered fuel batches are reported to the competent authority, The Environment Agency of Iceland. There are four main fuel companies in Iceland: Atlantsolía ehf., Skeljungur hf., Olíverzlun Íslands hf. and N1 hf.

National legislation that transposed the Fuel Quality Directive

The requirements of the FQD are transposed into Icelandic Regulation No 960/2016 and National Law on Chemicals No 61/2013.

Reporting periods

Seasonal periods in Iceland are as follows:

- summer: from 1 June to 31 August;
- winter: from 1 September to 31 May.

Samples were taken and tested during the transition period. The results of samples taken during the transition period are reported.

Maximum vapor pressure is 70 kPa during the summer period due to the low ambient summer temperature.

3.14.3 Sales

Table 3.41 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E5 (Unleaded petrol (RON>95))	4.65	151 529 483	111 192	11	23	14 of 19
Total petrol		151 529 483	111 192	11	23	
Diesel fuel B7	0	248 657 892	208 713	11	21	4 of 7
Total diesel		248 657 892	208 713	11	21	

3.14.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.44 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.42 Unleaded petrol (minimum 95 < RON < 98) E5 (Unleaded petrol (RON>95))

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 70	69.0	99.8	1	11

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.15 Ireland

3.15.1 Country details

Responsible organization:	Department of the Environment, Climate and Communications
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.15.2 Fuel quality monitoring service

Sampling

Samples of petrol and diesel are taken by the Irish Petroleum Industry Association and are analyzed by ITS Testing Services (UK) Ltd. Reporting is the responsibility of the Department of Communications, Climate Action and Environment. Samples are taken from refueling stations. Selection of sampling points is on a random basis and is carried out throughout the year.

For petrol samples the following test methods were used: R.O.N. EN ISO 5164, M.O.N. EN ISO 5163, vapour pressure at 100 °C and 100 °C ISO3405, olefins and aromatics ASTM D1319, benzene EN238, other oxygenates, methanol, ethanol, iso-propanol, iso-butanol, tert-butanol, ethers (5 or more C atoms) and other oxygenates EN13132, sulphur content IP 490, lead EN237.

For diesel samples the following methods were used cetane number EN ISO 5165. Density at 15 °C EN ISO 12185, distillation 95% ISO3405, polycyclic aromatics EN 12916, sulphur content IP 490 F.A.M.E. BS EN 14078.

Fuel quality monitoring system administration

The Department of Environment, Climate and Communications has responsibility for managing and implementing the FQD. Samples of petrol and diesel are taken by the Irish Petroleum Industry Association and are analyzed by ITS Testing Services (UK) Ltd. Reporting is the responsibility of the Department of Environment, Climate and Communications. Samples are taken from refueling stations. Selection of sampling points is on a random basis and is carried out throughout the year. Annual data is provided by the Irish Petroleum Industry for the winter period in January of each year and for the summer period in September of each year.

When non-compliant samples are discovered, it is the responsibility of the Department of Environment, Climate and Communications to report, manage and monitor the non-compliance. All non-compliances are reported in the annual fuel quality data report and follow-up action is also reported. Ireland is a small country, using statistical model C. Whitegate Oil Refinery in County Cork is Ireland's only refinery. There are five distribution terminals in Ireland.

National legislation that transposed the Fuel Quality Directive

European Communities Act 1972 (Environmental Specifications for petrol, diesel fuels and gas oils for use by non-road mobile machinery, including waterway vessels, agricultural and forestry tractors, and recreational craft) Regulations 2011 (SI No 155 of 2011).

Reporting periods

Seasonal periods in Ireland are as follows:

- summer: from 1 June to 31 August;
- winter: from 1 September to 31 May.

A Vapour Pressure Waiver has been granted because of the low ambient summer temperature (maximum vapour pressure 70 kPa).

3.15.3 Sales

Table 3.43 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5	3.0	1 079 389 873	799 548	50	50	18 of 19
Total petrol		1 079 389 873	799 548	50	50	
Diesel fuel B7	4.0	3 221 539 356	2 723 195	50	50	6 of 7
Total diesel		3 221 539 356	2 723 195	50	50	

3.15.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.44 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.44 Unleaded petrol (minimum RON = 95) E5

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 70	66.9	80.8	4	50

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.16 Italy

3.16.1 Country details

Responsible organization:	Ministry of Ecological Transition
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model A
Location of sampling:	Refueling stations

3.16.2 Fuel quality monitoring service

Sampling

The monitoring system was set up using Statistical Model A of EN 14274 (large country framework, five macro-regions). A total of 253 petrol samples and 335 diesel fuel samples were analyzed. The distribution of samples throughout Italy was 18 % north-west, 19 % north-east, 22 % center, 16 % south and 25 % islands. The testing required for fuel quality monitoring was performed by laboratories that regularly participate in one or more national inter-laboratory proficiency testing schemes and that are accredited in accordance with EN ISO 17025 or certified in accordance with ISO 9000 standards. The proficiency testing schemes include all test methods listed in the FQMS. In accordance with the requirements of EN 14274, analytical results for petrol and diesel fuel were reported separately for each season and for each grade. Selection of sampling points is on a random basis but in accordance with the sales in each macro-region; in 2020, the sampling was carried out at refueling stations only. Sample of petrol and diesel are taken by independent supervisory bodies.

Fuel quality monitoring system administration

Italy established a fuel quality monitoring system, in accordance with the requirements of the European standard EN 14274:2003, by decree 3 February 2005. The competent authority for the system of monitoring fuel quality is the Ministry of the Environment and Protection of Land and Sea. The fuel quality monitoring (sampling and measurements) was carried out by independent supervisory bodies on behalf of the main oil companies. The supervisory bodies forward their results to the Italian National Institute for Environmental Protection and Research, where a general report is produced. On the basis of this report, the Ministry of the Environment and Protection of Land and Sea produces data for the European Commission.

National legislation that transposed the Fuel Quality Directive

The Fuel Quality Directive was transposed by the Legislative Decree of 21 March 2005, n. 66 to the national law.

Reporting periods

Seasonal periods in Italy are as follows:

- summer: petrol from 1 May to 30 September; diesel from 16 March to 14 November;
- winter: petrol from 16 November to 15 March; diesel from 15 November to 15 March.

No samples were taken during the transition period.

3.16.3 Sales

Table 3.45 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (E5)	1.15	7 580 625 180	5 059 302	111	142	18 of 19
Total Petrol		7 580 625 180	5 059 302	111	142	
Diesel fuel B7 (B7)	5.93	25 462 306 480	22 051 642	171	164	6 of 7
Total Diesel		25 462 306 480	22 051 642	171	164	

3.16.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.46 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.46 Unleaded petrol (minimum RON = 95) (E5)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Research Octane Number	--	> 95	94.3	100.4	4	250
Vapour Pressure, DVPE	kPa	< 60	49.4	80.2	3	74

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.17 Latvia

3.17.1 Country details

Responsible organization:	The State Construction Control Bureau of Latvia (SCCB)
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations and terminals

3.17.2 Fuel quality monitoring service

Sampling

In 2020, the State Construction Control Bureau (hereinafter – Bureau) took over the administration of energy policy, which includes supervision of the fuel quality. Due to the takeover of new transport energy functions and the time needed to create internal processes and to establish FQMS according to the European Standard EN 14274:2003, the fuel quality monitoring was performed only for winter-grade fuel. An agreement between the Bureau and the accredited laboratory which carries out fuel sampling, testing and conformity assessment was concluded in late October. In result a total of 129 winter-grade fuel samples have been taken from service stations in different regions of Latvia and later tested in an accredited laboratory. Samples were taken from refueling stations that are selected at random. In 2020, sampling was done in November and December.

Fuel quality monitoring system administration

The SCCB is responsible for managing and implementing the FQD and performs the fuel quality monitoring in Latvia. Fuel sampling is carried out by an accredited laboratory Ltd Latvian Certification Centre with which the SCCB has a contract. The State Revenue Service is responsible for acting when non-compliant samples have been discovered. FQMS is established according to the standard EN 14274 statistical model C, considering that the total automotive fuel sales in the country is less than 15 million tons per annum. Fuel samples are taken from refueling stations (selected at random) in all regions of Latvia.

National legislation that transposed the Fuel Quality Directive

The legislation regarding fuel quality has been transposed into the national law by the Cabinet Regulation No. 332 "Requirements for Conformity Assessment of Petrol and Diesel Fuel" which determines the quality requirements for petrol and diesel fuel offered in the Latvian market provided for the operation of the spark ignition internal combustion engines and the compression ignition internal combustion engines. Regulation No 332 also determines the institutions for supervision of the market and procedures for conformity assessment of petrol and diesel fuel.

Cabinet Regulation No 772 "Regulations Regarding Requirements for Biofuel Quality, Conformity Assessment, Market Supervision and Procedures for Consumer Information" prescribes the quality requirements for biofuel, the procedures by which the production of biofuel and blending thereof with fossil fuel shall be controlled and the procedures by which consumers shall be informed regarding the content of biofuel present at points of sale and the conformity thereof with quality requirements. From 2020, the SCCB is responsible for the supervision of the fuel market and performs annual fuel quality monitoring in accordance with the amendments of the Regulation No. 332. A legislative change and new legislation are currently being developed by The Ministry of Economics of the Republic of Latvia which is the leading authority in the field of energy policy.

Reporting periods

Seasonal periods in Latvia are as follows:

- summer: from 1 June to 31 August;
- winter: from 1 November to 30 March.

According to the Directive 98/70/EC Article 2 (5) Latvia belongs to the Member States with low ambient summer temperatures (the maximum vapour pressure is 70 kPa during summer period).

In 2020, fuel samples have been taken only in the winter period.

3.17.3 Sales

Table 3.47 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (A95)	10.0	186 864 052	142 951	0	47	19 of 19
Unleaded petrol (minimum RON = 95) E+ (E85)	85.0	77 124	59			
Unleaded petrol (minimum 95 < RON < 98) E5 (A-98)	5.0	31 079 739	23 776	0	33	18 of 19
Total Petrol		218 020 915	166 786	0	80	
Diesel fuel B7 (DD)	0	637 803 593	532 566	0	48	7 of 7
Diesel fuel B+ (DD B+)	7.0	534 259 880	446 107			
Total Diesel		1 172 063 473	978 673	0	48	

3.17.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Table 3.48 and Table 3.49 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.48 Unleaded petrol (minimum RON = 95) E10 (A95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour Pressure, DVPE	kPa	< 70	68.9	86	2	48

Table 3.49 Unleaded petrol (minimum 95 < RON < 98) E5 (A-98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Research Octane Number	kPa	> 98	95.9	98.7	2	33
Aromatics	% V/V	< 35	29.6	36.6	1	33

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.18 Lithuania

3.18.1 Country details

Responsible organization:	Ministry of Energy
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.18.2 Fuel quality monitoring service

Sampling

The State Consumer Rights Protection Authority is responsible for sampling and analysis. The organization responsible for reporting is the Ministry of Energy. 108 samples of petrol A-95 (A-98) were taken at the service stations.

Fuel quality monitoring system administration

The Ministry of Energy has responsibility for managing and implementing FQD. Fuel sampling was carried out by The State Consumer Rights Protection Authority, which is responsible for acting where non-compliant samples are discovered. Lithuania is a small sized country, using statistical model C (standard EN 14274). The whole country is defined as one region.

National legislation that transposed the Fuel Quality Directive

Standards EN 228 and diesel EN 590 have been transposed into national legal acts. All acts are related to researching parameters of fuel and diesel samples and are fully transposed into Lithuanian legislation.

Reporting periods

Seasonal periods in Lithuania are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 October to 30 April.

Samples are taken during transition periods, as there are no filtering and cloud temperatures in the reports, and the indicators mentioned are also suitable for the winter period. Samples from 1 October to 30 November and from 1 March to 30 April are also covered by data from the winter period.

Vapour pressure waiver has been granted for Lithuania due to the low ambient summer temperature (maximum 70 kPa for the summer period).

3.18.3 Sales

Table 3.50 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E10 (A-95 (RON 95))	10.0	306 132 682	230 212	50	50	19 of 19
Unleaded petrol (minimum RON >= 98) E10 (A-98 (RON 98))	10.0	12 696 213	9 548	3	5	19 of 19
Total Petrol		318 828 895	239 759	53	55	
Diesel fuel B+ (>7 % FAME ≤ 30 %) (Diesel)	7.0	2 085 502 541	1 762 250	50	50	7 of 7
Total Diesel		2 085 502 541	1 762 250	50	50	

3.18.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.19 Luxembourg

3.19.1 Country details

Responsible organization:	Environmental Administration of Luxembourg (Administration de l'environnement)
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	National system
Location of sampling:	Refueling stations and terminals

3.19.2 Fuel quality monitoring service

Sampling

For 2020, the sampling, analysis and reporting of fuel quality was managed by three organizations. The samples were taken at depots and public refueling stations. The sampling points were selected at random. Test methods are those specified in EN 228 and EN 590. The samples have to be taken in accordance with the methods described in the European standards:

- EN 14275, if taken at fuel stations;
- EN ISO 3170, if taken at terminals.

Fuel quality monitoring system administration

The FQMS is under the responsibility of the Environmental Administration of Luxembourg, part of the Department of Environment of the Ministry of Sustainable Development and Infrastructures. Fuel sampling, analysis and reporting is each carried out by a contracted organization. Within one week the results of the analyzed parameters are transmitted to the Environmental Administration of Luxembourg. In case of a non-compliant sample, the agreed organization has to inform the Environmental Administration at once. After a written warning, the provider or operator had 48 hours to take the necessary measures. The provider or operator informs at once the Environmental Administration of the measures undertaken. A new sample then is taken within 3 working days following the written warning. In 2009, the Luxembourgish Environmental Administration worked out, in collaboration with the Austrian federal Environment Agency, a concept to improve, respectively to establish a national fuel quality monitoring system for Luxembourg.

A two-day workshop was held with the intention to bring all stakeholders together and to discuss different proposals as well as to create a possible way forward. Besides the project partners, various representatives, for instance from the mineral oil industry, fuels laboratories or other EU countries where a FQMS was already established, attended the meeting.

The main outcomes were the following:

- it's possible to reduce the number of samples for diesel to a minimum amount of 86 samples a year instead of 100 (EN 14274);
- it's possible to reduce the number of samples for petrol grades (RON 95, RON 98) to a minimum amount of 66 samples instead of 2 x 100 (EN 14274).

without degrading the informative value and quality of the monitoring system. The following considerations have been considered during design and implementation:

1. Country specific data such as population, surface, number of passengers car and buses, number of Petrol stations, fuel sales/grade.
2. Economy.
3. Supply points and distribution patterns of fossil fuel.

Luxembourg has no own refinery on its territory; therefore, it depends on imports of petrol and diesel from other Member States, mainly from Belgium, the Netherlands and Germany (by truck, train or ship). Fuel stations at the closer border regions are delivered directly by truck from terminals in Belgium (Liege, Feluy/Brussels) and from terminals in Germany (Treves), a few are supplied by the terminal in Mertert,

whereas midland fuel stations are normally delivered from a terminal in Bertrange (composed of several big tanks). The inland terminals in Bertrange and Merttert are delivered directly or indirectly by ship or train from refineries in Belgium, the Netherlands or Germany.

National legislation that transposed the Fuel Quality Directive

Directive 98/70/CE amended by Directive 2009/30/CE is entirely transposed into national law by the Grand-ducal ordinance of 16 May 2012 concerning the quality of petrol and diesel fuels and the sustainable use of biofuels (Règlement grand-ducal du 16 mars 2012 concernant la qualité de l'essence et des carburants diesel et l'utilisation durable des biocarburants, Mém. A - 55, 26 mars 2012, p.626, www.legilux.lu).

Reporting periods

Seasonal periods in Luxembourg are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 October to 30 April.

The transition periods are regulated by the Grand-ducal ordinance. During the transition period, no samples are taken or tested.

3.19.3 Sales

Table 3.51 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (Euro 95)	10.0	274 733 560	203 303	20	42	19 of 19
Unleaded petrol (minimum RON >= 98) E5 (Euro 98)	5.0	91 400 480	67 636	17	45	19 of 19
Total Petrol		366 134 040	270 939	37	87	
Diesel fuel B7 (Diesel)	7.0	1 511 107 881	1 254 220	18	44	7 of 7
Total Diesel		1 511 107 881	1 254 220	18	44	

3.19.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.20 Malta

3.20.1 Country details

Responsible organization:	Regulator for Energy and Water Services (REWS)
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.20.2 Fuel quality monitoring service

Sampling

The organization responsible for sampling and reporting is the Regulator for Energy and Water Services. The organization responsible for the analysis is an independently contracted laboratory.

Fuel quality monitoring system administration

A total of 214 fuel samples, comprising of 104 diesel, 104 unleaded petrol minimum RON 95 and 6 unleaded petrol minimum RON 98, were analyzed. Unleaded petrol samples were analyzed according to the SM EN 228 quality standard and the diesel samples according to the SM EN 590 quality standard. All the samples were taken from refueling stations.

Malta is a small sized country, using statistical model C. The whole country is defined as one region.

A minimum of 50 samples were taken per period (winter/summer) and per fuel grade, which exceeded the 10 % market share of the parent grade. A total of 214 samples were collected by REWS compliance officers from fuel dispensing sites and then analyzed at the independently contracted laboratory.

National legislation that transposed the Fuel Quality Directive

All the actions are carried out by the Regulator for Energy and Water Services (REWS). The national subsidiary legislation, the Quality of Fuels Regulations, is S.L. 545.18. The actions related to the reduction of the GHG intensity of fuels supplied, under Article 7a of the Fuel Quality Directive, are performed by the Malta Resources Authority. The national subsidiary legislation is S.L. 423.48, Lifecycle GHG Emissions from Fuels Regulations.

Reporting periods

Seasonal periods in Malta are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 October to 30 April.

Monthly fuel samples were taken throughout the whole calendar year, including the transition period. It is to be noted that due to the restrictions caused by the COVID-19 pandemic, sampling for fuel was temporary suspended from the 16th of March up to the 30th of May, 2020.

3.20.3 Sales

Table 3.52 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (EN 228 minimum RON 95)	0.0	91 401 750	67 705	52	52	19 of 19
Unleaded petrol (minimum RON >= 98) E5 (EN 228 minimum RON 98)	0.0	2 952 450	2 187	3	3	19 of 19
Total Petrol		94 354 200	69 892	55	55	
Diesel fuel B7 (Diesel EN 590)	7.0	167 089 740	141 004	52	52	6 of 7
Total Diesel		167 089 740	141 004	52	52	

3.20.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.21 Netherlands

3.21.1 Country details

Responsible organization:	Human Environment and Transport Inspectorate, Ministry of Infrastructure and Water Management
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model A
Location of sampling:	Refueling stations

3.21.2 Fuel quality monitoring service

Sampling

The inspectors from the Human Environment and Transport Inspectorate of the Ministry of Infrastructure and Water Management are responsible for taking the samples and reporting. The Netherlands has 12 provinces. It was decided to take samples at fuel service stations from different oil companies. Samples were taken in each province based on the number of inhabitants and the number of fuel service stations in each province.

Fuel quality monitoring system administration

The Human Environment and Transport Inspectorate of the Ministry of Infrastructure and Water Management has responsibility for managing and implementing the FQD. The analysis of all parameters is performed by the Dutch Customs Laboratory except for the analysis of the Research Octane Number (RON) and Motor Octane Number (MON). The analysis of the RON and MON is performed by the laboratory of SGS Nederland B.V. The inspectors from the Human Environment and Transport Inspectorate are responsible for acting where non-compliant samples are discovered – and for the processes in place to report, manage and monitor such non-compliance. This action is consisted of alerting the offender to the detected offense and warning to prevent its repetition.

National legislation that transposed the Fuel Quality Directive

The Dutch legislation transposed the Fuel Quality Directive under the Air Pollution Fuels Decree. Air Pollution Fuels Decree of 8 April 2011, laying down requirements with regard to fuels for the implementation of Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC with regard to the specification petrol, diesel fuel and gas oil and establishing a mechanism to monitor and reduce GHG emissions, amending Council Directive 1999/32/EC as regards the specification of inland waterway fuels and repealing Directive 93/12/EEC (PbEU L 140). With this, the fuel legislation has been transposed into the Dutch national law.

Reporting periods

Seasonal periods in Netherlands are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 January to 30 April and 1 October to 31 December.

No samples were collected during the transition period.

3.21.3 Sales

Table 3.53 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E10 (Euro 95)	10.0	4 778 000 000	3 583 000	45	52	17 of 19
Unleaded petrol (minimum RON >= 98) E5 (Super ongelood 98)	5.0	160 000 000	120 000	2	1	17 of 19
Total Petrol		4 938 000 000	3 703 000	47	53	
Diesel fuel B7 (Diesel)	7.0	6 915 000 000	5 781 000	47	53	6 of 7
Total Diesel		6 915 000 000	5 781 000	47	53	

3.21.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.22 Norway

3.22.1 Country details

Responsible organization:	Norwegian Environment Agency
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Refueling stations

3.22.2 Fuel quality monitoring service

Sampling

In Norway the fuel quality monitoring system today is based on data from Certificates of Quality. Intertek has been engaged to take the physical samples and perform laboratory analysis. Random samples (32 in summer and 32 in winter period) were collected at petrol stations. In the summer period (June-August) the samples were taken in south of Norway (Oslo, Buskerud, Akershus og Østfold) and in the winter period (November-December) the samples were taken in the west of Norway (Rogaland, Hordaland og Sogn & Fjordane). The samples were collected from different companies, making sure they were selected from all companies. Samples were collected according to EN 14274:2013.

From 2012 detailed information is only required every 3 years. Thus, no detailed information is required for 2020.

Fuel quality monitoring system administration

The Norwegian Environment Agency is responsible for managing the FQM. The Ministry of Climate and Environment is responsible for audits and follow up if non-complied system that has been developed by the business sector is used. Norway is a small sized country and there are no regional differences in fuel qualities on refineries and the distribution terminals. The Fuel Quality Monitoring data report is usually provided by the 30th of June.

National legislation that transposed the Fuel Quality Directive

The Fuel Quality Directive is transposed in the Norwegian product regulation which is a regulation under the Product Control Act: <https://lovdata.no/dokument/SF/forskrift/2004-06-01-922>.

Reporting periods

Seasonal periods in Norway are as follows:

- summer: from 1 June to 31 August;
- winter: from 1 October to 30 April.

Transition periods are from the 1st to the 31st of May and from the 1st to the 30th of September.

Due to arctic conditions in certain parts of Norway, the maximum vapour pressure is 70 kPa for the summer period. During the winter the maximum vapour pressure is 100 kPa in accordance with the Norwegian Oil Industry Standard.

3.22.3 Sales

Table 3.54 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (95 BF) E5)	5.0	946 396	700 333	10	10	18 of 19
Unleaded petrol (minimum 95 < RON < 98) E5 (98 BF)	0.0	20 735	15 344	0	0	0 of 19
Total petrol		967 131	715 677	10	10	
Diesel fuel B7	7.0	2 842 499	2 387 699	22	22	6 of 7
Total diesel		2 387 699	2 842 499	22	22	

3.22.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.23 Poland

3.23.1 Country details

Responsible organization:	Urząd Ochrony Konkurencji i Konsumentów
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model B
Location of sampling:	Refueling stations

3.23.2 Fuel quality monitoring service

Sampling

The tasks related to the system administration are performed by the President of the Office of Competition and Consumer Protection, while scrutiny of fuel quality is carried out by the Trade Inspectorate. Samples taken during inspection are tested in laboratories that have accreditation certificates issued by the Polish Centre for Accreditation. Tests of fuel samples verify all or some of the parameters laid down in the legislation.

Poland has adopted an FQMS defined in EN 14274 statistical model B. In the process of developing the new system, account was taken of the specific characteristics of the Polish fuel market, and special solutions were introduced to make it possible to initiate inspections not only based on statistical factors but also based on any information on fuel of poor quality. Thus, the system is used to pursue yet another objective, namely, to try to eliminate fuel that is not compliant with quality requirements laid down in the legislation and to prevent it from being placed on the market.

To separate the control activities carried out to prepare a report for the European Commission on fuel quality, a monitoring system was introduced, which refers to the control of:

- RON 98 lead-free petrol, RON 95 lead-free petrol, diesel oil,
- liquid biofuels i.e., diesel oil with the content of 20 % ester (B20) and ester constituting an independent fuel (B100),
- conduction only at fuel and factory stations that are selected for inspection,
- selection of fuel samples in the amount specified in the regulation,

based on the method of monitoring and the European standard EN 14274,

- all quality parameters listed in the FQD and some parameters of the so-called operational use listed in the regulation, which are also listed in the standards EN 228 and EN 590,
- all quality parameters listed in the Regulation on the quality requirements for liquid biofuels, which are also listed in EN 14214,
- selection of one fuel sample of one type at the station. Fuel quality control under the European part of the system covered the following types of liquid fuels traded in the territory of the country, i.e.:
 - RON 95 unleaded petrol,
 - RON 98 lead-free petrol,
 - diesel.

Fuel quality monitoring system administration

The tasks related to the FQMS are performed by the President of the Office of Competition and Consumer Protection (the administrator of the system). Poland is a large sized country, using statistical model B to monitor fuel quality. The country is divided into 16 macro-regions.

Poland exceeded the annual fuel consumption of 15 million tons in the previous few years which classifies it as a large country. Due to the European Commission's comments on the insufficient number of samples taken, the number of samples was doubled by taking 200 samples of diesel oil and RON 95 petrol and more than 60 samples of RON 98 petrol in each monitoring period.

National legislation that transposed the Fuel Quality Directive

From 1 January 2007 onwards, the Act of 25 August 2006 on fuel quality monitoring and scrutiny constitutes the legal basis for the system's operation. The scrutiny system covers the whole fuel distribution chain — from filling stations, through wholesalers and fuel bases, to fuel producers. All types of fuel available on the market are subject to scrutiny: petrol (unleaded 95 and 98); diesel fuels; liquid biofuels; liquid petroleum gas; compressed natural gas; and light heating fuel.

Tests of fuel samples verify all or some of the parameters laid down in the legislation. The administrator of the fuel quality monitoring and control system determines the minimum number of business entities subject to inspection. However, it is also possible to initiate an inspection upon obtaining information about poor quality of fuels or circumstances indicating the possibility of poor quality of fuels (in practice, this includes complaints from drivers and information from the police and the Central Bureau of Investigation).

The legal basis for the functioning of the fuel quality monitoring and scrutinizing system in Poland are:

- Act of August 25, 2006, on the fuel quality monitoring and scrutinizing system (Journal of Laws of 2021, item 133, as amended), hereinafter referred to as the "Act",
- Act of December 15, 2000, on the Trade Inspection (Journal of Laws of 2020, item 1706) and implementing acts issued on its basis,
- Regulation of the Minister of Economy of September 21, 2007, on the method of monitoring the quality of liquid fuels, liquid biofuels, as well as report templates for these fuels, as well as for liquefied gas (LPG) and compressed natural gas (CNG) (Journal of Laws of 2019, Item 641), hereinafter referred to as the "Regulation on the method of monitoring",
- Regulation of the Minister of Economy of 9 October 2015 on quality requirements for liquid fuels (Journal of Laws, item 1680, as amended), hereinafter referred to as the "Regulation on quality requirements",
- Regulation of the Minister of Economy of 25 March 2010 on methods of testing the quality of liquid fuels (Journal of Laws of 2017, item 247), hereinafter referred to as "the Regulation on methods of testing the quality of liquid fuels",
- Regulation of the Minister of Energy of 25 May 2016 on quality requirements for liquid biofuels (Journal of Laws of 2016, item 771), hereinafter referred to as "the Regulation on quality requirements for liquid biofuels",
- Regulation of the Minister of Energy of October 14, 2016, on methods of testing the quality of liquid biofuels (Journal of Laws of 2016, item 1802), hereinafter referred to as "the Regulation on methods of testing the quality of liquid biofuels",
- Regulation of the Minister of Climate of April 22, 2020, amending the regulation on the quality requirements for liquid fuels (Journal of Laws of 2020, item 727).

Reporting periods

Seasonal periods in Poland are as follows:

- summer: from 1 May to 30 September (petrol); 16 April to 30 September (diesel);
- winter: from 1 October to 30 April.

Transition periods for petrol is from 1 March to 30 April and from 1 to 31 October and for diesel is from 1 March to 15 April and from 1 October to 15 November. Samples were taken during the transition periods.

3.23.3 Sales

Table 3.55 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (RON95)	5.0	5 354 640 000	3 996 000	206	229	19 of 19
Unleaded petrol (minimum RON >= 98) E5 (RON98)	5.0	503 840 000	376 000	66	90	19 of 19
Total Petrol		5 858 480 000	4 372 000	272	319	
Diesel fuel B7 (ON)	7.0	20 113 100 000	17 045 000	204	222	7 of 7
Total Diesel		20 113 100 000	17 045 000	204	222	

3.23.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.56 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.56 Unleaded petrol (minimum RON = 95) E5 (RON95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Research Octane Number	--	> 95	92.9	97.2	3	435
Motor Octane Number	--	> 85	83.5	86.4	1	435

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.24 Portugal

3.24.1 Country details

Responsible organization:	Directorate-General for Energy and Geology (DGEG)
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.24.2 Fuel quality monitoring service

Sampling

The bodies performing the analysis are selected through a public tender held by ENSE and sampling is performed by the ENSE itself. The ENSE collects samples from filling stations across the country and throughout the year. The selection of filling stations is undertaken by the ENSE. The methods of analysis used are those described in Directive 98/70/EC (The method used for each parameter can be found in the "Test methods and analyzes" tables of Reporting Results tables, where the number of values exceeded and their values are indicated, in the corresponding row of the method of analysis used).

Fuel quality monitoring system administration

The body responsible for the FQMS is the Ministry of Environment and Climate Action. The Directorate-General for Energy and Geology coordinates, prepares and submits the annual reports. Analyses are performed by entities selected through public tender held by the ENSE. Portugal is a small sized country, using statistical model C. The whole country is defined as one region under this model. The consumption or marketing of fuels that do not meet the specifications in force constitutes an infraction punishable by fine, which involves reporting to the authority responsible for prosecution. Two refineries supply the market, one in the north (Matosinhos Refinery) and the other in the south (Sines Refinery).

National legislation that transposed the Fuel Quality Directive

Decree-Law nº 89/2008, of 30 May, amended by Decree-Law nº 142/2010, of 31 December, Decree-Law nº 214-E/2015, of 30 September and Decree-Law nº 152-C/2017, of 11 December, transposed Fuel Quality Directive, and its successive amendments.

The requirements of FQMS are set out in Articles 13º and 14º of Decree-Law nº 89/2008, of 30 May. Considering (1) the logistical challenge that the pandemic has triggered (2) article 11 of Decree-Law 89/2008, of May 30th, which transposes the FQD Directive and provides that in exceptional situations, specifications set forth therein may have no application (3) the position adopted and communicated by the Commission to the Member States and, (4) the situation of excess product existing in Portugal and the importance of ensuring the flow of products, namely Petrol, it was published Ordinance No. 102-A/2020 of April 24th, which establishes an exceptional period, between May 1 and June 30, 2020, during which the sale of petrol with winter specifications, still existing in storage in national territory, may be marketed for the purpose of its sale.

Reporting periods

Seasonal periods in Portugal are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 November to 31 March.

Transition periods are the months of April and October. Analyses are performed at filling stations in transitional periods are not considered for the purposes of the FQMS. No vapor pressure derogation is granted until 2020.

3.24.3 Sales

Table 3.57 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E5 (Eurosuper)	1.22	935 048 266	697 546	57	67	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Superplus)	1.22	94 153 300	70 992	3	6	19 of 19
Total petrol		1 029 201 566	768 538	60	73	
Diesel fuel B7 (Gasóleo)	6.89	4 065 733 229	3 415 216	75	46	6 of 7
Total diesel		4 065 733 229	3 415 216	75	46	

3.24.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.58 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.58 Unleaded petrol (minimum RON = 95) E5 (Eurosuper)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Motor Octane Number	--	> 85	84.4	85.9	15	124

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.25 Romania

3.25.1 Country details

Responsible organization:	Ministry of Energy
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model A
Location of sampling:	Refueling stations

3.25.2 Fuel quality monitoring service

Sampling

Sampling is under the specifications of SR EN 14274:2013, respecting SR EN 14275:2013. The Ministry of Energy is receiving the data from an association of two companies (SGS Romania and Rompetrol Quality Control), which have been designated for sampling, analysis, and reporting, following a public procurement procedure.

Samples are taken in refueling stations and, from 2019, in terminals/depots. Sampling is planned to be performed twice each year, and in 2019 and in 2020, samples were collected during a single sampling activity carried out in the winter and summer periods. In 2018, tests were taken during the summer period, due to the change of legislation covering FQMS (repeal the Government Decision no. 928/2012 and 935/2011 and adoption of the Law no. 311/2018 for adopting of OUG 80/2018) and approval of specific regulations for the National System in August-September 2019 (Order of the Minister of Energy no. 569/2019).

For 2020, 408 samples in total were tested.

Fuel quality monitoring system administration

The Ministry of Energy is responsible for managing and implementing the FQD. Fuel sampling activities during the summer and winter period are carried out by a privately contracted entity. The gathering of information on sales from the fuel suppliers is updated under the Order of the Ministry of Energy (no. 569/2019).

Romania is a small sized country, using statistical model A (EN 14274) to monitor fuel quality. The country is divided into 4 macro-regions.

National legislation that transposed the Fuel Quality Directive

The Government Decisions no. 928/2012 and 935/2011 were abolished by the Emergency Government Ordinance no. 80/2018 approved by Law no. 311/2018, with the additional specifications of Order of the Ministry of Energy no. 569/2019.

Reporting periods

Seasonal periods in Romania are as follows:

- summer: from 1 May to 30 September;
- winter: from 16 November to 14 March.

No samples were taken during the transition periods.

3.25.3 Sales

Table 3.59 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 < RON < 98) E10 (Benzină COR-95)	8.0	1 200 075 919	1 097 083	50	50	19 of 19
Unleaded petrol (minimum RON >= 98) E10 (Benzină COR-98)	8.0	176 494 101	155 228	54	54	19 of 19
Total Petrol		1 376 570 020	1 252 311	104	104	
Diesel fuel B7 (Motorină)	6.5	5 627 109 619	5 704 145	100	100	7 of 7
Total Diesel		5 627 109 619	5 704 145	100	100	

3.25.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of petrol diesel fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

The results of quality fuel samples taken during the summer and winter periods are reported within this annual fuel quality report.

3.26 Slovakia

3.26.1 Country details

Responsible organization:	VÚRUP, a.s.
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.26.2 Fuel quality monitoring service

Sampling

The organization responsible for sampling, analysis and reporting is VÚRUP, a.s. (Accredited Testing Laboratories and Accredited Inspection Body, www.snas.sk). Fuel sampling was carried out at refueling stations only. Fuel sampling was carried out during both summer and winter periods, and the sampling locations were selected from a database of refueling stations and based on suggestions made by the Slovak Environmental Inspectorate (S.I.E.). The applied monitoring system is equivalent to the CEN system.

Fuel quality monitoring system administration

The public bodies responsible for managing and implementing the FQD are the Ministry of Environment and the Slovak Inspection of Environment. Fuel sampling was carried out by a contracted institution (VÚRUP, a.s.), accredited in accordance with EN ISO/IEC 17020 and EN ISO/IEC 17025, selected by public competition. The annual data concerning the sale of petrol and diesel was provided by Ministry of the Environment at the end of July 2021 for 2020. Slovakia is a small sized country, using statistical model C (from August 2004), and is defined as one region under this model.

When non-compliant samples were discovered, S.I.E. was responsible for acting and imposing financial penalties. S.I.E. is responsible for all processes i.e., reporting, managing, and monitoring all non-compliant samples discovered during monitoring. There is one national refinery (the Slovnaft refinery in Bratislava) and two distribution terminals.

The annual fuel quality monitoring data report is provided every year in the due date until the 30th of August.

National legislation that transposed the Fuel Quality Directive

The FQD was transposed into Slovak national law in the form of Directive of the Ministry of Environment No 228/2014 Coll., establishing fuel quality requirements and keeping records of fuel as amended (by Decree No 367/2015 Coll).

Reporting periods

Seasonal periods in Slovakia are as follows:

- summer: from 1 May to 30 September;
- winter: from 16 November to 28/29 February.

Fuel samples were not taken during the transition period, but only during summer and winter period. Therefore, only the results of fuel samples taken during these periods are reported within this annual fuel quality report.

3.26.3 Sales

Table 3.60 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (Super 95)	7.6	616 651 209	462 735	105	96	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus 98)	0	92 143 284	69 236	20	24	19 of 19
Total petrol		708 794 493	531 972	125	120	
Diesel fuel B7 (Diesel)	6.9	2 247 644 524	1 883 526	109	112	6 of 7
Total diesel		2 247 644 524	1 883 526	109	112	

3.26.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.61 and Table 3.62 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.61 Unleaded petrol (minimum RON = 95) E10 (Super 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure, DVPE	kPa	< 60	54.9	74.8	4	105

Table 3.62 Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus 98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Manganese	mg/l	< 2	0	16.8	2	44

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.27 Slovenia

3.27.1 Country details

Responsible organization:	Slovenian Environment Agency
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model C
Location of sampling:	Refueling stations

3.27.2 Fuel quality monitoring service

Sampling

Monitoring is carried out by the legal entities, which obtain authorization from the Ministry of the Environment and Spatial Planning. The main condition for authorization is that they are accredited by Slovenian Accreditation as inspection bodies, in accordance with EN ISO/IEC 17020:2004, and as testing laboratories. They are responsible for the sampling plan, sampling, and analysis of fuel (analysis is undertaken in testing laboratories accredited in accordance with EN ISO/IEC 17025:2005), collecting and processing the data. The publicly available information on legal entities is at the website of Slovenian Environment Agency on the [link](http://okolje.arso.gov.si/onesnazevanje_zraka/vsebine/kakovost-tekocih-goriv) http://okolje.arso.gov.si/onesnazevanje_zraka/vsebine/kakovost-tekocih-goriv.

The Slovenian Environment Agency receives annual reports from three independent inspection bodies on regular basis. The samples of petrol fuels, diesel fuel and gas oil are taken throughout the year at refueling stations and depots.

Fuel quality monitoring system administration

Legislation, implementation, and reporting is exercised by the Ministry of the Environment and Spatial Planning, and within this by the Slovenian Environment Agency. Control of non-compliant samples and other discrepancies is exercised by the Inspectorate for the Environment and Spatial Planning and the Slovenian Maritime Administration, under the Ministry of Infrastructure.

Slovenia is a small sized country, where the FQMS is based on statistical model C. The whole country is considered one region.

National legislation that transposed the Fuel Quality Directive

The FQD was transposed into national law by the Environmental Protection Act and the following regulations: ([Environmental Protection Act](http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1545): <http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1545>) and following regulations:

- Decree on the physical and chemical properties of liquid fuels (Uredba o fizikalno-kemijskih lastnostih tekočih goriv: OJ/Uradni list RS, št. 74/11),
- Decree amending the Decree on the physical and chemical properties of liquid fuels (Uredba o spremembah in dopolnitvah Uredbe o fizikalno-kemijskih lastnostih tekočih goriv: OJ/Uradni list RS, št. 64/14),
- Decree amending the Decree on the physical and chemical properties of liquid fuels (Uredba o spremembah in dopolnitvah Uredbe o fizikalno-kemijskih lastnostih tekočih goriv: OJ/Uradni list RS, št. 36/18),
- Rules on the monitoring of physical and chemical properties of liquid fuels (Pravilnik o monitoringu fizikalno-kemijskih lastnosti tekočih goriv: OJ/Uradni list RS št. 76/11),
- Rules amending the Rules on the monitoring of physical and chemical properties of liquid fuels (Pravilnik o spremembah in dopolnitvah Pravilnika o monitoringu fizikalno-kemijskih lastnosti tekočih goriv: OJ/Uradni list RS št. 56/14) and

- Rules amending the Rules on the monitoring of physical and chemical properties of liquid fuels (Pravilnik o spremembah in dopolnitvah Pravilnika o monitoringu fizikalno-kemijskih lastnosti tekočih goriv: OJ/Uradni list RS št. 35/18).

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Reporting periods

Seasonal periods in Slovenia are as follows:

- summer: from 1 May to 30 September;
- winter: from 1 October to 30 April.

There are no transition periods.

3.27.3 Sales

Table 3.63 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (NBM 95)	5.0	523 697 093	395 391	57	66	19 of 19
Unleaded petrol (minimum 95 < RON < 98) E5 (NBM 98)	5.0	35 509 583	26 810	10	11	19 of 19
Total petrol		559 206 676	422 201	67	77	
Diesel fuel B7 (B7)	7.0	1 934 137 838	1 634 298	76	109	6 of 7
Total diesel		1 934 137 838	1 634 298	76	109	

3.27.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.28 Spain

3.28.1 Country details

Responsible organization:	Ministerio para la Transición Ecológica y el reto demográfico
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 statistical model A
Location of sampling:	Refineries, refueling stations and terminals

3.28.2 Fuel quality monitoring service

Sampling

Samples were taken at refineries, terminals and at service stations (point of delivery to final consumers):

- Refineries: samples were taken from 5 refineries from different regions of the country.
- Terminals: samples were taken from approximately 30 terminals covering the whole country. Samples are taken from storage tanks at atmospheric pressure in accordance with ISO 3170:2004, or near atmospheric pressure.
- Refueling/service stations: samples were taken from service stations from different regions of the country.

For 2020, some samples have been taken from refineries and less samples have been taken of the "Gasolina 98" fuel grade, as this grade comprises <10 % of total petrol sales.

Fuel quality monitoring system administration

Spain is defined as a large sized country regarding fuel sales (more than 15 million tons/year), which uses statistical model A to monitor fuel quality. In some regions there is more potential variability due to product coming in by ship cargo. The country is divided into regions considering the refineries and the terminals. There are 9 refineries in the country and samples were taken from 5 of them. Also, samples were collected from more than 30 terminals, covering the whole country, and including samples from every refinery. Samples taken from service stations cover most of the country. For fuels that came into Spain by ship, the variability factor was considered. The service stations from which samples have been taken cover great part of the Spanish territory.

National legislation that transposed the Fuel Quality Directive

Fuel quality specifications were transposed into Spanish law in Royal Decree RD 61/2006 and RD 1088/2010. Sampling and analysis specifications were transposed in Article 7 of RD 61/2006.

Reporting periods

Seasonal periods in Spain are as follows:

- summer: petrol from 1 May to 30 September; diesel from 1 April to 30 September;
- winter: petrol from 1 October to 30 April; diesel from 1 October to 30 March.

A Vapour Pressure Waiver has been granted to Spain (vapour pressure limits can be increased depending on the content of ethanol on each fuel grade). Samples were taken and tested during transition periods.

3.28.3 Sales

Table 3.64 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Gasolina 95)	3.17	5 203 899 000	3 913 332	101	100	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Gasolina 98)	3.17	438 563 000	329 800	12	15	19 of 19
Total petrol		5 642 462 000	4 243 132	113	115	
Diesel fuel B7 (Gasóleo A)	7.43	23 045 669 000	19 473 591	100	100	7 of 7
Total diesel		23 045 669 000	19 473 591	100	100	

3.28.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 3.65 and Table 3.66 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 3.65 Unleaded petrol (minimum RON = 95) E5 (Gasolina 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure	kPa	< 60	51.0	82.0	12	183

Table 3.66 Unleaded petrol (minimum RON ≥ 98) E5 (Gasolina 98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
Vapour pressure	kPa	< 60	53.3	70.6	3	20

Diesel fuel grades

Table 3.67 summarizes the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 3.67 Diesel fuel B7 (Gasóleo A)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside tolerance limit	Total number of samples
FAME Content	% v/v	< 7	0	7.3	1	184

3.29 Sweden

3.29.1 Country details

Responsible organization:	The Swedish Transport Agency
Country size:	Small
Summer period:	1 May to 15 September in south Sweden; 16 May to 31 August in north Sweden
FQMS used:	National system
Location of sampling:	Terminals, refueling stations

3.29.2 Fuel quality monitoring service

Sampling

The Swedish fuel quality model is based on a national system. Drivkraft Sverige (the former Swedish Petroleum and Biofuels Institute) compiles the data at the terminals for this annual Fuel Quality Monitoring Report on behalf of The Swedish Transport Agency. The quality assessment system at the terminals consists of compilation of quality data of all batches produced in Sweden and of all import batches for the Swedish market. The number of samples taken per fuel grade at the terminals could be found in the tab Sales as well as in each respective tab, for the respective grade, in column N-samples in this report. In 2020, there were 695 samples of Unleaded Petrol 95, 71 samples of Unleaded Petrol 98 and 794 samples of diesel taken at the terminals. Unleaded Petrol 98 represents only about 3,3 % of the total sales of petrol in Sweden. The reported data at the terminals represents more than 98 % of the sales of petrol and diesel in Sweden.

In 2020, (representing summer quality), The Swedish Transport Agency, as an assessment of the national monitoring system's equivalency to the CEN system (crosschecking), carried out sampling at actual refueling stations with the help of an accredited test laboratory. Five samples of unleaded petrol 95 and five samples of diesel, where taken at five actual fuel dispensing sites in five cities distributed across Sweden. The cities were (from north to south): Gävle, Södertälje, Norrköping, Göteborg and Malmö. The refueling stations also represented five different fuel companies. The samples where then analyzed according to the same test methods as in the excel template and to what is required in SS-EN 14274:2003 and SS-EN 14275:2003. The samples from the refueling stations (crosschecking) showed good equivalency for both petrol and diesel with this report based upon quality data of the deliveries to the terminals. The analysis report for the crosschecking at refueling stations in 2020 is available from The Swedish Transport Agency upon request. The same goes for the analysis reports from 2012-2019. The Swedish Transport Agency plans to do a similar crosschecking at the actual refueling stations in the summer of 2021 to also verify the upcoming 2021 FQMS Report.

Fuel quality monitoring system administration

The Swedish Transport Agency is responsible for managing and implementing most parts (including fuel quality) of the FQD except from the parts of the directive dealing with GHG emission reductions and sustainability criteria for biofuels (i.e., Article 7a-7d). The Swedish Energy Agency is responsible for Article 7a-7d of the FQD. This FQMS report is, in other words, under the responsibility of the Swedish Transport Agency with compilation of quality data at the terminals for the annual FQMS report. Sampling and subsequent analysis for the additional national monitoring is carried out by accredited test laboratories. The Swedish Transport Agency verified the reliability of the compilation of Drivkraft Sverige (The former Swedish Petroleum and Biofuel Institute) for this 2020 fuel quality report. The sampling at the actual refueling stations in 2020 (representing summer quality), showed good conformity for both petrol and diesel with the data at the terminals in this annual Fuel Quality Monitoring Report. From authority side, The Swedish Petroleum and Biofuels Institute's compilation of quality data for the FQMS Report gives a correct picture of the fuel quality situation in Sweden for 2020. There are no indications that the fuel quality was a problem in 2020.

Fuels and fuel quality are managed through the national Swedish legislation; "Drivmedelslag (2011:319) the law" and "Drivmedelsförordning (2011:346) the regulation". According to 14 § in Drivmedelsförordning (2011:346), The Swedish Transport Agency supervises most parts of the national fuel regulation including fuel quality and is thereby the authority responsible for acting where non-compliant samples are discovered.

The main reason for Sweden to choose this national system is the considerable costs associated with the extensive sampling in a large, sparsely populated Member State with long geographical distances. There are also substantial annual costs associated with the analysis of the large number of samples per fuel grade required by the statistical model in question according to the European Standard EN 14274:2003. This was agreed by the European Commission, Directorate-General Climate Action and the Swedish Ministry of the Environment and Energy, in October 2014, by means of (EU-pilot 6321/14/CLIM). There are 3 national refineries in Sweden, producing automotive fuels and 32 distribution terminals.

National legislation that transposed the Fuel Quality Directive

The legislation regarding fuel quality has been transposed into the national law *Drivmedelslag* (2011:319), the national regulation *Drivmedelsförordning* (2011:346) and regulations adopted by The Swedish Transport Agency (The Swedish Transport Agency's regulations and general guidelines on information requirements regarding additives in fuels and TSFS 2015:14, Regulations amending the Swedish Transport Agency's regulations and general guidelines (TSFS 2011:66) on information requirements regarding additives in fuels). The latter requires appropriate information to consumers concerning the biofuel content, in particular the FAME, content of diesel fuel in Article 4(1) of the FQD. This is in accordance with EU-pilot 6321/14/CLIM. In addition, TSFS 2011:66 and TSFS 2015:14 contain a demand for information to customers about other additives (ethanol content in Article 3.3 and metallic additives in Article 8(a) of the FQD). The law *Drivmedelslag* (2011:319) was also amended to incorporate the limit of 2 mg per litre of methylcyclopentadienyl manganese tricarbonyl (MMT) in diesel fuel. This is in accordance with Article 8(a)2 of Directive 98/70/EC.

Drivmedelslag (2011:319) contains, among other things, the fuel specifications (Articles 3 and 4 of the FQD) and standard references, among them SS EN 228. The environmental classes for petrol (bensin) can be found in Sections 4-6. There are two environmental classes for petrol in Sweden. Petrol environmental class 1, (Bensin i miljöklass 1), equates to the former national standard SS 155422. This standard is now included as a national appendix of EN 228. Petrol in environmental class 2, known as *Bensin i miljöklass 2*, equates to EN 228 and Annex 1 of the FQD. There are also three environmental classes for diesel in Sweden. Environmental classes 1 and 2 for diesel equate to the national standard SS 155435. The environmental classes for diesel can be found in Sections 8-10. Diesel environmental class 3 equates to EN 590 and Annex 2 of the FQD. Environmental class 1, for both petrol and diesel, represents the largest volumes of those fuels sold on the Swedish market.

The specific regulation on annual FQMS reporting, Article 8 of the FQD, is found in Section 19 of the national law *Drivmedelslag* (2011:319) and in Sections 7-8 of the national regulation *Drivmedelsförordning* (2011:346).

Reporting periods

Seasonal periods in Sweden are as follows:

- summer: from 1 May to 15 September in the south and from 16 May to 31 August in the north;
- winter: from 1 November to 15 March in the south and from 16 October to 31 March in the north.

A Vapour Pressure Waiver has been granted, as Sweden has low ambient summer temperature (maximum vapour pressure of 70 kPa during the summer period according to Article 3.5 of the FQD). Transition periods between summer and winter grades of petrol vary between the northern and the southern parts of Sweden. The transition periods for the south are 16 September to 31 October and 16 March to 1 April. For the northern parts of Sweden, the transition periods are 1 September to 15 October and 1 April to 15 May.

Sweden has the same diesel fuel quality the whole year around. There are no winter and summer periods for diesel and no transition periods between winter and summer. The reported data for diesel are, therefore, only an administrative allocation to facilitate comparison between Member States.

3.29.3 Sales

Table 3.68 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Blyfri 95, Mk1)	5.0	2 630 789 150	1 973 092	334	361	13 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Blyfri 98, Mk1)	5.0	89 778 740	67 334	54	17	13 of 19
Total petrol		2 720 567 890	2 040 426	388	378	
Diesel fuel B7 (Diesel Mk1)	7.0	5 722 661 495	4 658 246	395	399	6 of 7
Total diesel		5 722 661 495	4 658 246	395	399	

3.29.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

3.30 United Kingdom (Northern Ireland)

3.30.1 Country details

Responsible organization:	Department for Transport
Country size:	Large
Summer period:	1 June to 31 August
FQMS used:	National system
Location of sampling:	Refineries, terminals and refueling stations

3.30.2 Fuel quality monitoring service

Sampling

Sampling is done at refineries, terminals and refueling stations. Samples are done routinely throughout the year and across all regions of the UK; the numbers for each month are shown in the petrol and diesel sheets showing the test results. The test methods used are in accordance with EN 228 and EN 590 standards.

Fuel quality monitoring system administration

The Department for Transport has responsibility in the UK for implementing the FQD for Northern Ireland and oversees the fuel quality monitoring system. The UK fuel quality monitoring system makes use of industry quality analyses on batches of fuel produced in, or imported into, the UK, plus samples taken at distribution terminals and service stations (to check the contamination in the distribution network). Due to the very large number of samples involved, this approach provides an equivalent, or greater, degree of confidence to EN 14274. There are six operational fuels refineries within the UK and approximately 50 distribution terminals.

National legislation that transposed the Fuel Quality Directive

The FQD is transposed in UK law under the Motor Fuel (Composition and Content) Regulations 1999 (SI No. 3107) with amendments in 2001, 2003, 2007, 2010, 2012, 2013 and 2015. The FQD is listed under the Protocol on Ireland/Northern Ireland, Annex 1, Section 26 (Environment, Energy Efficiency). There are no changes to the UK's national monitoring system, with quantities and locations like those of previous years. There are no further derogations received since the last detailed FQMS report.

Reporting periods

Seasonal periods in the UK are as follows:

- summer: from 1 June to 31 August;
- winter: from 1 September to 31 May.

In May 2020, the Secretary of State for Transport granted a temporary exemption to the Motor Fuel (Composition and Content) Regulations 1999 (as amended) to allow the distribution and sale of petrol with a vapour pressure of up to 100 kPa up to the end of July 2020.

3.30.3 Sales

Table 3.69 Total sales and sample number

Fuel grade (name)	Biofuel content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Premium 95 RON)	5.0	376 642 737	276 459	320	597	19 of 19
Unleaded petrol (minimum 95 < RON < 98) E5 (Super 97 + RON)	5.0	16 394 340	12 116	52	73	19 of 19
Total petrol		393 037 077	288 575	372	670	
Diesel fuel B7 (Diesel)	7.0	777 261 766	654 199	1 588	1 172	7 of 7
Total diesel		777 261 766	654 199	1 588	1 172	

3.30.4 Exceedances of the fuel quality limits

Petrol fuel grades

No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

Abbreviations, symbols and units

% m/m	Percentage mass per mass
% v/v	Percentage volume per volume
°C	Degree Celsius
B+	Diesel with > 7 % biodiesel content
B0	Diesel with no biodiesel content
B7	Diesel with up to 7 % biodiesel content
CNG	Compressed natural gas
CO ₂	Carbon dioxide
DVPE	Dry Vapour Pressure Equivalent
E+	Petrol with > 10 % ethanol content
E0	Petrol with no ethanol content
E10	Petrol with up to 10 % ethanol content
E5	Petrol with up to 5 % ethanol content
EEA	European Environment Agency
Eionet	European Environment Information and Observation Network
ETBE	Ethyl tert-butyl ether
ETC/ACM	European Topic Centre for Air Pollution and Climate Change Mitigation
EU	European Union
FAME	Fatty acid methyl esters
FQD	Fuel Quality Directive
FQMS	Fuel quality monitoring system
GHG	Greenhouse gas
kg	kilogram
kPa	kilopascal
LPG	Liquid petroleum gas
mg	milligram
MON	Motor octane number
N/A	Not available
QA/QC	Quality assurance/quality control
RON	Research octane number



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