ETC CM Report 2025/01

# Fuel quality monitoring in the EU in 2023

## Fuel quality monitoring under the Fuel Quality Directive

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Cover design: EEA
Cover image © Stephanie Schilling
Layout: Tom Dauwe (VITO)

**Publication Date:** 20 March 2025

**EEA activity:** climate change mitigation and adaptation



**ETC CM coordinator:** Vlaamse Instelling voor Technologisch Onderzoek (VITO)

**ETC CM partners:** AETHER Limited, Citepa, Czech Hydrometeorological Institute (CHMI), EMISIA, Stiftelsen NILU (NILU), Öko-Institut e.V. Institut für Angewandte Ökologie, Öko-Recherche GmbH - Büro für Umweltforschung und -beratung, Rijks Instituut voor Volksgezondheid en Milieu (RIVM), Gauss International Consulting S.L., Transparency for life (T4L), Klarfakt e.U., Exergia S.A., Transport & Mobility Leuven (TML), Umweltbundesamt GmbH (UBA).



**doi**: 10.5281/zenodo.15051860

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## Acknowledgements

This report was prepared for the European Environment Agency (EEA) by its European Topic Centre on Climate change Mitigation (ETC CM). The authors of the report were Giorgos Mellios and Evi Gouliarou (ETC CM partner EMISIA S.A., Greece).

The EEA project manager was Stephanie Schilling. The EEA acknowledges comments received on the draft report from the European Commission's Directorate General for Climate Action and from the European Environment Information and Observation Network (Eionet).

# 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 the 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. Member State 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)].

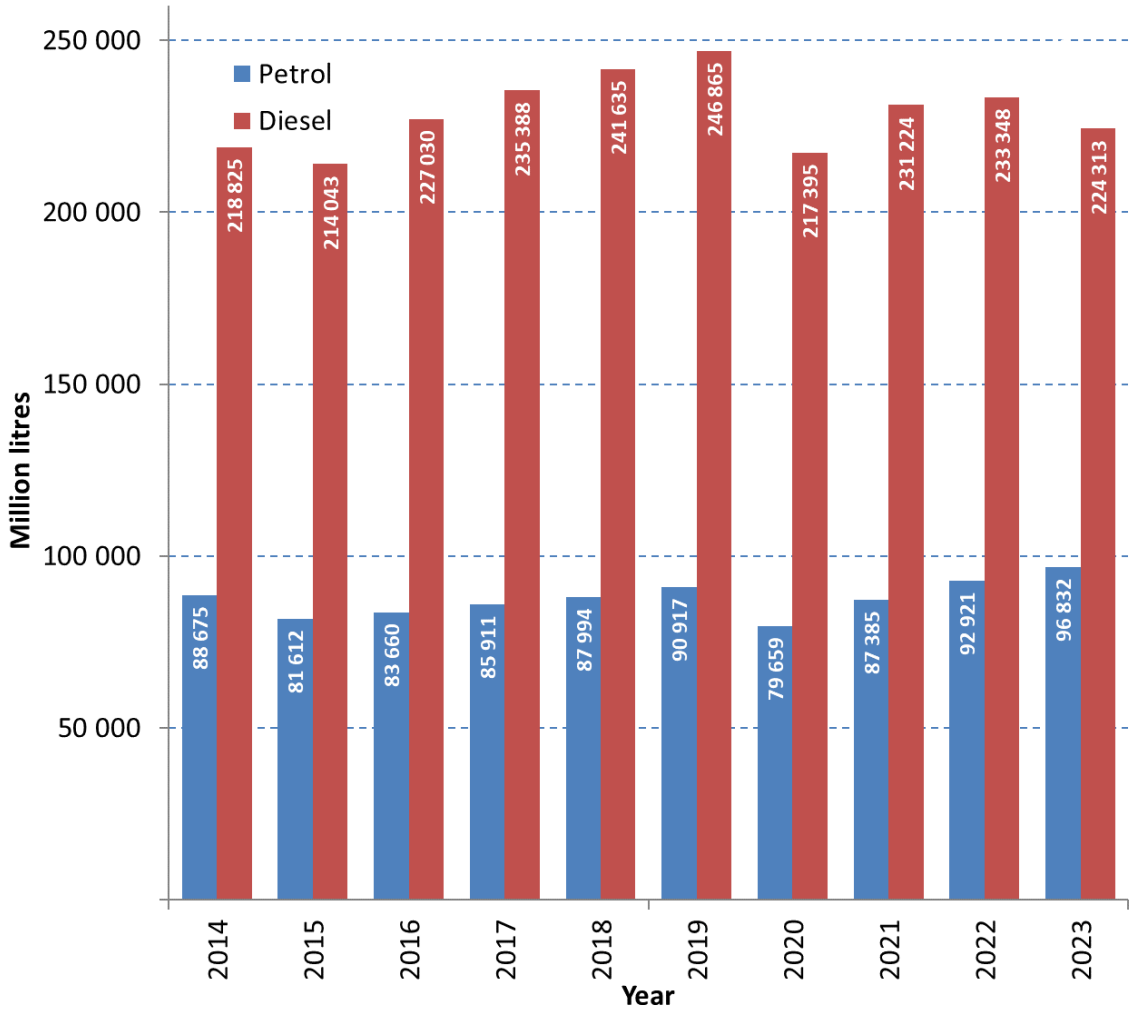
(1) https://www.eea.europa.eu/publications/quality-and-greenhouse-gas-intensities-1

# 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: 69.8% (224,313 million litres) of fuel sold was diesel and 30.2% was petrol (96,832 million litres) in 2023 [2]. Petrol sales increased by 4.2% in 2023 while diesel sales decreased by 3.9% when compared with 2022 (Figure 2.1).

**Figure 2.1 EU-27 petrol and diesel fuel sales in 2023 (million litres).**




The proportion of diesel in total fuel sales has decreased over the years, from 71.2% of total sales in 2014 to 69.8% in 2023 (Figure 2.1).

This reflects a decrease of freight tonnes kilometres in Europe[3]. 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 was a decrease in both diesel and petrol fuel sales in 2020 by 11.9% and 12.4% respectively. This was most likely a consequence of the pandemic of Covid-19. In 2023, there was an increase, compared to

[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 2024 (https://transport.ec.europa.eu/facts-funding/studies-data/eu-transport-figures-statistical-pocketbook/statistical-pocketbook-2024_en)

2020, in petrol by 21.6% and in diesel by 3.2% while a comparison of the entire time series (2014–2023) for the EU-27 shows that petrol and diesel increased by 9.2% and 2.5% respectively.

**Table 2.1 Categories of fuel grades of petrol in 2021, 2022 and 2023 and corresponding sales and shares for 2021, 2022 and 2023.**

| | Million litres | Share |
|---|---|---|
| **2021** | | |
| Minimum RON = 91 | 27 | 0.03% |
| Minimum RON = 95 | 69,209 | 80.5% |
| Minimum 95 ≤ RON < 98 | 11,454 | 13.1% |
| Minimum RON ≥ 98 | 5,070 | 6.4% |
| **Total** | **85,760** | |
| **2022** | | |
| Minimum RON = 91 | 7 | 0.01% |
| Minimum RON = 95 | 88,366 | 95.1% |
| Minimum 95 ≤ RON < 98 | 0.1 | 0.0001% |
| Minimum RON ≥ 98 | 4,548 | 4.9% |
| **Total** | **92,921** | |
| **2023** | | |
| Minimum RON = 91 | 10 | 0.01% |
| Minimum RON = 95 | 91.975 | 94.98% |
| Minimum 95 ≤ RON < 98 | 0 | 0.0% |
| Minimum RON ≥ 98 | 4.847 | 5.01% |
| **Total** | **96,832** | |

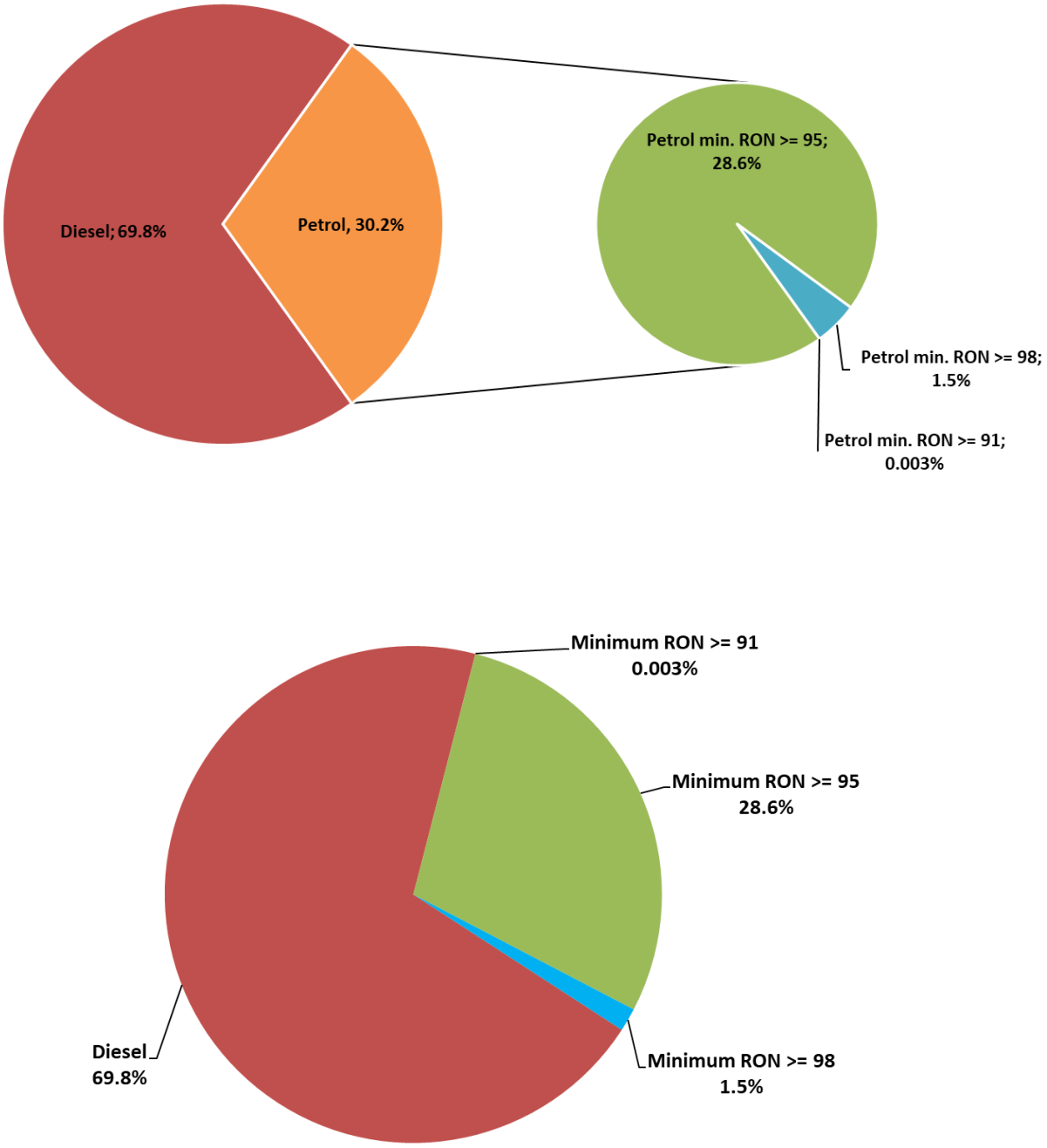
The majority of petrol sales in 2023 comprised of fuels with a petrol grade research octane number (RON) of equal or greater than 95, which accounted for 94.98% of the total petrol fuel sales 5.01% were RON ≥ 98 while the same fuel grade had a and 0.01% of sales were RON ≥ 91[(4)].

There are no significant changes in the distribution of petrol fuel grades between 2022 and 2023 while small changes were realised in the categorisation (Table 2.1) of the petrol fuel grades in the template[(5)] provided by the EEA to be used by the Member States for their Article 8 reporting under the FQD in 2023.

(4) Austria and Denmark reported an insignificant proportion of fuel grade RON >= 91 (0.01% in total, out of the total sales of petrol for 2023).

(5) https://cdr.eionet.europa.eu/help/FQD8. In comparison to previous years (until 2021), category 95 < RON < 98 was removed completely and all other fuel grades relate to the definition of RON91, RON95, etc. to harmonize the reporting and remove some potential inconsistencies amongst countries.

**Figure 2.2 EU-27 petrol and diesel fuel sales, 2023 (% litres).**




Diesel fuel consumption is dominant (> 60% of total fuel sales) in most Member States, apart from Cyprus, Greece, and the Netherlands (Table 2.2).

The ten Member States with the highest volumes of fuel sold account for 82% of total EU sales, while the remaining 17 Member States with the lowest volumes account for 18% of total EU fuel sales.

**Table 2.2 Fuel sales by Member State and fuel type in 2023.**

| Member State | Minimum RON ≥ 91 | Minimum RON ≥ 95 | Minimum RON ≥ 98 | Total petrol | Total diesel |
|---|---|---|---|---|---|
| | | million litres | | | |
| Austria | 0,1 | 2,009 | 164 | 2,173 | 6,990 |
| Belgium | 0 | 2,768 | 485 | 3,253 | 6,937 |
| Bulgaria | 0 | 621 | 43 | 664 | 2,858 |
| Croatia[6] | 0 | 701 | 31 | 732 | 2,217 |
| Cyprus | 0 | 401 | 39 | 440 | 413 |
| Czech Republic | 0 | 2,245 | 69 | 2,313 | 6,160 |
| Denmark | 9,6 | 1,682 | 102 | 1,793 | 3,006 |
| Estonia | 0 | 173 | 102 | 274 | 940 |
| Finland | 0 | 1,369 | 353 | 1,723 | 2,727 |
| France | 0 | 14,067 | 0 | 14,067 | 34,722 |
| Germany | 0 | 21,950 | 1,158 | 23,109 | 39,738 |
| Greece | 0 | 2,364 | 499 | 2,863 | 3,447 |
| Hungary | 0 | 1,715 | 300 | 2,015 | 4,556 |
| Ireland | 0 | 943 | 0 | 943 | 3,338 |
| Italy | 0 | 10,910 | 0 | 10,910 | 29,428 |
| Latvia | 0 | 182 | 29 | 211 | 1,209 |
| Lithuania | 0 | 404 | 13 | 418 | 1,649 |
| Luxembourg | 0 | 443 | 75 | 518 | 1,264 |
| Malta | 0 | 113 | 4 | 117 | 216 |
| Netherlands | 0 | 5,866 | 0 | 5,866 | 5,119 |
| Poland | 0 | 6,842 | 390 | 7,232 | 22,192 |
| Portugal | 0 | 1,242 | 99 | 1,341 | 4,637 |
| Romania | 0 | 1,525 | 196 | 1,721 | 6,266 |
| Slovakia | 0 | 733 | 100 | 833 | 2,353 |
| Slovenia | 0 | 543 | 23 | 566 | 2,002 |
| Spain | 0 | 7,639 | 425 | 8,063 | 25,604 |
| Sweden | 0 | 2,528 | 150 | 2,678 | 4,326 |
| **EU27** | **10** | **91,975** | **4,847** | **96,832** | **224,313** |

## 2.2 Use of biocomponents

In 2023, close to 100% of all diesel and petrol fuels sold in the EU contained biocomponents [(7)] (Figure 2.3). Only Latvia reported diesel with 0% biofuel content (and Iceland from the non-EU countries) which has a share of 0.5% out of total sales of diesel. Austria, Latvia, Lithuania, Malta and Slovakia reported 422 million litres of petrol in total with 0% biofuel content (and Norway from the non-EU countries) and have a share of 0.4% out of total sales of petrol [(8)].

Of petrol sold in the EU in 2023, 58.8% 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 40.3% was E10 (i.e., up to 10% ethanol content by volume). Petrol with no ethanol content (previously reported as E0) has

(6) Croatia reported an insignificant proportion of 95 < RON < 98 grade sales despite this fuel grade not being accepted by the template anymore. The reported amounts where not taken into account.

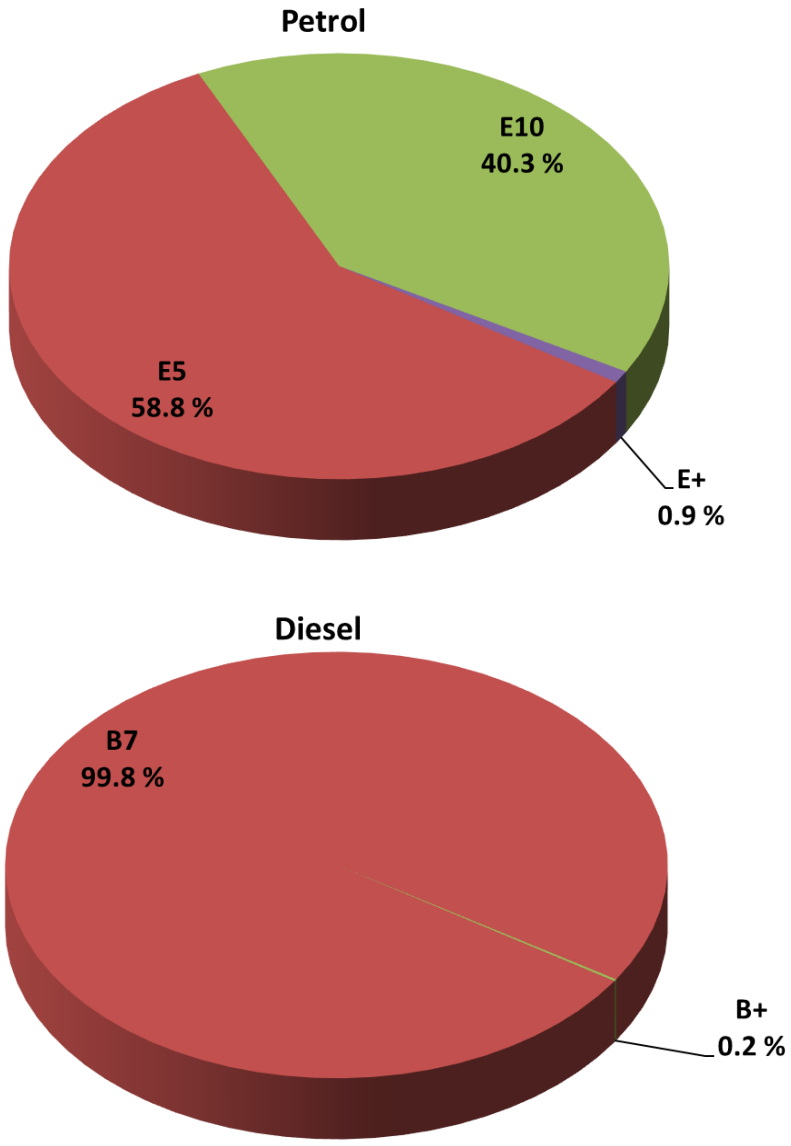
(7) This includes bioethanol directly blended into petrol or converted to ETBE and then blended into petrol.

(8) Due to the low share of these fuels, they were left out of Figure 2.3 (they are included in E5).

been included in E5 since 2020 due to its decreasing share [9]. Only 0.9% of petrol was E+ (i.e., > 10% ethanol content by volume, reported by France and Latvia). This refers mainly to E85, which is 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 2023, 99.8% was of the B7 product type (i.e., containing up to 7% fatty acid methyl esters, FAME) and 0.2% 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 since 2020, only Latvia reported diesel quantity with no FAME content [10] (and Iceland from the non-EU countries).

**Figure 2.3 Use of biocomponents in petrol and diesel fuels sold in the EU-27 in 2023 (% litres).**




The share of ethanol-containing petrol (E5 and E10) in the EU has increased over the last seven years, from about 89% in 2014 to about 99% in 2023, as illustrated in Figure 2.4. The share of non-ethanol-containing

[9] 0.4% – coming from Austria, Latvia, Lithuania, Malta, and Slovakia in 2023.

[10] 0.54% out of the total diesel sold in 2023.

petrol (E0) has decreased significantly over the past years and stabilised for the past three years at 0.3-0.4%.

The decrease in the use of fuel grades with biofuel content of up to 5% (E5) between 2019 and 2023 is due to the change in the geographical scope [(11)] (almost 4% effect) and due to the increase of Member States that sold petrol fuel grades with up to 10% of biofuel content (from 12% in 2014, to 40% in 2023). In detail, 11 Member States sold fuel grades with E10 in 2014 in comparison to 19 Member States in 2023 (all except Croatia, Spain, Ireland, Italy, Malta, Poland, Portugal and Slovenia).

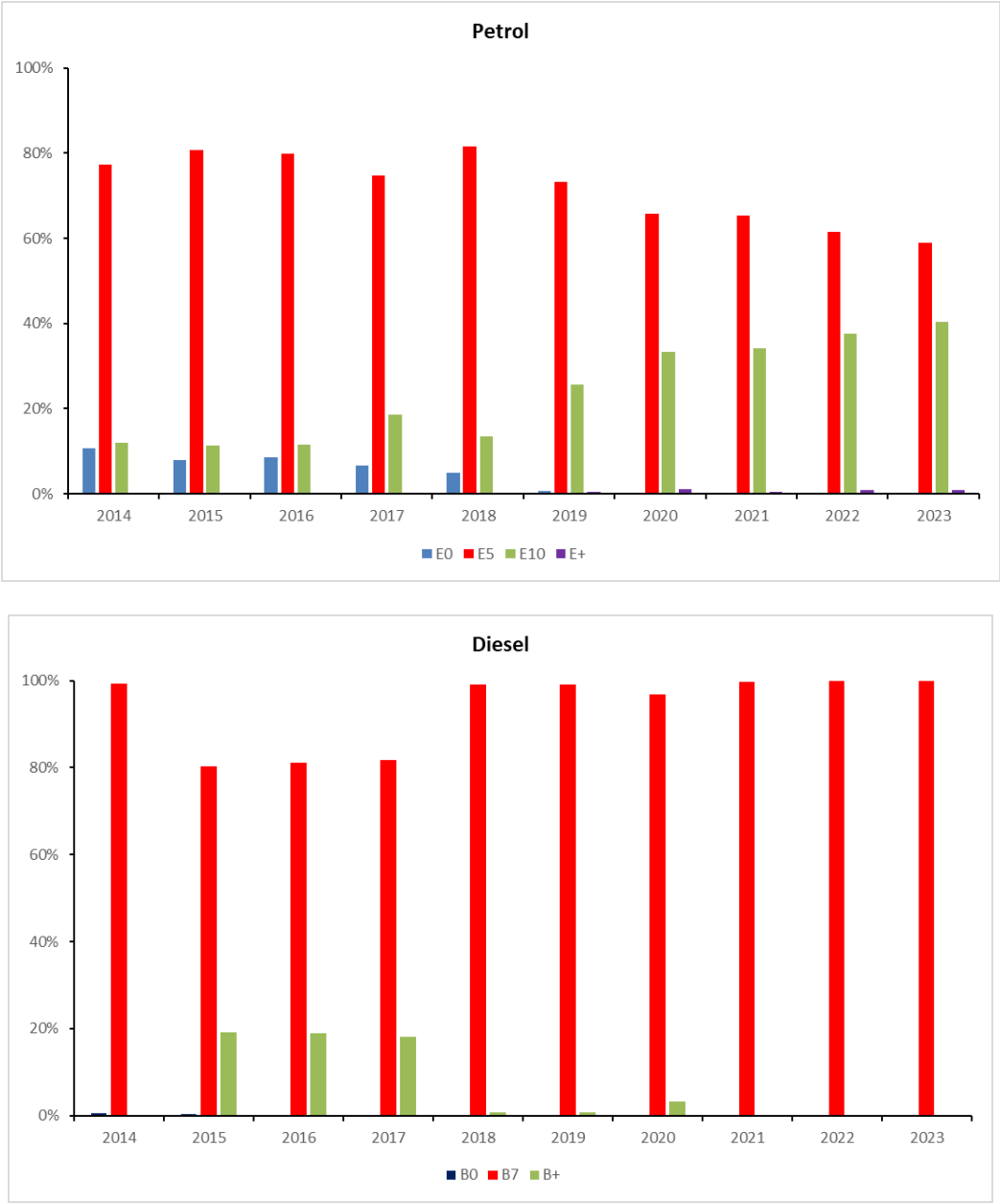
Almost all diesel contained different levels of biodiesel over the same period. The share of B+ changes significantly between 2014 and 2018 because of changes in the French legislation allowing the share of biodiesel to be above 7% between 2015 and 2017. For 2023, the share of B+ remains stable compared to 2022. Only Latvia reported diesel without any biofuel content for 2023 that holds 0.5% out of total diesel sales.

Whereas the use of different biocomponents results in lower overall greenhouse gas (GHG) emissions, the reductions achieved depend 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(a) of the FQD [(12)].

(11) Since 2020 and, the reporting commitments under the Fuel Quality Directive apply only to Northern Ireland (NI) and not the UK as a whole anymore (see Annex 2 of the Withdrawal Agreement, https://eur-lex.europa.eu/eli/treaty/withd_2020/2022-02-22).

(12) https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of
https://www.eionet.europa.eu/etcs/etc-cm/products/etc-cm-report-2024-04

**Figure 2.4 Biocomponents in petrol and diesel sold in the EU from 2014 to 2023 (% 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 2.3 summarises the main information on the operation of the relevant fuel quality monitoring system (FQMS) by the Member States, including the 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 2.3 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 | 107 | 100 |
| Croatia | Statistical model C | Small | Yes | 104 | 100 |
| Cyprus | Statistical model C | Small | Yes | 110 | 100 |
| Czech Republic | Statistical model C | Small | Yes | 103 | 100 |
| Denmark | Statistical model C | Small | Yes | 107 | 100 |
| Estonia | Statistical model C | Small | Yes | 200 | 100 |
| Finland | Statistical model A | Small | Yes | 200 | 100 |
| France | Statistical model A | Large | Yes | 422 | 201 |
| Germany | Statistical model B | Large | Yes | 829 | 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 | Yes | 212 | 100 |
| Lithuania | Statistical model C | Small | Yes | 103 | 100 |
| Luxembourg | National system | Small | Yes | National system | National system |
| Malta | Statistical model C | Small | Yes | 103 | 100 |
| Netherlands | Statistical model A | Small | Yes | 100 | 100 |
| Poland | Statistical model B | Large | Yes | 423 | 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 | 104 | 100 |
| Spain | Statistical model A | Large | Yes | 211 | 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 2.4) 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.

24 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 2.4 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, many samples per grade are 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. 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 [13], during the summer period only.

Vapour pressure derogations up to the year 2023 have been granted to eight Member States [14] upon their request, either due to the effect of ethanol blending (for Portugal and Spain) or due to low ambient summer temperature (for Denmark, Estonia, Finland, Ireland, Latvia, Spain and Sweden) [15].

### *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 2.5.

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[13] According to Annex I and III of FQD for petrol.

[14] https://climate.ec.europa.eu/eu-action/transport/fuel-quality_en#reducing-air-pollution-and-ensuring-fuel-compatibility > Documentation > Vapour pressure derogations

[15] 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://climate.ec.europa.eu/document/download/bfaf45a4-69fc-47cf-8716-2bab87d92b67_en?filename=guidance_note_vapour_pressure_en.pdf).

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:

$$N_{grade\ i} = market\ share_{grade\ i} / market\ share_{parent\ grade} \times N_{parent\ grade}$$

**Table 2.5 Minimum number of samples per fuel grade in each winter and summer period**

| | | Statistical model | | |
|---|---|---|---|---|
| **Fuel grade** | **Country size** | **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 2023 were within the tolerance limits. In total, 240 non-compliances for petrol and 62 for diesel were reported for 2023 (Table 2.6).

One Member State (Belgium) reported 107 non-compliances for petrol and 58 for diesel in 2023. Despite this large number of non-compliances, it represents only a small fraction of the overall number of samples taken in Belgium, which is 7,687.

22 Member States reported fewer than 10 non-compliances for petrol, 10 of which have reported full compliance (Bulgaria, Croatia, Hungary, Lithuania, Luxembourg, Malta, Netherlands, Romania, Slovenia, and Sweden).

Exceedance(s) of the:

- summer vapour pressure was reported in 13 Member States,
- research octane number (RON) was reported in seven Member States (Belgium, Estonia, Finland, Germany, Latvia, Portugal, and Spain),
- motor octane number (MON) was reported in five Member States (Belgium, Estonia, Finland, Portugal and Slovakia),
- oxygen content was reported in five Member States (Belgium, Finland, France, Italy and Portugal),
- ethanol was reported in four Member States (Belgium, Czech Republic, Denmark and France),
- aromatics (hydrocarbon analysis) were reported in three Member States (Belgium, Germany, and Ireland) and
- sulphur content was reported in one Member State (France).

26 Member States reported fewer than 10 non-compliances for diesel (all except Belgium), 23 of which reported full compliance (all except Belgium, Bulgaria, Cyprus and France). Of the seven fuel parameters that require testing and analysis [16], the most common parameters falling outside the specifications were the sulphur content, distillation and the FAME content (in three Member States), as shown in Table 2.6.

[16] 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.

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 re-sampling. 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.

**Table 2.6 Number of non-compliances for petrol and diesel fuels by country in 2023**

| Member State | Samples taken (and samples required in brackets) | | Number of non-compliances in 2022 (figures for 2021 in brackets) | | Parameters outside tolerance limits for non-compliant samples |
|---|---|---|---|---|---|
| | Petrol | Diesel | Petrol | Diesel | |
| Austria | 108 (108) | 100 (100) | 1 (2) | 0 (0) | Vapour pressure |
| Belgium | 4,320 (National system) | 3,367 (National system) | 107 (52) | 58 (74) | RON, MON, Vapour pressure, Aromatics, Ethanol, Oxygen content, Oxygenates (iso-propyl alcohol), Diesel: Density at 15 °C, distillation 95%-point, sulphur content, FAME content |
| Bulgaria | 126 (107) | 118 (100) | 0 (1) | 1 (1) | Diesel: FAME Content |
| Croatia | 204 (104) | 211 (100) | 0 (0) | 0 (0) | - |
| Cyprus | 389 (110) | 222 (100) | 10 (0) | 1 (0) | Vapour pressure, Diesel: Sulphur content |
| Czech Republic | 1,001 (103) | 1,203 (100) | 2 (7) | 0 (0) | Ethanol |
| Denmark | 113 (107) | 101 (100) | 5 (8) | 0 (0) | Vapour pressure, Ethanol |
| Estonia | 350 (200) | 250 (100) | 4 (4) | 0 (1) | RON, MON |
| Finland | 247 (200) | 122 (100) | 12 (1) | 0 (0) | RON, MON, Oxygen content |
| France | 500 (422) | 228 (201) | 18 (5) | 2 (20) | Vapour pressure, Sulphur content, Oxygen content, Ethanol, Diesel: FAME content |
| Germany | 858 (829) | 410 (400) | 6 (9) | 0 (3) | RON, Vapour pressure, Distillation (evaporated at 100 °C), Aromatics |
| Greece | 215 (200) | 124 (100) | 7 (9) | 0 (0) | Vapour pressure |
| Hungary | 200 (200) | 135 (100) | 0 (2) | 0 (0) | - |
| Ireland | 100 (100) | 100 (100) | 5 (0) | 0 (0) | Vapour pressure, Aromatics |
| Italy | 239 (200) | 364 (200) | 6 (2) | 0 (6) | Vapour pressure, Distillation (evaporated at 100 C), Oxygen content |
| Latvia | 124 (200) | 71 (100) | 2 (1) | 0 (2) | RON, Vapour pressure |
| Lithuania | 102 (103) | 100 (100) | 0 (0) | 0 (0) | - |
| Luxembourg | 124 (National system) | 62 (National system) | 0 (4) | 0 (0) | - |
| Malta | 109 (103) | 101 (100) | 0 (0) | 0 (1) | - |
| Netherlands | 100 (100) | 100 (100) | 0 (0) | 0 (0) | - |
| Poland | 656 (423) | 477 (400) | 5 (1) | 0 (0) | Vapour pressure |
| Portugal | 116 (108) | 106 (100) | 43 (9) | 0 (0) | RON, MON, Oxygen content, Methanol |
| Romania | 200 (200) | 200 (102) | 0 (0) | 0 (1) | - |
| Slovakia | 231 (200) | 212 (100) | 3 (3) | 0 (1) | MON, Vapour pressure |
| Slovenia | 144 (104) | 184 (100) | 0 (0) | 0 (1) | - |
| Spain | 275 (211) | 269 (200) | 4 (4) | 0 (14) | RON, Vapour pressure |
| Sweden | 783 (National system) | 824 (National system) | 0 (0) | 0 (0) | - |
| **Total** | | | **240 (124)** | **62 (125)** | |

## 2.5 Quality of Member States' reporting in 2022

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/CM).

In 2024, 27 EU Member States plus Iceland, Norway, and Northern Ireland [17] submitted their fuel quality reports, in accordance with the requirements of Article 8 of the FQD, for the reference year 2023.

23 countries out of 32 European areas reporting submitted their first report within the deadline (August 31, 2023). The latest submission was received on the 15th of October 2023. No outstanding unresolved issues remain.

During the QA/QC procedure, the ETC/CM reviewers posed in total 36 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 were reported in the regional sampling sheets;
- wrong order of magnitude for fuel sales in litres and tonnes;
- 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, 6 countries submitted revised data sets. The last resubmission was received on the 18th of October 2024.

[17] 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: | Refuelling stations / Fuel dispensing sites |

### *3.1.2 Fuel quality monitoring service*

***Sampling***
The organization responsible for sampling is Agrar Market Austria (AMA), analysing 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 (at the beginning 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 Climate Action, Environment, Energy, Mobility, Innovation and Technology). 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 analysing. Reporting starts when all samples of the previous year were tested. After analysing 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 that 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 number 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 1$^{st}$ and the 31$^{st}$ of October and between the 1$^{st}$ of March and the 30$^{th}$ 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) | 0 | 149,528 | 112 | 0 | 0 | 19 of 19 |
| Unleaded petrol (minimum RON ≥ 95) E10 (Super) | 7.77 | 2,009,116,407 | 1,511,056 | 50 | 50 | 19 of 19 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus) | 6.69 | 163,600,334 | 122,635 | 4 | 4 | 19 of 19 |
| **Total petrol** | | **2,172,866,269** | **1,633,804** | **54** | **54** | |
| Diesel fuel B7 (Diesel) | 6.02 | 6,989,994,948 | 5,819,376 | 50 | 50 | 6 of 6 |
| **Total diesel** | | **6,989,994,948** | **5,819,376** | **50** | **50** | |

### 3.1.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.2 summarize the parameter for which exceedances were reported for petrol fuels.

**Table 3.2 Unleaded petrol (minimum RON ≥ 95) 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 | 55.5 | 87.4 | 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 May to 30 September |
| FQMS used: | National system |
| Location of sampling: | Refuelling 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 refuelling stations, depots, and pumps with private owners. Only samples for refuelling 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 analysed 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 analysed 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 analysed samples. Pump labelling is regulated by national legislation. Requirements and test methods are described in the following standards: NBN EN 228 for petrol, NBN EN 590 for diesel B7 and NBN EN 16734 for diesel B10.

***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 May to 30 September,
- winter: from 1 January to 31 March and 1 November 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.

### 3.2.3 Sales

**Table 3.3 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 (E10) | 9.70 | 2,768,319,144 | 2,062,398 | 1,459 | 678 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (E5) | 12.52 | 484,588,907 | 361,019 | 1,507 | 676 | 18 of 18 |
| **Total petrol** | | **3,252,908,051** | **2,423,417** | **2,966** | **1,354** | |
| Diesel fuel B7 (B7) | 11.19 | 6,855,435,560 | 5,710,578 | 1,204 | 2,141 | 6 of 6 |
| Diesel fuel B+ (B10) | 10.30 | 81,588,983 | 67,964 | 4 | 18 | 6 of 6 |
| **Total diesel** | | **6,937,024,543** | **5,778,542** | **1,208** | **2,159** | |

### 3.2.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.4 and Table 3.5 summarize the parameters for which exceedances were reported for petrol fuels.

**Table 3.4 Unleaded petrol (minimum RON ≥ 95) 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 | 94.3 | 97.8 | 3 | 417 |
| Motor octane number | - | > 85 | 84.3 | 88.4 | 8 | 2,137 |
| Vapour pressure, DVPE | kPa | < 60 | 48.7 | 80.3 | 26 | 1,459 |
| Ethanol | % v/v | < 10 | 0.8 | 10.5 | 1 | 2,137 |

**Table 3.5 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 | 49.9 | 83.8 | 60 | 1,507 |
| Aromatics | % v/v | < 35 | 3.9 | 37.5 | 1 | 2,183 |
| Oxygen content | % (m/m) | < 2.7 | 1.5 | 3.5 | 7 | 2,183 |
| Iso-propyl alcohol | % v/v | < 12 | 0.8 | 14.7 | 1 | 2,183 |

***Diesel fuel grades***

Table 3.6 summarize the parameters for which exceedances were reported for the diesel fuel grades measured.

**Table 3.6 Diesel fuel B7 (B7)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Density at 15 °C | kg/m³ | < 845 | 821.3 | 847.6 | 30 | 3,345 |
| Distillation 95% point | °C | < 360 | 336.4 | 389.3 | 7 | 3,345 |
| Sulphur content | mg/kg | < 10 | 3.0 | 18.4 | 7 | 3,345 |
| FAME content | % v/v | < 7 | 0.1 | 11.1 | 14 | 3,315 |

## 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: | Refuelling 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, refuelling stations, and road tankers for liquid fuels transport.

In fulfilment 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 2023 was 6.42%.

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:

- In English: https://www.nab-bas.bg/en/registers/laboratoriya-za-izpitvane-na-goriva-smazochni-materiali-i-prisadki-pri-glavna-direktsiya-kontrol-na-kachestvoto-na-technite-goriva-kam-damtn-35-li-11328.html,
- In Bulgarian: https://www.nab-bas.bg/registar/laboratoriya-za-izpitvane-na-goriva-smazochni-materiali-i-prisadki-pri-glavna-direktsiya-kontrol-na-kachestvoto-na-technite-goriva-kam-damtn-35-li-11328.html.

***Fuel quality monitoring system administration***

Responsible organisations for the 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).

The Directorate General "Quality Control of liquid fuels" of SAMTS takes samples of transport and heating liquid fuels, and the Executive Agency "Maritime Administration" takes samples from vessels and sends 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, the statistical model B was used and from 2015 the statistical model A is used instead.

The 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.

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

Bulgaria provides the Annual Fuel Quality Monitoring Data Report by the 31$^{st}$ of August.

***National legislation that transposed the Fuel Quality Directive***

The European legislation for the liquid fuel 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 fuel quality requirements, conditions, order, and way of their control. The Clean Ambient Air Act and the Regulation on the liquid fuel 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 biocomponents. 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 a minimum of 6% (v/v) biodiesel and a minimum of 1% (v/v) of biodiesel to be a new generation biofuel and petrol with a minimum of 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 fuel quality requirements, conditions, order, and way of their control were introduced transition periods:

- winter-summer transition period from 16 April to 31 May;
- summer-winter transition period from 16 October to 30 November;

Results included in the Report are for samples taken and tested in the summer and winter periods, apart from two samples of petrol RON 95 and two samples of diesel fuel, taken in a transition period from petroleum depots, because in Bulgarian legislation there are no transition periods for manufacturers and importers concerning seasonal specifications of fuels.

### 3.3.3 Sales

**Table 3.7 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 (Unleaded petrol RON 95 E10) | 10.0 | 621,341,305 | 466,006 | 59 | 55 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E10 (Unleaded petrol RON ≥ 98 E10) | 10.0 | 42,637,305 | 31,978 | 6 | 6 | 18 of 18 |
| **Total petrol** | | 663,978,609 | 497,984 | 65 | 61 | |
| Diesel fuel B7 (Diesel fuel B7) | 7.0 | 2,857,727,967 | 2,429,069 | 59 | 59 | 6 of 6 |
| **Total Diesel** | | 2,857,727,967 | 2,429,069 | 59 | 59 | |

### 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 3.8 summarizes the parameter for which exceedances were reported for the diesel fuel grades measured.

**Table 3.8 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 |
|---|---|---|---|---|---|---|
| FAME Content | % v/v | < 6 | 1.1 | 6.8 | 1 | 115 |

## 3.4 Croatia

### *3.4.1 Country details*

| | |
|---|---|
| Responsible organization: | Ministry of Environmental Protection and Green Transition |
| Country size: | Small |
| Summer period: | 1 May to 30 September |
| FQMS used: | EN 14274 statistical model C |
| Location of sampling: | Refuelling stations and terminals |

### *3.4.2 Fuel quality monitoring service*

***Sampling***

The sampling and the assessment of the laboratory reports are conducted by the Inspection body type A accredited by is norm ISO/IEC 17020 (legal entity that is certified by the Croatian Accreditation Agency).

The analysis of the fuel samples is conducted by the laboratory accredited by the norm ISO/IEC 17025 (a legal entity that is certified by the Croatian Accreditation Agency).

The types of locations at which sampling is carried out are petrol stations and terminals.

The Fuel Quality Monitoring System in Croatia is based on the European Standard EN 14274, utilizing the statistical model C (small country) and Croatia carries out a sampling of petrol and diesel fuels at the petrol stations and on the terminals.

The National Fuel Quality Monitoring Program defines the minimum number of samplings on the petrol stations for the winter and the summer periods for the petrol 95 (50 samples at winter period and 50 samples at summer period), for the petrol 98 and for the petrol 100 (5 samples at winter period and 5 samples at summer period) and for the diesel (50 samples at winter period and 50 samples at summer period). The program also defines the minimum number of samplings of the petrol (40 per year) and the diesel (50 per year) on the terminals.

Samples and analyses of petrol and diesel fuel grades (including gas oil and heating oil) are carried out according to the “fuel quality monitoring program” which is under the responsibility of the Ministry of Environmental Protection and Green Transition.

The frequency of the sampling and the selection of the sampling points are in accordance with the "Fuel Quality Monitoring Program”.

Sampling from the terminals is conducted according to the norm HRN EN ISO 3170. Sampling from the petrol stations is conducted according to the norm HRN EN ISO 14275. The determination of the concentrations of the fuel quality components is carried out using the valid EN and ISO norms prescribed by the FQD and the Regulation on the quality of liquid petroleum fuels. The reference method used for the precision of the testing method and the interpretation of test results by the norm HR EN ISO 4259.

***Fuel quality monitoring system administration***

According to the national legislation which transposed the FQD (Air Protection Law OG No 127/19, 57/22; Regulation on the quality of liquid petroleum fuels OG No. 131/21), the Ministry of Environmental Protection and Green Transition receives annual reports from distributors to the 31$^{st}$ of March of the current year for the previous year.

The control and the sampling are performed by a legal entity that is accredited according to the norm ISO/IEC 17020 and are certified by the Croatian Accreditation Agency. The analysis of the fuel samples is performed by legal entities that are accredited according to norm ISO/IEC 17025 and are certified by the Croatian Accreditation Agency.

The samples of the petrol and the diesel fuel grades are taken each month during the year at refuelling stations and terminals, according to the "Fuel Quality Monitoring Program". The Ministry of Economy and Sustainable Development continuously prepares and adopts the "Fuel Quality Monitoring Program" for each following year.

According to the national legislation which transposed the FQD, the distributors are penalized in case of any exceedance of prescribed fuel quality. The enforcement is under the responsibility of the Market Inspection (State Inspectorate, Republic of Croatia).

According to the national legislation which transposed the FQD, the distributors are also penalized in case of not submitting data to the National database established by the Ministry of Environmental Protection and Green Transition. Enforcement is under the responsibility of the Environmental Inspection (State Inspectorate, Republic of Croatia). Penalties for all types of misdemeanours are included in the Air Protection Law (OG No. 127/19, 57/22).

The number of National refineries is two (the refinery Rijeka works and the refinery Sisak doesn't work) and the number of distribution terminals is 13.

***National legislation that transposed the Fuel Quality Directive***

The FQD 98/70/EC and its amendments (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 and the Council Directive (EU) 2015/652) were transposed into the Croatian legislation by the Air Protection Law (OG No 127/19, 57/22) and by the Regulation on the quality of liquid petroleum fuels (OG No. 131/21).

The Act on Air Protection defines the obligations of adopting a national fuel monitoring program, procedures of the state inspectorate during inspections, types of misdemeanours and number of fines.

The Regulation on the quality of liquid petroleum fuels prescribes the limit values of the ingredients and/or the characteristics of the quality of liquid petroleum fuels, the method of determining and monitoring the quality of liquid petroleum fuels, the conditions for the work of the laboratory for sampling and laboratory analysis of the quality of liquid petroleum fuels, the method of proving the conformity of the product, the name and labelling of the product, the method and deadlines for submitting reports on the quality of liquid petroleum fuels, the format of the report and the method of submitting data to the competent authorities of the European Union.

***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 2023, 415 samples were analysed for the purposes of the FQMS including 204 samples of petrol (RON 95 – 197 samples and RON 100 – 7 samples) and 211 samples of diesel fuel. According to the national legislation which transposed the FQD, the distributors are penalized in case of any exceedance of prescribed fuel quality.

Enforcement is under the responsibility of the Market Inspection (State Inspectorate, Republic of Croatia). Penalties are included in the Air Protection Law (OG No. 127/19, 57/22). According to the national legislation which transposed the FQM Directive, the distributors are penalized in the case of not submitting data to the National database established by the Ministry of environmental Protection and Green Transition. Enforcement is under the responsibility of the Environmental Inspection (State Inspectorate, Republic of Croatia). Penalties are included in the Air Protection Law (OG No. 127/19, 57/22).

### *3.4.3 Sales*

**Table 3.9 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 (RON=95) | 5.0 | 700,618,233 | 528,967 | 98 | 99 | 18 of 18 |
| Unleaded petrol (minimum 95 < RON < 98) E5 (RON=98) | 5.0 | 30,902,332 | 23,331 | 3 | 4 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (RON=100) | | **731,520,565** | **552,298** | **101** | **103** | |
| **Total Petrol** | 7.0 | 2,216,514,610 | 1,872,955 | 102 | 109 | 6 of 6 |
| Diesel fuel B7 (B7) | | **2,216,514,610** | **1,872,955** | 102 | 109 | |
| **Total Diesel** | 5.0 | 700,618,233 | 528,967 | 98 | 99 | 18 of 18 |

### *3.4.4 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.

## 3.5 Cyprus

### *3.5.1 Country details*

| | |
|---|---|
| Responsible organization: | Energy Service, 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: | Refuelling stations |

### *3.5.2 Fuel quality monitoring service*

**Sampling**
The Energy Service of the Ministry of Energy, Commerce, and Industry (ES) is responsible for sampling, analysis, and reporting. Analysis of samples is conducted by the Mobile Lab of the ES 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 ES. The statistical and analytical results of the 2023 FQMS Report, include samples from retail sites. The Mobile Lab of the ES carried out almost all the tests required for monitoring the fuel quality for 2023, at the petrol stations. The Laboratory of the CPSC conducted several tests, especially for verification purposes and for parameters that cannot be measured in the Mobile Lab.

**Fuel quality monitoring system administration**
The ESis the competent authority for monitoring fuel quality. 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 ES from retail sites (petrol refuelling stations) on a daily surveillance program prepared by the Chief Inspector and/or his/her 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 issuing administrative fines to the persons responsible for the retail site/installation/tank. Cyprus is considered as a single region.

The import and supply of petrol and diesel in Cyprus are managed by four major companies, while the distribution and retail operations are handled by eight petrol station companies across the island. Cyprus does not have a domestic 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 106 (I)/2022 as amended by Decrees (KDP) P.I.252/2015 plus P.I. 200/2016, P.I. 326/2013, 315/2019, P.I. 6/2014 and P.I.392/22.

**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 six 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 3.10 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) E5 (Unleaded Gasoline-Petrol RON 95) | 5.0 | 401,118,697 | 294,940 | 103 | 99 | 19 of 19 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Unleaded Gasoline-Petrol RON 98) | 5.0 | 37,690,197 | 27,713 | 98 | 84 | 19 of 19 |
| Unleaded petrol (minimum RON ≥ 98) E10 (Unleaded Gasoline-Petrol RON 100) | 5.0 | 1,173,000 | 863 | 2 | 3 | 19 of 19 |
| **Total Petrol** | | **439,981,894** | **323,516** | **203** | **186** | |
| Diesel fuel B7 (Eurodiesel) | 7.0 | 412,530,255 | 344,682 | 113 | 109 | 7 of 7 |
| **Total Diesel** | | **412,530,255** | **344,682** | **113** | **109** | |

### *3.5.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***

Table 3.11 and Table 3.12 summarize the parameters for which exceedances were reported for petrol fuels.

**Table 3.11 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 | 54.0 | 74.0 | 4 | 103 |

**Table 3.12 Unleaded petrol (minimum RON ≥ 98) E5 (Unleaded Gasoline-Petrol 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 | < 60 | 49.2 | 75.5 | 6 | 98 |

**Diesel fuel grades**

Table 3.13 summarizes the parameter for which exceedances were reported for the diesel fuel grades measured.

**Table 3.13 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 | 0.5 | 26.0 | 1 | 213 |

## 3.6 Czech Republic

### *3.6.1 Country details*

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

### *3.6.2 Fuel quality monitoring service*

***Sampling***

The System of the Fuel Quality Monitoring has been carried out since 2001 under the management and the 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 the 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 the 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 the 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 the service stations, in cooperation with the Accredited Inspection and Certification Authority SGS for laboratory testing of all samples, which were used in the transport sector over the year 2022. The fuel samples were tested monthly throughout the year 2023. The controlling process of all fuel samples has been carried out by the last amendment of the Czech standard ČSN EN 228:2018 and ČSN EN 590:2022.

***Fuel quality monitoring system administration***

The fuel sampling was performed according to the requirements of national and European legislation and standards of the Fuel Quality Monitoring System, in general. If the Czech Trade Inspection Authority controller has 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 the 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. 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 (2022) have been provided by CTIA in the form of an 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 the corresponding work agenda and for reporting to the European Commission on behalf of the EEA from the Czech Republic.

Currently, there are two refineries and about 13 distribution terminals in the Czech Republic, this situation is not changed. Data of the annual fuel analyses were taken from the service stations after analysing in the Accredited Inspection and Certification Authority SGS for laboratory testing of all samples of liquid and gas fuels, which were selling at the Czech trade in the previous year (2023). This information of sailing at the petrol stations in the whole country is provided by Department of Data Support and Analyses, Unit of MIT in cooperation with the Czech Statistical Office.

***National legislation that transposed the Fuel Quality Directive.***

The FQD is transposed by the national legislation in accordance with the continual guidelines of the European legislation. The fuel quality is monitored by the Decree No. 516/2020 Coll on requirements of fuels and the implementation of other provisions of the Fuel Act. 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 2023, which is shown in details in the tabular requirements of this form/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 2023, 2,545 samples were analysed including alternative fuels at the service stations in the whole country. The results of sampling of the transition periods are included in two basic seasonal periods. Summer period for reporting purpose is from May to September, the winter period is from October to April including both transitional periods.

### *3.6.3 Sales*

**Table 3.14 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 E5) | 5.0 | 2,244,652,406 | 1,679,000 | 389 | 556 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (BA-98 E5) | 5.0 | 45,721,925 | 34,200 | 23 | 23 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E10 (BA-98 E10) | 10.0 | 22,860,963 | 17,100 | 4 | 6 | 18 of 18 |
| **Total Petrol** | | **2,313,235,294** | **1,730,300** | **416** | **585** | |
| Diesel fuel B7 (Diesel B7) | 7.0 | 6,159,763,314 | 5,205,000 | 488 | 712 | 6 of 6 |
| **Total Diesel** | | **6,159,763,314** | **5,205,000** | **488** | **712** | |

### *3.6.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***

Table 3.15 summarizes the parameter for which exceedances were reported for the petrol fuel grades measured.

**Table 3.15 Unleaded petrol (minimum RON ≥ 95) E5 (BA-95 E5)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Ethanol | % v/v | < 5 | 0.1 | 5.7 | 2 | 945 |

***Diesel fuel grades***

No exceedances of the diesel fuel quality limits were reported.

## 3.7 Denmark

### *3.7.1 Country details*

| | |
|---|---|
| Responsible organization: | Environmental Protection Agency |
| Country size: | Small |
| Summer period: | 1 June to 31 August |
| FQMS used: | EN 14274 statistical model C |
| Location of sampling: | Refuelling 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: in 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 two refineries in Denmark. Some samples are not analysed 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 – until the end of 2030 – 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 3.16 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 | 9,573,443 | 7,458 | 1 | 1 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 95) E10 (Oktan 95 unleaded) | 10.0 | 1,682,001,790 | 1,263,027 | 51 | 50 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Oktan 98 + unleaded) | 5.0 | 101,708,000 | 76,281 | 5 | 5 | 18 of 18 |
| **Total Petrol** | | **1,793,283,233** | **1,346,766** | **57** | **56** | |
| Diesel fuel B7 (Diesel B7) | 7.0 | 3,006,474,219 | 2,261,383 | 51 | 50 | 6 of 6 |
| **Total Diesel** | | **3,006,474,219** | **2,261,383** | **51** | **50** | |

### *3.7.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***

Table 3.17 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

**Table 3.17 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 |
|---|---|---|---|---|---|---|
| Vapour pressure | kPa | < 70 | 58.4 | 73.0 | 1 | 51 |
| Ethanol | % V/V | < 10 | 4.5 | 10.5 | 4 | 101 |

***Diesel fuel grades***

No exceedances of the diesel fuel quality limits were reported.

## 3.8 Estonia

### *3.8.1 Country details*

| | |
|---|---|
| Responsible organization: | Ministry of Climate |
| Country size: | Small |
| Summer period: | 1 June to 30 September |
| FQMS used: | EN 14274 statistical model C |
| Location of sampling: | Refuelling stations |

### *3.8.2 Fuel quality monitoring service*

***Sampling***
Sampling is done according to standard EN 14275 by the Estonian Environmental Research Centre, which is also responsible for analysis and reporting of results. Samples are taken only from retail fuel stations and from terminals. Sampling points are selected so that most of the refuelling stations are covered within the period of two years. Samples from almost all terminals are taken twice a year – during the winter and the summer period.

Frequency of sampling is done the way that summer/winter period samples from refuelling stations are evenly distributed through the respective period.

***Fuel quality monitoring system administration***
The Estonian Ministry of Climate 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 public body is informed immediately by e-mail. If necessary, new samples are taken by the Tax and Customs Board. The system has been designed from 2004-2005 using the EN 14274 model C.

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

***National legislation that transposed the Fuel Quality Directive***
Elements of the FQD requirements are described in national regulation by the Ministry of the Environment (Regulation No 73 of 20 December 2016).

***Reporting periods***
Seasonal periods in Estonia are as follows:

- summer: from 1 June 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 May. Samples are taken also during the transition periods, but those results are excluded from reporting FQD.

### 3.8.3 Sales

**Table 3.18 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 (RON 95) | 1.9 | 172,788,658 | 127,864 | 83 | 62 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (RON 98) | 0.66 | 101,643,011 | 75,216 | 79 | 56 | 18 of 18 |
| **Total Petrol** | | **274,431,669** | **203,079** | **162** | **135** | |
| Diesel fuel B7 (B7) | 2.63 | 939,762,171 | 780,003 | 119 | 69 | 6 of 6 |
| **Total Diesel** | | 939,762,171 | 780,003 | 119 | 69 | |

### 3.8.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.19 and Table 3.20 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

**Table 3.19 Unleaded petrol (minimum RON ≥ 95) E10 (RON 95)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Research Octane Number | -- | > 95 | 93.8 | 97.3 | 3 | 145 |
| Motor Octane Number | -- | > 85 | 84.1 | 86.6 | 1 | 145 |

**Table 3.20 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 |
|---|---|---|---|---|---|---|
| Research Octane Number | -- | > 98 | 97.2 | 99.5 | 1 | 135 |

***Diesel fuel grades***

No exceedances of the diesel fuel quality limits were reported.

## 3.9 Finland

### *3.9.1 Country details*

| | |
|---|---|
| Responsible organization: | Finnish Customs Laboratory and Finnish Environment Institute (Syke) |
| Country size: | Small |
| Summer period: | 1 June to 31 August |
| FQMS used: | EN 14274 statistical model A |
| Location of sampling: | Refuelling 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. The samples are analysed at the Customs Laboratory or by subcontractors whose competence has been confirmed. The Finnish Customs also compiles the report and forwards it to the SYKE 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 three macro-regions with about the same sales volumes and variability factors. There is one refinery and 12 terminals in operation. The number of retail sites in macro-regions 1, 2 and 3 are in total about 2,335. 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. Petrol containers are stored in cool place in laboratory to avoid possible evaporation of light components. 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 2023, subcontractors were used for octane numbers (EN ISO 5164:2014 and EN ISO 5163:2014 methods) of petrol and cetane number (EN ISO 5165:2020 method) of diesel. Except for the lead and FAME methods, all other methods of analysis used (including those subcontracted) were reference methods according to the standards EN 228 and EN 590. Sulphur of petrol and diesel (standard EN ISO 20846:2019), density of diesel (standard EN ISO 12185:1996), vapour pressure of petrol (standard EN 13016-1:2018), polycyclic aromatics content of diesel (EN ISO 12916:2019+A1:2021) and aromatics, olefins, benzene, oxygenates and oxygen contents of petrol (standard EN ISO 22854:2021) methods have been accredited by FINAS Accreditation service. Other test methods used by the laboratory have been tested and validated according to quality procedure of customs laboratory. These test methods are distillation of petrol and diesel (standard EN ISO 3405:2019), FAME in-house method and lead in-house method. FAME method is based on ATR technique. If needed, the laboratory has the ability to confirm the FAME content of the sample with the EN 14078:2014 method. The lead method used by the laboratory is based on EDXRF technique. The sensitivity of the method used, however, is better than the limit indicated in the quality requirements. If needed, the laboratory has the ability to confirm the lead content of the sample with the EN 237:2004 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. The authenticity accuracy and reproducibility value R of the standard methods used by the laboratory have been verified by international PT comparative studies.

In 2023, the Customs Laboratory took part in 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, total oxygen and polycyclic aromatics content) were acceptable. In 2001 - 2022, the laboratory has also taken part in these IIS PT tests with acceptable results.

***Fuel quality monitoring system administration***

Relating to 2022, the Ministry of the Environment is responsible for the transposition of the Directive into 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, analyse the samples. However, subcontractors whose competence has been confirmed can be used. The annual reporting according to the year 2022 is performed by the Finnish Environment Institute (Syke), for that from the year 2023 on Syke is the responsible for transposition of the Directive into the national legislation, approving annual sampling plans and giving general guidance.

In case of non-compliant samples, the analyses will be repeated, as soon as possible. If non-compliance is confirmed, Customs contacts the fuel supplier/oil company to get a detailed account. In these cases (non-compliant) samples, further processing is the responsibility of the Finnish Environment Institute (Syke), not Customs. If clear reason for non-compliance is not found, if there's 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 (883/2022). 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 EC decisions K (2011) 714 final, 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.

### 3.9.3 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 RON ≥ 95) E10 (Moottoribensiini 95 E10) | Max. 10.0 | 1,369,471,000 | 1,020,256 | 54 | 73 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Moottoribensiini 98 E5) | Max. 5.0 | 353,228,000 | 263,155 | 55 | 65 | 18 of 18 |
| **Total petrol** | | **1,722,699,000** | **1,283,411** | **109** | **138** | |
| Diesel fuel B7 (Dieselöljy) | Max. 7.0 | 2,726,751,000 | 2,189,581 | 54 | 68 | 6 of 6 |
| **Total diesel** | | **2,726,751,000** | **2,189,581** | **54** | **68** | |

### 3.9.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.22 and Table 3.23 summarizes the parameter for which exceedances were reported for the petrol fuel grades measured.

**Table 3.22 Unleaded petrol (minimum RON ≥ 95) E10 (Moottoribensiini 95 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 | 94.4 | 97.1 | 1 | 37 |
| Motor Octane Number | -- | > 85 | 84.2 | 86.5 | 7 | 43 |

**Table 3.23 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 |
|---|---|---|---|---|---|---|
| Oxygen content | % m/m | < 2.7 | 2.0 | 2.9 | 4 | 116 |

***Diesel fuel grades***

No exceedances of the diesel fuel quality limits were reported.

## 3.10 France

### *3.10.1 Country details*

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

### *3.10.2 Fuel quality monitoring service*

***Sampling***

The service provider that carried out the sampling and analyses in 2023 on behalf of the Directorate General for Energy and Climate (DG EC) is the company SGS FRANCE selected by a European call for tenders, launched in 2022 to cover the period 2023 - 2026. The company SGS FRANCE in charge of the controls and analyses is audited once a year by the DG EC. The DGEC is responsible for reporting on the basis of the elements transmitted by the service provider. The controls are carried out throughout the national territory and concern petrol (superfuels) and diesel fuels. They consist of verifying, as close as possible to the user, that the regulatory technical characteristics are respected.

The control points are the service stations, which are chosen by a random draw carried out by the DG EC from a file listing French service stations, updated each year. The annual control plan covers 200 samples of SP95 or SP98, 200 samples of diesel, 200 samples of SP95-E10 and 76 samples of E85, approximately half in winter and half in summer. Since sales of B10 diesel do not exceed 1% of sales of B7 diesel, only 1 sample was taken. Each control campaign at service stations is spread over a calendar year and is organized into quarterly programs except for the Overseas Departments (DOM), where the sampling campaign is carried out once a year, due to the absence of seasonality. The sampling campaign in the DOM can be scheduled at any time of the year.

***Fuel quality monitoring system administration***

At the Ministry of Energy Transition, the DG EC is responsible for implementing the Directives relating to fuel quality and the sulphur content of marine fuels as well as implementing the control system. The service provider that carries out the sampling and analyses on behalf of the DG EC is the company SGS FRANCE selected by European call for tenders. The public contract was renewed in 2023 for a maximum period of four years, following a European call for tenders launched in 2022. The controls are mainly aimed at verifying the conformity of the fuels distributed. They make it possible to identify deviations, analyse them and adopt appropriate corrective measures. Distributors are kept informed of the deviations noted by the DG EC and must provide explanations as well as corrective and preventive measures. During the measurement campaign (four per year in metropolitan France and one in the French overseas departments), the DGEC may expressly request, in view of the anomalies and non-conformities noted, additional samples and analyses.

The Directorate General for Competition, Consumer Affairs and Fraud Control (DG CCRF) maintains its role of one-off intervention and records violations. In the event of serious or repetitive deviations, the DG CCRF is formally notified and sales of the product concerned by a non-conformity may be suspended.

According to the articles 3.2.2 and 5.3.3 of the NF EN 14274 standard, France is classified as a large country and uses model A.

The regions controlled are five macro-regions: Normandy-Ile de France Zone, North-East Zone, South Zone, South-West Zone and West Zone and the overseas departments (DOM): Martinique, Guadeloupe, Guyana, Reunion and Mayotte. In 2023, the controls were carried out in Martinique, Guadeloupe, Guyana.

In 2023, France had seven refineries in operation (six in mainland France and one in Martinique) and a biorefinery, La Mède. In 2021, the Grand Puits refinery was closed to be converted into a biorefinery. As of January 1, 2023, France has approximately 180 civil oil depots with a capacity of more than 400 $m^3$ distributing fuels and combustibles, and approximately 10,000 service stations in mainland France.

***National legislation that transposed the Fuel Quality Directive***

The requirements relating to the quality of fuels, defined in the amended Fuel Quality Directive 2009/30/EC, have been transposed into ministerial decrees relating to the characteristics of fuels (one decree for each fuel) and decisions establishing the methods of tests relating to these characteristics.

Ministerial decrees and decisions are modified as necessary with each evolution of Directive 98/70/EC.

***Reporting periods***

For petrol, the regulatory transition periods (inter-seasons) are as follows:

- from March 16 to April 30 and
- from October 1 to 31.

Generally, samples are not taken in April and October.

In 2023, given the social movements that had been announced in March, and to avoid the risks of shortages such as those experienced in October 2022, operators anticipated and increased their stocks with winter quality fuels in February 2023.

Some depots may have had difficulty meeting summer specifications before May 1, 2023, and one-off exemptions were taken to allow the sale of gasoline stocks that did not comply with summer specifications and thus limit distribution disruptions that could have generated a feeling of panic among consumers.

No checks on the summer quality of gasoline have been scheduled before June 1, 2023.

### 3.10.3 Sales

**Table 3.24 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 | 5,173,961,000 | 3,906,341 | 131 | 97 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 95) E10 (SP95-E10) | 10.00 | 7,998,195,000 | 6,038,637 | 101 | 95 | 19 of 19 |
| Unleaded petrol (minimum RON ≥ 95) E+ (E85) | 85.00 | 894,943,000 | 698,056 | 45 | 31 | 5 of 19 |
| **Total Petrol** | | **14,067,099,000** | **10,643,034** | **277** | **223** | |
| Diesel fuel B7 (Diesel B7) | 7.00 | 34,465,335,000 | 29,123,208 | 129 | 98 | 7 of 7 |
| Diesel fuel B+ (Diesel B10) | 10.00 | 256,312,000 | 216,583 | 1 | 0 | 7 of 7 |
| **Total Diesel** | | **34,721,647,000** | **29,339,791** | **130** | **98** | |

### 3.10.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.25 and Table 3.26 and Table 3.27 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

**Table 3.25 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 | 53.5 | 64.7 | 9 | 131 |
| Sulphur content | mg/kg | < 10 | 0.1 | 12.1 | 1 | 228 |

**Table 3.26 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 |
|---|---|---|---|---|---|---|
| Vapour pressure, DVPE | kPa | < 60 | 56.8 | 64.1 | 6 | 101 |
| Oxygen content | % m/m | < 3.7 | 2.0 | 4.0 | 1 | 196 |

**Table 3.27 Unleaded petrol (minimum RON ≥ 95) E+ (E85)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Ethanol | % v/v | 70-85 | 60.8 | 84.2 | 1 | 76 |

***Diesel fuel grades***

Table 3.28 summarizes the parameter for which exceedances were reported for the diesel fuel grades measured.

**Table 3.28 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 |
|---|---|---|---|---|---|---|
| FAME Content | % v/v | < 7 | 4.0 | 7.7 | 2 | 206 |

## 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: | Refuelling 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 states or their federal state agencies. The authorities and organizations which are involved are listed in detail below. 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) | (d) |
| | | Landesamt für Arbeitsschutz, Verbraucherschutz und Gesundheit des Landes Brandenburg (a, c) | (a, c) |
| | | Private laboratory (b) | (b) |
| 5 | Bremen: | Die Senatorin für Klimaschutz, Umwelt, Mobilität, Stadtentwicklung und Wohnungsbau der Freien Hansestadt Bremen | (d, a) |
| | | Gewerbeaufsicht des Landes Bremen | (a, c) |
| | | Private laboratory | (a, b) |
| 6 | Hamburg: | Behörde für Umwelt, Klima, Energie und Agrarwirtschaft, Amt für Immissionsschutz und Abfallwirtschaft, Referat für Raffinerien, Tankläger 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 Klimaschutz, Umwelt, Energie und Mobilität | (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, 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) |
| | | 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 (Federal Environment Agency – UBA) using the web portal/database https://fqms.umweltbundesamt.de/, where data are collected and subsequently consolidated into a report.

The sampling was carried out at refuelling 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 federal 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, taking into account population distribution and regional aspects. The test methods used to sample the different parameters are presented in "Petrol" and "Diesel" sections of this template.

***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 with regard to 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 10$^{th}$ BImSchV, Annex 20. For fuels with less than 10% market share, DIN EN 14274-2013 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 https://www.verwaltungsvorschriften-im-internet.de/pdf/BMU-IGI6-20221219-SF-A020.pdf.

The federal states have to convey their results to the Federal Environment Agency until April 30$^{th}$ 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, Nuclear Safety and Consumer Protection and to the European Commission.

The governments of the federal states and/or the lower-ranking government agencies are responsible for taking action in case of non-compliant samples.

The design of the system was defined in DIN EN 14274-2013. It was adopted into legislation by the German 10th BImSchV in 2019.

At the beginning of 2023 there were 16 refineries in Germany and 14,452 refuelling stations.

***National legislation that transposed the Fuel Quality Directive***
The elements of the directive are transposed into the German "Zehnte Verordnung zur Durchführung des Bundesimmissionsschutzgesetzes (Verordnung über die Beschaffenheit und Auszeichnung der Qualitäten von Kraft- und Brennstoffen – 10. BImSchV)" i.e. Tenth Ordinance Implementing the Federal Emission Control Act (Tenth BImSchV):
https://www.gesetze-im-internet.de/bundesrecht/bimschv_10_2010/gesamt.pdf.

***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 and thus does not influence the statistics. For petrol, limit breaches might depend on whether the transition period data is assigned to the summer or winter period. Since this would induce flexibility on the number of limit breaches, the transition period data for petrol is excluded from this report.

### *3.11.3 Sales*

**Table 3.29 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 | 15,959,425,435 | 11,969,599 | 197 | 206 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 95) E10 (Super E10) | 10.0 | 5,990,929,023 | 4,493,208 | 201 | 209 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus) | 5.0 | 1,158,286,438 | 868,717 | 23 | 22 | 18 of 18 |
| **Total Petrol** | | **23,108,640,895** | **17,331,524** | **421** | **437** | |
| Diesel fuel B7 (Diesel) | 7.0 | 39,737,515,983 | 33,379,687 | 197 | 213 | 6 of 6 |
| **Total Diesel** | | **39,737,515,983** | **33,379,687** | **197** | **213** | |

### *3.11.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***

Table 3.30, Table 3.31 and No exceedances of the diesel fuel quality limits were reported.
summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

**Table 3.30 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 |
|---|---|---|---|---|---|---|
| Aromatics | % v/v | < 37.2 | 18.6 | 38.8 | 1 | 403 |

**Table 3.31 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 |
|---|---|---|---|---|---|---|
| Vapour pressure, DVPE | kPa | 43.8-61.3 | 49.7 | 70.2 | 1 | 201 |

**Table 3.32 Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Research Octane Number | -- | > 97.6 | 97.4 | 102.4 | 2 | 38 |
| Vapour pressure, DVPE | kPa | < 60 | 49.2 | 70.1 | 1 | 23 |
| Distillation, evaporated at 100 °C | % v/v | 44.9-72.1 | 43.0 | 63.8 | 1 | 44 |

***Diesel fuel grades***

No exceedances of the diesel fuel quality limits were reported.

## 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: | Refuelling 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 the Environment and Energy. For Region B and C, the competent bodies for taking fuel samples are the inspection teams from the competent Chemical Services of the General Chemical State Laboratory working in collaboration with the regional Customs Authorities.

Refuelling 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.

The number of samples to be tested in each period (summer and winter) for each grade of fuel with annual sales accounting for less than 10% of the fuel market are calculated using the following formula:

N(x) = where:

N(x): the number of samples taken from fuel (x) where sales account for less than 10% of the fuel market.
M(x): the share of sales held by fuel (x). [Calculations are made on a rough basis based on past data].
M: the share of sales for the main category of fuel in which fuel (x) belongs.

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 refuelling 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 accredited laboratories of the General Chemical State Laboratory in Piraeus and Thessaloniki. 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).

***National legislation that transposed the Fuel Quality Directive***

Fuel Quality Directive 2009/30 (apart from Articles 7(a) to 7(e) of the Directive 98/70/EC, as amended by Article 1 of Directive 2009/30/EC) was transposed into the 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 3.33 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 | 2,363,724,209 | 1,766,884 | 50 | 59 | 13 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E10 (Super unleaded (100 RON)) | 10.0 | 499,154,658 | 373,118 | 47 | 59 | 13 of 18 |
| **Total Petrol** | | **2,862,878,867** | **2,140,002** | **97** | **118** | |
| Diesel fuel B7 (Diesel fuel) | 7.0 | 3,446,877,319 | 2,867,802 | 59 | 65 | 4 of 6 |
| **Total Diesel** | | **3,446,877,319** | **2,867,802** | **59** | **65** | |

### *3.12.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***

Table 3.34 and Table 3.35 summarizes the parameter for which exceedances were reported for the petrol fuel grades measured.

**Table 3.34 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 | 54.8 | 73.2 | 4 | 50 |

**Table 3.35 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 | 50.0 | 76.7 | 3 | 47 |

***Diesel fuel grades***

No exceedances of the diesel fuel quality limits were reported.

## 3.13 Hungary

### *3.13.1 Country details*

| | |
|---|---|
| Responsible organization: | HEXUM Laboratories Private Company Limited by Shares |
| Country size: | Small |
| Summer period: | 1 May to 30 September |
| FQMS used: | EN 14274 statistical model C |
| Location of sampling: | Refuelling stations |

### *3.13.2 Fuel quality monitoring service*

***Sampling***

The organisation responsible for the sampling, the testing and the reporting is HEXUM Laboratories Private Company Limited by Shares (before 1st of October 2021, formerly known as ÁMEI Ltd.), as contracted by the Ministry of Innovation and Technology of Hungary (ITM). In December 2022 the name of ITM changed to Ministry of Energy.

Fuel samples were taken from retail stations selected from the list of fuel stations collected by the National Tax and Customs Administration (NAV).

Our FQMS system is in line with / equivalent to the system proposed by CEN.

***Fuel quality monitoring system administration***

Ministry of Energy is assigned to manage and to operate the FQD.
Fuel sampling and testing have been contracted to HEXUM Laboratories Private Company Limited by Shares.
Annual data set is provided by the 30th of April of the consecutive year.
Test results including non-compliances have been quarterly reported to the Ministry.
Model C (small country) was considered best fit 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 have been sampled.

***National legislation that transposed the Fuel Quality Directive***

Based on the FQD, National Decree of 17/2017 (v. 26) 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 3.36 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 (ESZ-95) | 10.0 | 1,714,730,893 | 1,286,050 | 50 | 50 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (ESZ-98) | 5.0 | 300,000,000 | 225,210 | 50 | 49 | 18 of 18 |
| **Total Petrol** | | **2,014,730,893** | **1,511,260** | **100** | **99** | |
| Diesel fuel B7 (Dízel gázolaj) | 5.0 | 4,556,101,923 | 3,810,268 | 75 | 60 | 6 of 6 |
| **Total Diesel** | | **4,556,101,923** | **3,810,268** | **75** | **60** | |

### 3.13.4 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.

## 3.14 Iceland

### *3.14.1 Country details*

| | |
|---|---|
| Responsible organization: | Environment Agency of Iceland (Umhverfisstofnun) |
| 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***

Reporting to Umhverfisstofnun is based on two-fold reporting. According to Article 7 in Directive 960/2016, concerning fuel quality, importers of fuel batches that arrive to Iceland are to take samples of all batches that are delivered to Iceland. The chemical laboratory Fjölver (Efnarannsóknarstofan Fjölver ehf.) that operates by ASTM standards gathers information about the sampling results and delivers results to Umhverfisstofnun by the 1st of March every year.

Suppliers of fuel provide information to the National Energy Regulatory (Orkustofnun) before the 1st of February every year, on the concentration of GHG from fuel and energy that is delivered in Iceland by providing information about the total amount of each type of fuel and energy supplied and the origin of the purchase and information on GHG emissions, Orkustofnun reviews the reports and delivers to Umhverfisstofnun by the 1st of May.

***Fuel quality monitoring system administration***

In Iceland, each fuel batch delivered 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 (Umhverfisstofnun).

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.

Additionally, there is national act on renewable fuels in land transport no. 40/2013.The aim of this law is to increase the share of renewable energy sources in land transport and to reduce the emission of greenhouse gases in a cost-effective and efficient manner.

***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 3.37 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 petrol (RON ≥ 95)) | 8.64 | 158,184,317 | 116,912 | 11 | 25 | 11 of 18 |
| **Total petrol** | | **158,184,317** | **116,912** | **11** | **25** | |
| Diesel fuel B7 | 0 | 285,944,557 | 238,192 | 11 | 25 | 4 of 6 |
| **Total diesel** | | **285,944,557** | **238,192** | **11** | **25** | |

### *3.14.4 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.

## 3.15 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: | Refuelling stations |

### *3.15.2 Fuel quality monitoring service*

**Sampling**
Samples of petrol and diesel are taken by Fuels for Ireland (formerly known as the Irish Petroleum Industry Association) and are analysed by the ITS Testing Services (UK) Ltd. Reporting is the responsibility of the of the Environment, Climate and Communications. Samples are taken from refuelling 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 ISO 3405, olefins, and aromatics ASTM D1319, benzene EN 238, other oxygenates, methanol, ethanol, iso-propanol, iso-butanol, tert-butanol, ethers (five or more C atoms) and other oxygenates EN 13132, sulphur content IP 490 and lead EN 237.

For diesel samples the following methods were used: cetane number EN ISO 5165, density at 15 ˚C EN ISO 12185, distillation 95% ISO 3405, polycyclic aromatics EN 12916, sulphur content IP 490 and F.A.M.E. BS EN 14078.

***Fuel quality monitoring system administration***
The Department of the Environment, Climate and Communications has responsibility for managing and implementing the FQD. Samples of petrol and diesel are taken by Fuels for Ireland and are analysed by the ITS Testing Services (UK) Ltd.

Reporting is the responsibility of the Department of Environment, Climate and Communications. Samples are taken from refuelling stations. Selection of sampling points is on a random basis and is carried out throughout the year. Annual data is provided by Fuels for Ireland 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 EN 14274 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.

Under EC Decision of the 5th of October 2020, on the request from Ireland for a derogation pursuant to Article 3(4) and (5) of Directive 98/70/EC, as amended by Directive 2009/30/EC, Ireland is permitted to place on the market (during the summer period) petrol with a maximum vapour pressure of 70 kPa (derogation) until the end of 2030.

### *3.15.3 Sales*

**Table 3.38 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 | 942,563,362 | 746,151 | 50 | 50 | 18 of 18 |
| **Total petrol** | | **942,563,362** | **746,151** | **50** | **50** | |
| Diesel fuel B7 | 4.0 | 3,338,381,759 | 3,023,350 | 50 | 50 | 6 of 6 |
| **Total diesel** | | **3,338,381,759** | **3,023,350** | **50** | **50** | |

### *3.15.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***

Table 3.39 summarizes the parameter for which exceedances were reported for the petrol fuel grades measured.

**Table 3.39 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 | < 60 | 66.9 | 72.2 | 1 | 100 |
| Aromatics | % v/v | < 35 | 14.9 | 39.2 | 4 | 100 |

***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 Environment |
| Country size: | Large |
| Summer period: | 1 May to 30 September |
| FQMS used: | EN 14274 statistical model A |
| Location of sampling: | Refuelling stations |

### *3.16.2 Fuel quality monitoring service*

***Sampling***

The monitoring system was set up using the Statistical Model A of EN 14274 (large country framework, five macro-regions). A total of 239 petrol samples and 364 diesel fuel samples were analysed. The distribution of samples throughout the national territory was: 17% north-west; 17.5% north-east; 20% centre; 14.5% south; and 31% islands. The test methods required for fuel quality monitoring were performed by laboratories that regularly participate in one or more national inter-laboratory proficiency testing schemes, and that are accredited according to EN ISO 17025 or certified according to ISO 9000 standards.

The proficiency testing schemes include all test methods listed in the FQMS. According to the requirements of EN 14274, analytical results for petrol and diesel fuel were reported separately for each season and each grade. Selection of sampling points is on a random basis but in accordance with the sales in each macro-region; In 2023, the sampling was carried out at refuelling stations only. Samples 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 of the 3rd of February of 2005. The competent authority for the system of monitoring fuel quality is the Ministry of the Environment and Energy Security.

The fuel quality monitoring (sampling and measurements) was conducted by the 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. Based on this report, the Ministry of the Environment and Energy Security produced data for the European Commission.

***National legislation that transposed the Fuel Quality Directive***

The FQD was transposed by the Legislative Decree of 21st of 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 3.40 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 (Benzina E5) | 1.34 | 10,909,748,120 | 6,833,764 | 133 | 106 | 18 of 18 |
| **Total Petrol** | | **10,909,748,120** | **6,833,764** | **133** | **106** | |
| Diesel fuel B7 (Diesel B7) | 5.39 | 29,427,999,660 | 25,210,699 | 224 | 140 | 6 of 6 |
| **Total Diesel** | | **29,427,999,660** | **25,210,699** | **224** | **140** | |

### 3.16.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.41 summarizes the parameter for which one exceedance was reported for the petrol fuel grades measured.

**Table 3.41 Unleaded petrol (minimum RON ≥ 95) (Benzina E5)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Vapour pressure | kPa | < 60 | 52.2 | 65.0 | 4 | 132 |
| Distillation, evaporated at 100 °C | % v/v | > 46 | 43.0 | 66.8 | 1 | 239 |
| Oxygen content | % m/m | < 2.7 | 0 | 3.2 | 1 | 120 |

***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: | Refuelling stations and terminals |

### *3.17.2 Fuel quality monitoring service*

***Sampling***

The Bureau is responsible for the supervision and the control of the fulfilment of transport energy conditions, including the organizing of fuel quality monitoring and reporting about fuel quality. The data on fuel quality conformity assessment included in this report has been obtained by The State Construction Control Bureau (hereinafter - Bureau) of Latvia based on the fuel quality monitoring performed in 2023.

An agreement was concluded between the Bureau and the accredited laboratory which carries out fuel testing and conformity assessment. Fuel sampling is performed at refuelling stations in all regions of Latvia. Sampling points are selected randomly.

***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 conducted 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 are 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 refuelling 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 Regulation No. 332, which determine 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, as well as determines the institutions for supervision of the market, procedures for conformity assessment of petrol and supervision of the market.

Cabinet Regulation No. 772 ''Regulations Regarding Requirements for Biofuel Quality, Conformity Assessment, Market Supervision and Procedures for Consumer Information'' (Regulation No. 772) which prescribe 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 following 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 1 April.

In Latvia, regulations determine that diesel fuel shall have an admixture of biofuel not less than 6.5% by volume of the total quantity of petroleum products (obligatory from the 1st of April until the 31st of October (summer period). These requirements do not apply to class zero to four diesel fuel to be used in arctic and severe winter conditions, according to the standard LVS EN 590, which is sold in retail trade between the 1st of November and the 1st of April (winter period).

These periods are used also for petrol fuel, however considering that Latvia has been granted a vapour pressure waiver, respectively maximum vapour pressure for petrol must not exceed 70 kPa during the period from the 1st of June until the 31st of August. Another requirement for petrol fuel is that vapour pressure from the 1st of September to the 31st of May does not exceed 100 kPa. Petrol samples taken in April, May, September, and October were included in the annual fuel quality report and reported within the summer period.

As stated above, Latvia has been granted a vapour pressure waiver since Latvia is a Member State with low ambient summer temperatures (Directive 2009/30/EC, Article 2 (5)) and maximum vapour pressure must not exceed 70 kPa during the summer period (Directive 2009/30/EC, Article 3 (4) and (5)).

### *3.17.3 Sales*

**Table 3.42 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 (A-95) | 0 | 162,747,712 | 124,502 | 40 | 30 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 95) E10 (A-95 E10) | 10.0 | 18,900,654 | 14,459 | | | |
| Unleaded petrol (minimum RON ≥ 95) E+ (E85) | 85.0 | 74,510 | 57 | | | |
| Unleaded petrol (minimum RON ≥ 98) E5 (A-98) | 0 | 29,160,784 | 22,308 | 28 | 26 | 18 of 18 |
| **Total Petrol** | | **210,883,660** | **161,326** | **68** | **56** | |
| Diesel fuel B7 (DD) | 0 | 1,208,934,132 | 1,009,460 | 40 | 31 | 6 of 6 |
| Diesel fuel B7 (DD B+) | 7.0 | 159,281 | 133 | | | 6 of 6 |
| **Total Diesel** | | **1,209,093,413** | **1,009,593** | **40** | **31** | |

### *3.17.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***
Table 3.43 summarizes the parameters for which exceedances were reported for the petrol fuel grades measured.

**Table 3.43 Unleaded petrol (minimum RON ≥ 95) E5 (A-95)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Research Octane Number | -- | > 95 | 92.8 | 96.1 | 1 | 70 |
| Vapour Pressure | kPa | < 70 | 6.6 | 88.4 | 1 | 70 |

***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: | Refuelling 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. 102 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 the FQD. Fuel sampling was conducted 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 3.44 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 (A-95 (RON 95)) | 10.0 | 404,212,492 | 303,968 | 50 | 50 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (A-98 (RON 98)) | 0 | 13,303,037 | 10,004 | 2 | 0 | 18 of 18 |
| **Total Petrol** | | **417,515,529** | **313,972** | **52** | **50** | |
| Diesel fuel B7 (Diesel) | 7.0 | 1,648,602,512 | 1,393,089 | 50 | 50 | 6 of 6 |
| **Total Diesel** | | **1,648,602,512** | **1,393,089** | **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: | Refuelling stations and terminals |

### *3.19.2 Fuel quality monitoring service*

***Sampling***

For 2023, the sampling, analysis and reporting of fuel quality was managed by three organizations. The samples were taken from refuelling stations. The sampling points were selected at random.

Test methods are those specified in EN 228 and EN 590. The samples are taken in accordance with the methods described in the European standard, EN 14275.

***Fuel quality monitoring system administration***

The fuel sampling, the analysis and the reporting are conducted by an approved body (Ministry of the Environment). Within one week, the results of the analysed parameters are transmitted to the Luxembourg Environment Agency.

In case of a non-compliant sample, the agreed organization has to inform the Environment Agency 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 Environment Agency at once of the measures undertaken. A new sample then is taken within three working days following the written warning.

In 2009, the Luxembourg Environment Agency 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 of bringing all stakeholders together and discussing different proposals as well as creating 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 is possible to reduce the number of samples for diesel to a minimum amount of 86 samples a year instead of 100 (EN 14274),
- It is 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 Mertert 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 'Règlement grand-ducal du 16 mars 2012 concernant la qualité de l'essence et des carburants diesel et l'utilisation durable des biocarburants'. During the transition period there was no samples taken nor tested. No arctic derogation has been granted.

### *3.19.3 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) E10 (Euro 95) | 10.0 | 442,657,410 | 327,566 | 31 | 31 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Euro 98) | 5.0 | 74,929,737 | 54,448 | 31 | 31 | 18 of 18 |
| **Total Petrol** | | **517,587,147** | **382,014** | **62** | **62** | |
| Diesel fuel B7 (Diesel) | 7.0 | 1,264,401,080 | 1,062,097 | 31 | 31 | 6 of 6 |
| **Total Diesel** | | **1,264,401,080** | **1,062,097** | **31** | **31** | |

### *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: | Refuelling stations |

### *3.20.2 Fuel quality monitoring service*

***Sampling***
The organisation responsible for the sampling and the reporting is the Regulator for Energy and Water Services (REWS). The samples were analysed in an independent laboratory.

All the samples were taken from refuelling stations.

Sampling is distributed evenly throughout the year. The selection of sampling points is by random sampling. A total of 210 fuel samples were analysed, consisting of 102 unleaded petrol minimum RON 95 samples, 101 diesel samples and 7 unleaded petrol minimum RON 98 samples.

The monitoring system used is according to European Standard EN 14274:2013. Malta is considered a small-size country since a "total of 15 million tons or less of automotive fuel is being placed on the market per annum". Hence, Statistical Model C is used. The requirement for the analysis of a minimum of 50 samples per fuel grade in each winter and summer periods (according to the Statistical Model C) was observed in 2023.

The different parameters of unleaded petrol samples were analysed using test methods specified in the SM EN 228 quality standard and the different parameters of diesel samples were analysed using test methods specified in the SM EN 590 quality standard.

***Fuel quality monitoring system administration***
REWS is responsible for monitoring the compliance and the reporting as per Article 8 of the FQD.

Fuel samples are lifted throughout the calendar year from randomly selected refuelling stations by the Regulator's compliance officers. Samples are analysed by an independent laboratory.

REWS is responsible for taking action where non-compliant samples are discovered. A procedure is in place so that any non-compliances are investigated by the Regulator. Legal action is taken against the operators of non-compliant refuelling stations. No non-compliances were found in 2023.

Statistical Model C is used.

***National legislation that transposed the Fuel Quality Directive***
All the actions are carried out by the REWS. The national subsidiary legislation, the Quality of Fuels Regulations, is S.L. 545.18.

***Reporting periods***
Seasonal periods in Malta are as follows:

- summer: from 1 May to 30 September;

- winter: from 1 October to 30 April.

Fuel samples were taken throughout the whole calendar year.

Samples are also lifted and tested also during the transition period. Any unleaded petrol samples lifted during the transition period are not included in the FQMS.

### *3.20.3 Sales*

**Table 3.46 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 (Petrol EN 228 minimum RON 95) | 0.0 | 112,748,688 | 83,906 | 50 | 52 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Petrol EN 228 minimum RON 98) | 0.0 | 3,765,188 | 2,802 | 4 | 3 | 18 of 18 |
| **Total Petrol** | | **116,513,875** | **86,708** | **54** | **55** | |
| Diesel fuel B7 (Diesel EN 590) | 7.0 | 215,785,944 | 180,658 | 51 | 50 | 6 of 6 |
| **Total Diesel** | | **215,785,944** | **180,658** | **51** | **50** | |

### *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: | Refuelling 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 is responsible for managing and implementing the FQD sampling and reporting. The analyses of all parameters type diesel are performed by the laboratory of SGS Nederland B.V. This laboratory also determines the RON and MON values of petrol. The analyses of the other parameters of petrol are performed by the Dutch Customs Laboratory.

The inspectors from the Human Environment and Transport Inspectorate are responsible for enforcing compliance of the fuel supplied in the Netherlands. In the case of non-compliance the offender is warned, the cause is investigated, and if necessary, corrective measures are taken.

***National legislation that transposed the Fuel Quality Directive***
Air Pollution Fuels Decree of 8 April 2011, laying down the requirements about fuels for the implementation of the Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending the Directive 98/70/EC about the specification petrol, diesel fuel and gas oil and establishing a mechanism to monitor and reduce GHG emissions, amending the Council Directive 1999/32/EC as regards the specification of inland waterway fuels and repealing the 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 3.47 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 (E10) | 10.0 | 5,865,771,812 | 4,370,000 | 50 | 49 | 17 of 19 |
| **Total Petrol** | | **5,865,771,812** | **4,370,000** | **50** | **49** | |
| Diesel fuel B7 (Diesel) | 7.0 | 5,119,047,619 | 4,300,000 | 50 | 49 | 6 of 7 |
| **Total Diesel** | | **5,119,047,619** | **4,300,000** | **50** | **49** | |

### 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: | National system |
| Location of sampling: | Refuelling stations |

### *3.22.2 Fuel quality monitoring service*

***Sampling***
From 2012, detailed information is only required every three years. Thus, no detailed information is required for 2023. In Norway, the FQMS 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 north of Norway (Troms and Finnmark) and in the winter period (November-December) the samples were taken in the east of Norway (Østfold, Akershus and Hedmark).

The samples were collected from different companies, making sure that samples were taken from all companies. Samples were collected according to EN 14274:2013.

***Fuel quality monitoring system administration***
From 2012, detailed information is only required every three years. Thus, no detailed information is required for 2023.

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 used. Norway is a small-sized country and there are no regional differences in fuel qualities in refineries and distribution terminals. The Fuel Quality Monitoring data report is usually provided by the 30$^{th}$ 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 1$^{st}$ to the 31$^{st}$ of May and from the 1$^{st}$ to the 30$^{th}$ of September.

Due to the 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.

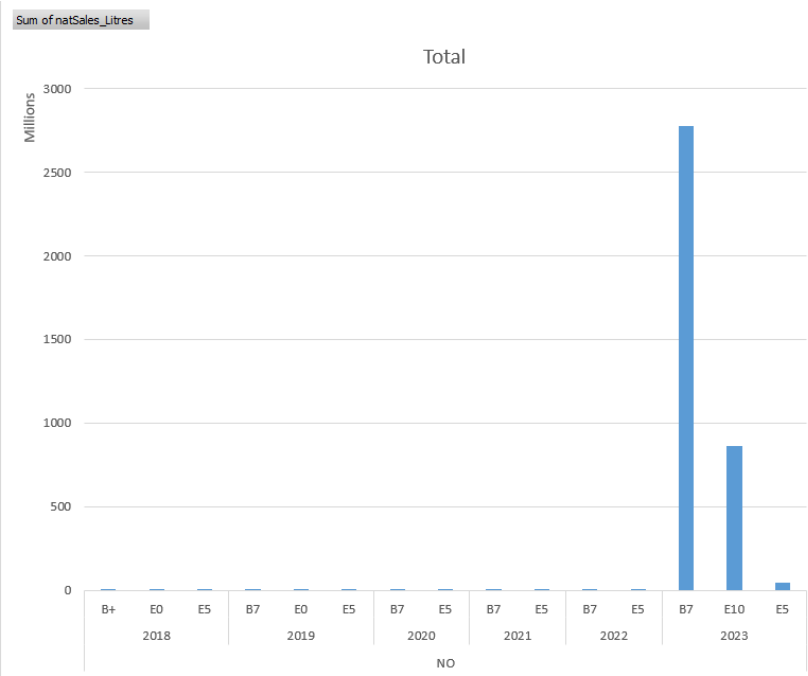
### 3.22.3 Sales

**Table 3.48 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 BF) E10) | 26.0 | 862,209,000 | 638,035 | 9 | 8 | 13 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (98 BF) | 0 | 45,351,000 | 33,560 | 2 | 2 | 14 of 18 |
| **Total petrol** | | **907,560,000** | **671,595** | **11** | **10** | |
| Diesel fuel B7 (B7) | 11.0 | 2,776,313,000 | 2,332,103 | 22 | 22 | 6 of 6 |
| **Total diesel** | | **2,776,313,000** | **2,332,103** | **22** | **22** | |

**** Special situation for the total petrol and diesel sales for Norway.***

During the submission of the Norwegian 2023 data and the regular checks for European Free Trade Association (EFTA) countries, it was discovered that the sales numbers for petrol and diesel increased significantly, see graph below.

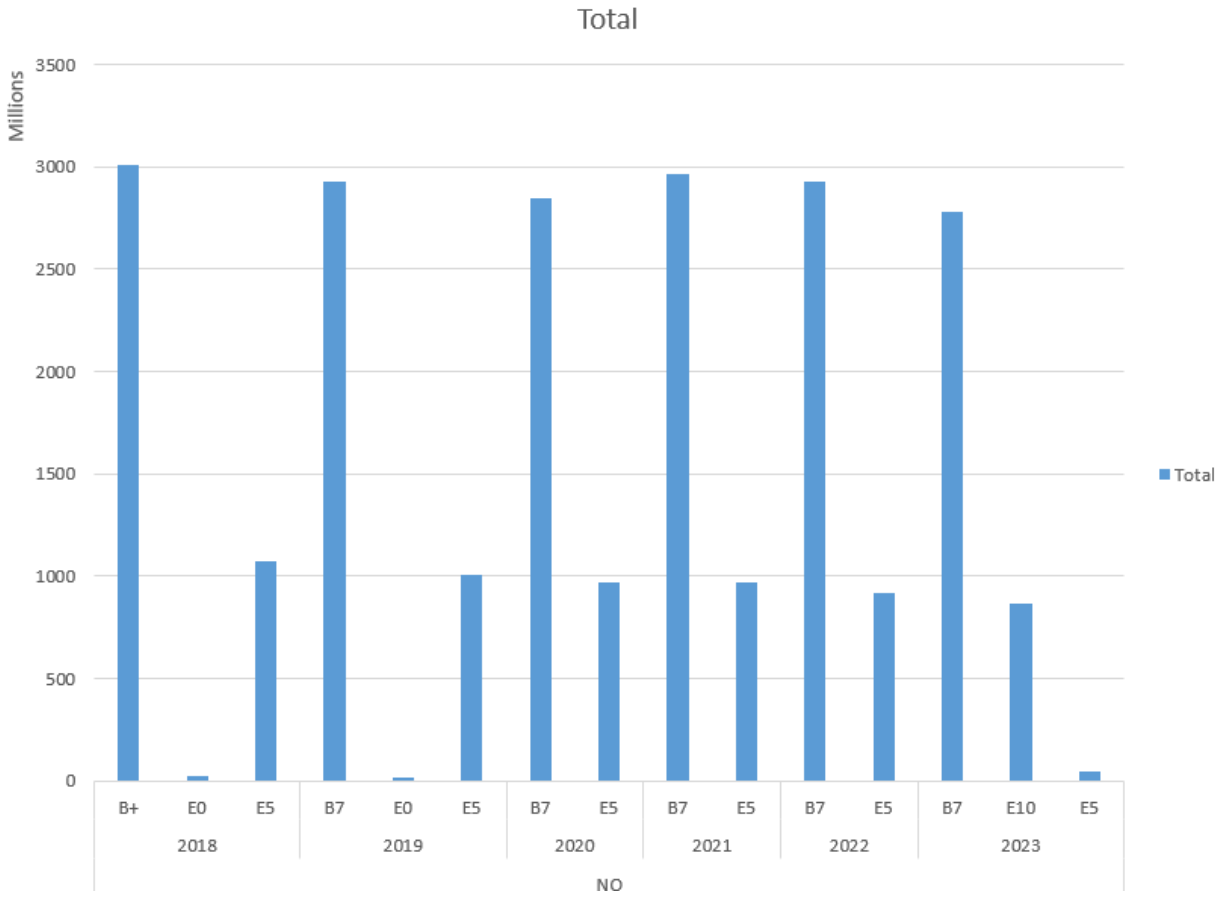



Upon checking with the responsible Norwegian authority, it was discovered that since 2018 Norway had reported totals in 1000 liters instead of liters [18]. Previous years are unaffected by this error [19]. Hence the indicated totals for Norway in the reports from 2018 up to 2022 are significantly too low. The EU27 values in the previous reports published by the ETC and EEA are unaffected as Norway is not part of the European Union and is reporting voluntarily according to Art. 8 of the FQD. The values are corrected below. The

[18] Email exchange with the Norwegian Environmental Agency (Miljødirektoratet) from 22.01.2025 (Ticket#2025011011000242).

[19] Norway did not report data in 2017, the years before show the right unit.

Norwegian values shown in the summary of Member States' submissions (chapter 3) of the previous ETC reports will not be corrected.




It was also confirmed that the fuel industry in Norway shifted from E5 to E10 in 2023 [20].

Further clarifications on the biofuel content of Petrol and Diesel regarding their labelling as B7 and E10 was investigated and answered as follows:

*'More biofuels are blended into fossil fuels than what the indicated by B7 and E10, as the biofuel mandate for road traffic in Norway is higher than this (19%). This is done using other types of biofuel.*

*Measurements confirm that petrol contains up to 10% bioethanol. However, other renewable components, such as BioNafta, can also be blended into petrol. Additionally, there is co-processing, where bio-oil is mixed with fossil fuels before refining. This results in a higher biofuel content than just up to 10% bioethanol.*

*For B7, the FAME content is measured up to 7% FAME. In addition, a significant amount of HVO is blended in, which cannot be measured or distinguished from the fossil fuel. Here too, the biofuel content is higher, as HVO comes in addition to FAME.*

*The renewable content in both E10 and B7 is within the requirements specified in EN228 (gasoline) and EN590 (diesel).'* [21]

[20] Email exchange with the Norwegian Environmental Agency (Miljødirektoratet) from 05.06.2024 (Ticket#2024060410000445).

[21] Email exchange with the Norwegian Environmental Agency (Miljødirektoratet) from 12.03.2025 (Ticket#2025011011000245).

### *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: | Refuelling stations |

### *3.23.2 Fuel quality monitoring service*

***Sampling***

The fuel quality monitoring and control system is managed by the President of the Office of Competition and Consumer Protection. Tasks related to system management are carried out with the help of the Trade Inspection, which conducts the fuel quality inspections. Fuel quality analysis is carried out by laboratories accredited by the Polish Centre for Accreditation for fuel testing with the methods, specified in the regulations on test methods.

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

- unleaded petrol RON 98, unleaded petrol RON 95, diesel oil,
- liquid biofuels, i.e., diesel oil with 20% ester content (B20) and ester constituting a pure 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 Poland, i.e.:
  - RON 95 unleaded petrol,
  - RON 98 unleaded petrol,
  - diesel.

***Fuel quality monitoring system administration***

The fuel quality monitoring and control system is managed by the President of the Office of Competition and Consumer Protection. Tasks related to system management are carried out with the help of the Trade Inspection, which conducts fuel quality inspections. Poland has adopted the fuel quality monitoring system specified in EN 14274 Fuel quality monitoring system (FQMS) – model B – considering the specificity of Polish conditions.

Considering the specificity of the Polish market for liquid fuels, due to the low availability of RON 98 unleaded petrol at Polish stations, in the regulation on the method of monitoring, the minimum number of samples for this type of fuel for each monitoring period is 30, not 100, as specified in the EN 14274 standard. At the same time, due to the fact that in Poland over the past few years, the annual fuel

consumption exceeded 15 million tonnes, which classifies Poland as a large country, and due to the comments of the European Commission regarding the insufficient number of samples taken, the number of samples was doubled by taking 200 samples of diesel oil and 95 RON petrol and 60 samples of 98 RON petrol each in each monitoring period.

***National legislation that transposed the Fuel Quality Directive***

The legal basis for the operation of the fuel quality monitoring and control system in Poland are the following:

- Act of August 25, 2006, on the fuel quality monitoring and control system (Journal of Laws of 2023, item 846), 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 templates for reports on these fuels as well as liquefied gas (LPG) and compressed natural gas (CNG) (Journal of Laws of 2019 item 641), hereinafter referred to as the "monitoring regulation",
- Regulation of the Minister of Economy of October 9, 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 March 25, 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 May 25, 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 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. The test results of the transitional period are given in the table for the winter period, according to the principle that the summer period for petrol is in the range of May 1 - September 30 (for diesel: April 16 - September 30), while the remaining time is included in the table for the winter period.

### 3.23.3 Sales

**Table 3.49 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 | 6,842,040,000 | 5,106,000 | 212 | 286 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (RON98) | 5.0 | 389,940,000 | 291,000 | 68 | 90 | 18 of 18 |
| **Total Petrol** | | **7,231,980,000** | **5,397,000** | **280** | **376** | |
| Diesel fuel B7 (ON) | 7.0 | 22,192,260,000 | 18,807,000 | 203 | 274 | 6 of 6 |
| **Total Diesel** | | **22,192,260,000** | **18,807,000** | **203** | **274** | |

### 3.23.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.50 and Table 3.51 summarizes the parameter for which one exceedance were reported for the petrol fuel grades measured.

**Table 3.50 Unleaded petrol (minimum RON ≥ 98) E5 (RON98)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Vapour pressure | kPa | < 60 | 54.4 | 88.4 | 1 | 158 |

**Table 3.51 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 |
|---|---|---|---|---|---|---|
| Vapour pressure | kPa | < 60 | 55.6 | 89.8 | 4 | 498 |

***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: | Refuelling 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 the Directive 98/70/EC. The method used for each parameter can be found in the "Test methods and analyses" 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 Energyand the Directorate-General for Energy and Geology which coordinates, prepares, and submits the annual reports. The analyses are performed by entities selected through a public tender held by the ENSE.

The consumption or marketing of fuels that do not meet the specifications in force constitutes an infraction punishable by a fine that involves reporting to the authority responsible for prosecution.
The end of the refining activity in Matosinhos Refinery in 2021 (in the north) implied the concentration of refining operations in the Sines Refinery (in the south).

***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 FQD, 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.

***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 in the transition periods, but the results are not included in this annual report, in accordance with the provisions of the European Standard EN 14274.

Portugal grants a vapour pressure derogation for petrol, established by the Dispatch nº. 9558/2021, D.R. (Series II) of 30 September: Derogation from the maximum vapor pressure, from 60 kPa to 68 kPa, for fuel grade of petrol "Eurosuper" (I.O.95), containing bioethanol, in the period from 1 May to 30 September.

### *3.24.3 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 (Eurosuper) | 3.30 | 1,241,532,172 | 926,183 | 52 | 53 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5* (Superplus) | 3.30 | 99,480,106 | 75,008 | 10 | 1 | 18 of 18 |
| **Total petrol** | | **1,341,012,278** | **1,001,191** | **62** | **54** | |
| Diesel fuel B7 (Gasóleo) | 7.00 | 4,637,229,762 | 3,895,273 | 56 | 50 | 6 of 6 |
| **Total diesel** | | **4,637,229,762** | **3,895,273** | **56** | **50** | |

**** Special situation for E5/E10 in monitoring year 2023 for Portugal***

For unleaded petrol (minimum RON ≥ 98) Portugal claimed that the fuel grade constitutes E10 following the 'transposition into national law of Directive 98/70/EC was made by Decree-Law No. 89/2008, of May 30. The specifications of petrol marketed in national territory are set out in article 5 and Annex III of the referred diploma, in its current wording. According to the aforementioned decree-law, there are two grades of petrol at national level, Euro Super (also known as I.O 95) and Superplus (also known as I.O 98).

Thus, currently, Eurosuper (I.O.95) has a maximum oxygen content of 2.7% (% m/m) and a maximum (bio)ethanol content of 5.0% (% v/v). Superplus (I.O. 98) has a maximum oxygen content of 3.7% (% m/m) and a maximum (bio)ethanol content of 10.0% (% v/v).

In these terms, by definition, Superplus (I.O 98) currently corresponds to the grade that allows a maximum bioethanol limit of 10.0%.

The legislation establishes maximum limits, and it is up to operators to develop their commercial policies, always in accordance with the specifications established in current legislation, while simultaneously fulfilling the objectives established for the incorporation of biofuels. Given that Eurosuper (I.O.95) has a higher sales volume, the incorporation of bioethanol has a greater representation in this grade.' [22]

The biofuel content of this E10 is, however, with 3.3% very low and well below the 5% mark.

Looking at the time series of Portugal and the detailed submission of the past 2 years, very biofuel content was reported and having the fuel grade of E5 (see below tables).

[22] Email dated 29.01.2025 from the Portuguese Direção Geral de Energia e Geologia (DGEG).

**Total Sales of Petrol and Diesel**

**Year: 2021**

Member states are requested to complete the following table, as applicable detailing the quantities of each type and grade of petrol and diesel fuel marketed in their territory.

*NB: Please do not report national fuel grade sales under more than one category.
Blank rows have been provided where petrol fuel sales to be reported contain bioethanol.

| Fuel Grade | Name of national fuel grade | Biofuel Content | National sales total Litres | National sales total Tonnes |
|---|---|---|---|---|
| **Regular unleaded petrol (minimum RON = 91)[1]** | | | | |
| Regular unleaded petrol (minimum RON = 91) E5[2] | 0 | 0.00% | 0.0 | 0.0 |
| Regular unleaded petrol (minimum RON = 91) E10[2] | 0 | 0.00% | 0.0 | 0.0 |
| Regular unleaded petrol (minimum RON = 91) E+[2] | 0 | 0.00% | 0.0 | 0.0 |
| **Unleaded petrol (minimum RON = 95)[1]** | | | | |
| Unleaded petrol (minimum RON = 95) E5[2] | Eurosuper | 1.22% | 996,195,710.5 | 743,162.0 |
| Unleaded petrol (minimum RON = 95) E10[2] | 0 | 0.00% | 0.0 | 0.0 |
| Unleaded petrol (minimum RON = 95) E+[2] | 0 | 0.00% | 0.0 | 0.0 |
| **Unleaded petrol (minimum 95 < RON < 98)[1]** | | | | |
| Unleaded petrol (minimum 95 < RON < 98) E5[2] | 0 | 0.00% | 0.0 | 0.0 |
| Unleaded petrol (minimum 95 < RON < 98) E10[2] | 0 | 0.00% | 0.0 | 0.0 |
| Unleaded petrol (minimum 95 < RON < 98) E+[2] | 0 | 0.00% | 0.0 | 0.0 |
| **Unleaded petrol (minimum RON >= 98)[1]** | | | | |
| Unleaded petrol (minimum RON >= 98) E5[2] | Superplus | 1.22% | 95,566,313.0 | 72,057.0 |
| Unleaded petrol (minimum RON >= 98) E10[2] | 0 | 0.00% | 0.0 | 0.0 |

**Total Sales of Petrol and Diesel**

**Year: 2022**

Member states are requested to complete the following table, as applicable detailing the quantities of each type and grade of petrol and diesel fuel marketed in their territory.

*NB: Please do not report national fuel grade sales under more than one category.
Blank rows have been provided where petrol fuel sales to be reported contain bioethanol.

| Fuel Grade | Name of national fuel grade | Biofuel Content | National sales total Litres | National sales total Tonnes |
|---|---|---|---|---|
| **Regular unleaded petrol (minimum RON >= 91)[1]** | | | | |
| Regular unleaded petrol (minimum RON >= 91) E5[2] | 0 | 0.00% | 0.0 | 0.0 |
| Regular unleaded petrol (minimum RON >= 91) E10[2] | 0 | 0.00% | 0.0 | 0.0 |
| Regular unleaded petrol (minimum RON >= 91) E+[2] | 0 | 0.00% | 0.0 | 0.0 |
| **Unleaded petrol (minimum RON >= 95)[1]** | | | | |
| Unleaded petrol (minimum RON >= 95) E5[2] | Eurosuper | 3.57% | 1,332,777,333.0 | 994,251.9 |
| Unleaded petrol (minimum RON >= 95) E10[2] | 0 | 0.00% | 0.0 | 0.0 |
| Unleaded petrol (minimum RON >= 95) E+[2] | 0 | 0.00% | 0.0 | 0.0 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| **Unleaded petrol (minimum RON >= 98)[1]** | | | | |
| Unleaded petrol (minimum RON >= 98) E5[2] | Superplus | 3.57% | 104,117,462.0 | 78,504.6 |
| Unleaded petrol (minimum RON >= 98) E10[2] | 0 | 0.00% | 0.0 | 0.0 |

Therefore, the fuel grade was changed to E5 by the EEA in consultation with the European Commission. The Portuguese authorities replied to this change as follows: 'We agree with the proposed text regarding I.O.98, (as an E10)' [(23)].

### *3.24.4 Exceedances of the fuel quality limits*

***Petrol fuel grades***

Table 3.53 and Table 3.54 summarize the parameters for which exceedances were reported for the petrol fuel grades measured.

**Table 3.53 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 |
|---|---|---|---|---|---|---|
| Research Octane Number | -- | > 95 | 93.7 | 97.7 | 15 | 105 |
| Motor Octane Number | -- | > 85 | 83.7 | 87.0 | 23 | 105 |
| Oxygen content | % m/m | < 2.7 | 0.6 | 7.8 | 1 | 105 |
| Methanol | % v/v | < 3.0 | 0.8 | 12.9 | 1 | 105 |

(23) Email dated 07.03.2025 from the Portuguese Direção Geral de Energia e Geologia (DGEG). (Ticket# 2025012111001042).

**Table 3.54 Unleaded petrol (minimum RON ≥ 98) E5 (Superplus)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Research Octane Number | -- | > 98 | 97.3 | 98.1 | 1 | 11 |
| Motor Octane Number | -- | > 87 | 85.7 | 87.6 | 2 | 11 |

***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: | Refuelling stations |

### *3.25.2 Fuel quality monitoring service*

***Sampling***
Sampling is under the specifications of SR EN 14274:2013 and SR EN 14275:2013. The sampling activity is carried out by a third-party verification that is designated for sampling, analysis, and reporting, following a public procurement procedure. Samples are taken in refuelling stations and, from 2019, in terminals/depots inclusively.

Sampling is planned to be performed twice each year, and in 2023 samples were collected during a single sampling activity carried out in the winter and summer periods.

***Fuel quality monitoring system administration***
The Ministry of Energy is responsible for managing and implementing the FQD and FQMS. Fuel sampling activities during the summer and winter periods 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 (nor. 569/2019).

Romania is a small-sized country, using statistical model A (EN 14274) to monitor fuel quality. The country is divided into four macro-regions. The public body responsible for acting where non-compliant samples are discovered is the National Authority for Protection of Consumers, designated in the national legislation.

***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 3.55 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) E10 (Benzină COR-95) | 8.0 | 1,524,506,902 | 1,147,871 | 50 | 50 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E10 (Benzină COR-98) | 8.0 | 196,121,613 | 148,148 | 50 | 50 | 18 of 18 |
| **Total Petrol** | | **1,720,628,515** | **1,296,020** | **100** | **100** | |
| Diesel fuel B7 (Diesel) | 6.5 | 6,265,528,063 | 5,262,695 | 51 | 51 | 6 of 6 |
| **Total Diesel** | | **6,265,528,063** | **5,262,695** | **51** | **51** | |

### 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 diesel fuel quality limits were reported.

## 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: | Refuelling stations |

### *3.26.2 Fuel quality monitoring service*

***Sampling***
The organisation responsible for sampling, analysis and reporting is VÚRUP, a.s. (Accredited Testing Laboratories and Accredited Inspection Body, www.snas.sk/en). Fuel sampling was carried out at refuelling stations only.

Fuel sampling was carried out during both summer and winter periods. The selection of sampling points is made by the management of Testing Laboratories from database of refuelling stations and on the base of S.I.E. suggestions (S.I.E = Slovak Inspection of Environment).

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 the Ministry of the Environment at the end of July 2024 for 2023. 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 30$^{th}$ 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 Decree of the Ministry of the Environment of the Slovak Republic No. 251/2023 Coll. on fuel quality.

***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 the summer and winter periods. Therefore, only the results of fuel samples taken during these periods are reported within this annual fuel quality report.

### 3.26.3 Sales

**Table 3.56 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) | 7.8 | 732,955,178 | 551,256 | 100 | 94 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus 98) | 0 | 99,948,433 | 75,526 | 12 | 25 | 18 of 18 |
| **Total petrol** | | **832,903,611** | **626,782** | **112** | **119** | |
| Diesel fuel B7 (Diesel) | 6.9 | 2,352,918,243 | 1,968,687 | 100 | 112 | 6 of 6 |
| **Total diesel** | | **2,352,918,243** | **1,968,687** | **100** | **112** | |

### 3.26.4 Exceedances of the fuel quality limits

***Petrol fuel grades***

Table 3.57 and Table 3.58 summarizes the parameters for which one exceedance was reported for the petrol fuel grade measured.

**Table 3.57 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 |
|---|---|---|---|---|---|---|
| Motor Octane Number | -- | > 85 | 84.2 | 86.4 | 1 | 194 |
| Vapour Pressure | kPa | < 60 | 53.8 | 63.4 | 1 | 100 |

**Table 3.58 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 |
|---|---|---|---|---|---|---|
| Vapour Pressure | kPa | < 60 | 54.9 | 62.7 | 1 | 12 |

***Diesel fuel grades***

No exceedances of 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: | Refuelling 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. The main condition for authorization is that they are accredited by the 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 available at the website of the state administration at the following link: https://www.gov.si/teme/kakovost-goriv/.

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

***Fuel quality monitoring system administration***

Legislation, implementation, and reporting is exercised by the Slovenian Environment Agency, a body under the Ministry of the Environment, Climate and Energy.

Control of non-compliant samples and other discrepancies is exercised by the Environment and Energy Inspectorate and by the Slovenian Maritime Administration, a body under the Ministry of Infrastructure.

Slovenia is a small sized country, where the FQMS is based on the European Standard EN 14274:2003, statistical model C. The whole country is considered one region.

***National legislation that transposed the Fuel Quality Directive***

The FQD was transposed into the national law by the Environmental Protection Act and the following regulations (Environmental Protection Act: https://pisrs.si/pregledPredpisa?id=ZAKO8286):

- 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),
- 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. 44/22 – ZVO-2),
- 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),
- 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) 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. 44/22 – ZVO-2).

***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 3.59 Total sales and sample number**

| Fuel grade (name) | Biofuel content (% v/v) | Total sales | | Samples | | Parameters measured |
|---|---|---|---|---|---|---|
| | | Litres | Tonnes | Summer | Winter | |
| Unleaded petrol (minimum RON ≥ 95) E5 (NMB 95) | 5.0 | 542,840,473 | 410,198 | 59 | 66 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (NMB 98) | 5.0 | 22,831,016 | 17,249 | 8 | 11 | 18 of 18 |
| **Total petrol** | | **565,671,488** | **427,447** | **67** | **77** | |
| Diesel fuel B7 (B7) | 7.0 | 2,002,251,206 | 1,748,957 | 80 | 104 | 6 of 6 |
| **Total diesel** | | **2,002,251,206** | **1,748,957** | **80** | **104** | |

### *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: | Ministry for the Ecological Transition and the demographic challenge |
| Country size: | Large |
| Summer period: | 1 May to 30 September |
| FQMS used: | EN 14274 statistical model A |
| Location of sampling: | Refineries, refuelling 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 seven refineries from different regions of the country.
- Terminals: samples were taken from approximately 35 terminals covering the whole country. Samples are taken from storage tanks in accordance with ISO 3170:2004, at or near atmospheric pressure.
- Service stations: samples were taken from service stations from different regions of the country.

The FQMS has been run during 2023, according to EN 14274 standard in the category of large country and statistical model A. Samples were taken in service stations, storage facilities and refineries to reach sample number required in model A. "Gasolina 98" grade is less than 10% of the total petrol sales and, consequently, less samples were taken. The number of samples out of specification limits were low with no negative trend in quality regarding previous years.

***Fuel quality monitoring system administration***

Spain is defined as a large-sized country regarding fuel sales (more than 15 million tonnes/year), which uses statistical model A to monitor fuel quality. In some regions, there is more potential variability due to products coming in by ship cargo. The country is divided into regions considering the refineries and the terminals.

There are eight refineries in the country and samples were taken from seven of them. Also, samples were collected from more than 35 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 a 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 in each fuel grade, according to EN 228).

### 3.28.3 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) E5 (Gasolina 95) | 3.97 | 7,638,566,941 | 5,744,202 | 109 | 122 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Gasolina 98) | 3.97 | 424,523,165 | 319,241 | 21 | 23 | 18 of 18 |
| **Total petrol** | | **8,063,090,106** | **6,063,443** | **130** | **145** | |
| Diesel fuel B7 (Gasóleo A) | 8.91 | 25,604,176,734 | 21,635,529 | 131 | 138 | 6 of 6 |
| **Total diesel** | | **25,604,176,734** | **21,635,529** | **131** | **138** | |

### 3.28.4 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) E5 (Gasolina 95)**

| Parameter | Unit | Limit value | Minimum value measured | Maximum value measured | Number of samples outside tolerance limit | Total number of samples |
|---|---|---|---|---|---|---|
| Research Octane Number | -- | > 95 | 94.0 | 98.2 | 1 | 179 |
| Vapour Pressure | kPa | < 60 | 52.6 | 77.4 | 2 | 217 |

**Table 3.62 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 | 55.3 | 77.8 | 1 | 39 |

***Diesel fuel grades***

No exceedances of the diesel fuel quality limits were reported.

## 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<br>16 May to 31 August in north Sweden |
| FQMS used: | National system |
| Location of sampling: | Terminals, refuelling 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 a 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 can be found in the tab “Sales” (of Sweden’s annual submission) as well as in each respective tab, for the respective grade, in column N-samples in this report.

In 2023, there were 625 samples of Unleaded Petrol 95, 158 samples of Unleaded Petrol 98, 792 samples of diesel environmental class 1 (mk1) and 32 samples of diesel environmental class 3 (mk3) taken at the terminals. In 2023, Unleaded Petrol 95 represented about 94.4% of the total sales of petrol in Sweden and diesel mk1 represented about 93.3% of the total sales of diesel in Sweden. The reported data at the terminals represents more than 98% of the sales of petrol and diesel in Sweden.

In 2023, (representing summer quality), the Swedish Transport Agency, as an assessment of the national monitoring system's equivalency to the CEN system (crosschecking), carried out the sampling at actual refuelling stations with the help of an accredited test laboratory. Five samples of unleaded petrol 95 and five samples of diesel mk1, were taken at five actual fuel dispensing sites in five cities distributed across Sweden. The cities were (from north to south): Gävle, Nynäshamn, Norrköping, Göteborg and Malmö.

The refuelling stations also represented five different fuel companies. The samples were then analysed 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 refuelling 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 refuelling stations in 2023 is available from the Swedish Transport Agency, upon request. The same goes for the analysis reports from 2012-2022. The Swedish Transport Agency plans to do a similar crosschecking at the actual refuelling stations in the summer of 2024 to also verify the upcoming 2024 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. This FQMS report is thus under the responsibility of the Swedish Transport Agency. The parts of the directive dealing with GHG emission reductions and sustainability criteria for biofuels i.e. Article 7(a)-7(d) are under the responsibility of The Swedish Energy Agency. Also mentioned under 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 a compilation of quality data of all batches produced in Sweden and of all import batches for the Swedish market.

The Swedish Transport Agency is responsible for managing and implementing most parts, including fuel quality, of the FQD. This FQMS report is thus under the responsibility of the Swedish Transport Agency. The parts of the directive dealing with GHG emission reductions and sustainability criteria for biofuels i.e. Article 7(a)-7(d) is under the responsibility of The Swedish Energy Agency.

The Swedish Transport Agency verified the reliability of the compilation of Drivkraft Sverige (the former Swedish Petroleum and Biofuel Institute) at the terminals for this 2023 fuel quality report. The sampling at the actual refuelling stations in 2023 (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 the authority side, we are confident that Drivkraft Sverige (the former Swedish Petroleum and Biofuels Institute) compilation of quality data for the FQMS Report gives a correct picture of the fuel quality situation in Sweden for 2023. There are no indications that the fuel quality was a problem in 2023.

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 is 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 of Climate Action and the Swedish Ministry of the Environment and Energy, in October 2014, by means of EU-pilot 6321/14/CLIM.

There are three national refineries in Sweden, producing automotive fuels and 32 distribution terminals.

Sweden submits the report of its national fuel quality data for the preceding calendar year by the 31$^{st}$ of August, each year.

***National legislation that transposed the Fuel Quality Directive***

In Sweden, the legislation of the FQD was transposed into the national law “Drivmedelslag (2011:319)”, the national regulation “Drivmedelsförordning (2011:346)” and regulations adopted by the Swedish Transport Agency (Transportstyrelsens föreskrifter (TSFS 2011:66) och allmänna råd om informationskrav avseende tillsatser i drivmedel and TSFS 2015:14, Föreskrifter om ändring i Transportstyrelsens föreskrifter och allmänna råd (TSFS 2011:66) om informationskrav avseende tillsatser i drivmedel). The latter requires appropriate information to consumers concerning the biofuel, in particular FAME, content of diesel fuel in Article 4.1 of the FQD. This is according to EU-pilot 6321/14/CLIM. In addition to that, TSFS 2011:66 and TSFS 2015:14 also contain a demand for information to customers about other additives (ethanol content in Article 3.3 and metallic additives in Article 8a 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 the Article 8(a)2 of the FQD.

The law “Drivmedelslag (2011:319)” contains, among other things, fuel specifications (Article 3 and 4 of the FQD) and standard references among them SS-EN 228. In 4-6 §§, the environmental classes for petrol (bensin) can be found.

There are two environmental classes for petrol in Sweden. Petrol environmental class 1, in the law, equals the former national standard SS 155422. This standard is now included as a national Appendix of EN 228. Under the headline Bensin i miljöklass 2 (Petrol in Environmental class 2) and 6 § is petrol that equals to EN 228 and Annex 1 of the FQD found. Sweden also has three environmental classes for diesel.

Environmental class 1 and 2 for diesel equals to the national standard SS 155435. In 8-10 §§ the environmental classes for diesel can be found. Diesel Environmental class 3 and 10 § in the law, equals to the EN 590 and the Annex II of the FQD. Environmental class 1 of both petrol and diesel represents the largest volumes of those fuels sold on the Swedish market.

The specific regulation about this annual FQMS Report, Article 8 in the FQD, is found in 19 § of the national law Drivmedelslag (2011:319) and in 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.

Sweden, by definition in Article 2.5 of the FQD, belongs to the Member States with low ambient summer temperatures and has applied for and been granted a vapour pressure derogation for petrol with a maximum vapour pressure of 70 kPa during the summer period in accordance with Article 3.5 of the FQD.

Transition periods between summer and winter grades of petrol vary between the north and the south parts of Sweden. The summer and winter periods are regulated in the national law (Drivmedelslag (2011:319)) and the transition periods are considered for the fuel quality report. 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, an administrative allocation to facilitate comparison between the Member States.

### *3.29.3 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) E10 (Blyfri 95) | 10.0 | 2,528,163,000 | 1,896,122 | 284 | 341 | 18 of 18 |
| Unleaded petrol (minimum RON ≥ 98) E5 (Blyfri 98) | 5.0 | 149,847,000 | 112,385 | 91 | 67 | 18 of 18 |
| **Total petrol** | | **2,678,010,000** | **2,008,507** | **375** | **408** | |
| Diesel fuel B7 (Diesel Mk1) | 7.0 | 4,035,126,000 | 3,284,593 | 416 | 376 | 6 of 6 |
| Diesel fuel B7 (Diesel Mk3) | 7.0 | 291,145,000 | 236,992 | 14 | 18 | 5 of 6 |
| **Total diesel** | | **4,326,271,000** | **3,521,585** | **430** | **394** | |

### *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: | UK Department for Transport |
| Country size: | Small |
| Summer period: | 1 June to 31 August |
| FQMS used: | National system |
| Location of sampling: | Refineries, terminals, and refuelling stations |

### *3.30.2 Fuel quality monitoring service*

***Sampling***
Sampling is done at refineries, terminals, and refuelling stations. Samples are done routinely throughout the year and across all regions of the UK, including Northern Ireland. 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 European standards.

***Fuel quality monitoring system administration***
The Department for Transport has responsibility for the implementation of the FQD for Northern Ireland and oversees the FQMS. The UK fuel quality monitoring system uses industry quality analyses on batches of fuel produced in, or imported into, Northern Ireland and the UK as a whole, plus samples taken at distribution terminals and forecourts (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 fuel refineries within the UK and approximately 50 distribution terminals.

***National legislation that transposed the Fuel Quality Directive***
The FQD is transposed in the UK law, under the Motor Fuel (Composition and Content) Regulations 1999 (SI No. 3107) with amendments in 2001, 2003, 2007, 2010, 2012, and 2021. The FQD is listed under the Protocol on Ireland/Northern Ireland, Annex 1, Section 26 (Environment, Energy Efficiency).

***Reporting periods***
Seasonal periods in the UK are as follows:

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

The UK Department for Transport has responsibility for implementing the FQD for Northern Ireland (NI) and oversees the FQMS. The existing FQMS, used during the reporting period for 2023 does not allow disaggregation of NI data from data collected for UK as a whole.

For 2023, the data provided in the tabs ‘Petrol [number]’ and ‘Diesel [number]’ is based on fuel quality data for UK as a whole rather than NI only. As fuel sold and used in NI derives from the same refineries and distribution points supplying the whole of the UK, we consider the quality of the fuel monitored across the whole of the UK to be an accurate representation of the fuel used in NI.

The UK FQMS uses industry quality analyses on batches of fuel produced in, or imported to, NI and the UK as a whole, plus samples taken at distribution terminals and forecourts (to check for 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.

### 3.30.3 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 | |
| No data | | | | 363 | 483 | 18 of 18 |
| No data | | | | 81 | 82 | 18 of 18 |
| **Total petrol** | **No data** | **15,165,562,913** | **11,450,000** | **565** | | |
| Diesel fuel B7 | | | | 1,440 | 999 | 6 of 6 |
| **Total diesel** | **No data** | **27,065,088,757** | **22,870,000** | **1,440** | **999** | |

### 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/CM | 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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