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EU fuel quality monitoring — 2015

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Abbreviations

B+	Diesel fuel with > 7 % (v/v) biodiesel content
B0	Diesel fuel with no biodiesel content
B5	Diesel fuel with up to 5 % (v/v) biodiesel content
B7	Diesel fuel with up to 7 % (v/v) biodiesel content
CEN	European Committee for Standardization
CPSC	Cyprus Petroleum Storage Company
CTIA	Czech Trade Inspection Authority
DG	Directorate General
E+	Petrol with > 10 % ethanol content
E0	Petrol with no ethanol content
E5	Petrol fuel with up to 5 % (v/v) ethanol content
E10	Petrol with up to 10 % ethanol content
EEA	European Environment Agency
ELOT	Hellenic Organization for Standardization
EPA	Environmental Protection Agency, Denmark
ETC/ACM	European Topic Centre on Air Pollution and Climate Change Mitigation
EU	European Union
EU-28	28 European Union Member States
FAME	Fatty acid methyl ester
FQD	Fuel Quality Directive
FQMS	Fuel Quality Monitoring System
ISO	International Organization for Standardization
kPa	Kilopascal
L	Large country (i.e. having total automotive road fuel sales of > 15 million tonnes per annum)
MIT	Ministry of Industry and Trade, Czech Republic
MON	Motor octane number
MMT	Methylcyclopentadienyl manganese tricarbonyl
ppm	Parts per million
QA/QC	Quality Assurance/Quality Control
QCLF	Quality Control of Liquid Fuels
RON	Research octane number
S	Small country (i.e. having total automotive road fuel sales of < 15 million tonnes per annum)
SAMTS	State Agency for Metrological and Technical Surveillance, Bulgaria
TL	Tolerance limit
UBA	Federal Environment Agency, Germany
% v/v	Percentage by volume

Executive summary

Each year, under the requirements of the European Union (EU) Fuel Quality Directive (FQD) ([1]), EU Member States must report various types of information relating to the quality of petrol and diesel fuels sold 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 the FQD. From 2015 onwards, the European Environment Agency (EEA) has been supporting the European Commission's Directorate-General for Climate Action in the compilation, quality checking and dissemination of information reported under the FQD.

The requirements of the FQD have evolved with the introduction of new fuel specifications and reporting requirements. The first FQD specifications for petrol and diesel sold for road transport in the EU came into force on 1 January 2000, the second on 1 January 2005 and the third on 1 January 2009, all of which limited the sulphur content of all automotive road fuels used in the EU to 10 parts per million (ppm). Additional requirements are defined in the European Standard for the Fuel Quality Monitoring System (FQMS) (EN 14274).

This report provides a summary of the information reported by Member States for 2015, describing the quality of petrol and diesel used for road transport in the EU.

All EU Member States, except Romania, submitted fuel quality reports for 2015. Some Member States provided reports later than the required deadline of 31 August 2016. The key findings from the information reported are as follows:

- Fuel sales in just eight Member States accounted for more than 80 % of total EU fuel sales in 2015. The 15 Member States with the lowest fuel sales accounted for less than 10 % of total EU sales.
- EU fuel sales continue to be dominated by diesel: 71 % (247 792 million litres) of fuel sold was diesel and 29 % was petrol (100 726 million litres). Diesel sales increased by 0.7 % compared with the previous year, whereas petrol sales decreased by 0.5 %.
- The fraction of diesel fuel sales has increased over the years, from 55.6 % of total sales in 2001 to 71 % in 2015. This reflects to a large degree the increasing dieselisation of Europe's vehicle fleet during that period. Diesel fuel consumption is significant in most of the 28 EU Member States (> 60 % of total fuel sales) with the exception of Cyprus, Greece, Malta and the Netherlands.
- The majority of petrol sales in 2015 comprised fuels with a petrol grade research octane number (RON) of 95, which accounted for 88 % of the total petrol fuel sales; 6 % of sales were of fuel with RON between 95 and 98; and 6 % were of fuel with RON 98 or more. There was an insignificant proportion of RON 91 sales.
- Almost all diesel sold in the EU contains biodiesel, as 82.5 % of diesel fuel is of the B7 product type (i.e. containing up to 7 % fatty acid methyl esters) and 17.1 % is of B+ product type (i.e. containing more than 7 % fatty acid methyl esters), whereas the majority of petrol sold (85 %) contains bioethanol.
- Of petrol sold in the EU in 2015, 75.4 % was of the product type E5 (i.e. having up to 5 % ethanol content, whereby the ethanol is derived from biofuels or is of biogenic origin). A total of 9.3 % was E10 (i.e. up to 10 % ethanol content) and 15.2 % was E0 (no ethanol content). Only 0.1 % of petrol was E+ (i.e. > 10 % ethanol content).

([1]) Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 as amended by Directive 2009/30/EC, OJ L 140, 5.6.2009, pp. 88–113.

1 Introduction

1.1 Context

The road transport sector is a major contributor to air pollution and greenhouse gas emissions in Europe. Significant efforts are made by vehicle manufacturers to optimise vehicles in terms of energy conversion efficiency, exhaust emission levels and the durability of emission control systems (e.g. catalytic converters). Having clean fuels available on the market and following strict technical specifications with regard to them contributes to achieving higher levels of performance from vehicles. The role of liquid fuels and their contribution to air pollution and greenhouse gas emissions has been recognised in European Union (EU) law, which has stipulated minimum quality requirements and reduction targets for a range of different petroleum and bio-based fuels.

Each year, EU Member States report the quality of petrol and diesel used for road transport to the European Commission, in line with their obligations under the Fuel Quality Directive (FQD; 98/70/EC), as amended by Directive 2009/30/EC. From 2015 onwards, this reporting is to be managed by cooperation between the European Commission and the European Environment Agency (EEA). The submission procedure for monitoring information and country reports has changed with the new role of the EEA with regard to FQD monitoring and reporting. Member States now use the European Environment Information and Observation Network Reportnet infrastructure for reporting the required information.

This report summarises the information on the quality of petrol and diesel fuel sold in the EU for the year 2015.

The key documents that lay out the official requirements for the quality of fuel sold in the EU as well as its monitoring and reporting are the following:

- **Directive 98/70/EC** of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (see http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:31998L0070);
- **Commission Decision 2002/159/EC** of 18 February 2002 on a common format for the submission of summaries of national fuel quality data (see http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002D0159);
- **European Standard EN 14274:2003** describing the Fuel Quality Monitoring System (FQMS) for assessing the quality of petrol and automotive diesel fuel marketed in any of the EU Member States within the European Community;
- **Directive 2003/17/EC** of 3 March 2003 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels (see http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32003L0017);
- **Directive 2009/30/EC** of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (see http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32009L0030).

1.2 Report structure

This report is organised into four chapters as follows:

- Chapter 1 provides an introduction to the report.
- Chapter 2 describes the reporting requirements and the summary format for each Member State's submission.
- Chapter 3 provides an overall EU summary.
- Chapter 4 provides a summary of each Member State's submission.

2 Reporting by European Union Member States

A reporting template is used by European Union (EU) Member States for their reporting obligations. Its purpose is to provide the necessary information and guidance for the preparation of national reports and to ensure that all the required information has been provided. A number of consistency tools and checks are included in the template to facilitate data entry, as well as to provide a standard format for the presentation of the data collected.

This report provides a summary, for the EU overall and for each Member State, of the information received.

The individual country profiles present information on four aspects:

1. country details (responsible organisations, country size, summer period, a description of the Fuel Quality Monitoring System (FQMS) used and the location of sampling);

2. FQMS information, including a description of the sampling undertaken, FQMS administration, national legislation that transposed the Fuel Quality Directive and reporting periods;

3. fuel sales information, including details of fuel sales by fuel type, bioethanol contents, the number of samples taken in winter and summer periods and the number of technical parameters measured;

4. exceedances of the fuel quality limits, including a summary of the parameters for which exceedances were reported for the fuel grades measured.

3 European Union summary

3.1 Fuel quality monitoring 2015

The European Environment Agency (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/ACM).

In the 2015 reporting year, 27 of the 28 European Union (EU) Member States (EU-28) submitted their fuel quality reports in accordance with the requirements of the Fuel Quality Directive (FQD). Romania did not submit a report. During the QA/QC procedure, the ETC/ACM reviewers posed in total 84 questions to EU Member States, relating to the completeness and consistency of their submitted datasets. The most common findings communicated to Member States following the quality checks performed on the information reported were:

- Fuel Quality Monitoring System (FQMS) model not declared;
- no fuel sales reported in the regional sampling sheets;
- biofuel content not provided or incorrect units used;
- missing values for various fuel parameters;
- summer-grade fuel samples taken outside the summer period;
- use of non-numeric values (e.g. the '<' symbol) for different fuel properties (e.g. oxygenates, sulphur, lead, manganese), which produces an error in the relevant evaluation cells of the reporting template;
- exceedances of certain fuel quality parameters (e.g. summer vapour pressure, sulphur content, etc.), without specifying the number of samples outside the tolerance limits (TL), or providing any explanations or a description of the action taken;
- analytical and statistical values (e.g. maximum, minimum, median, mean, etc.) reported for the full year not consistent with the corresponding summer/winter data.

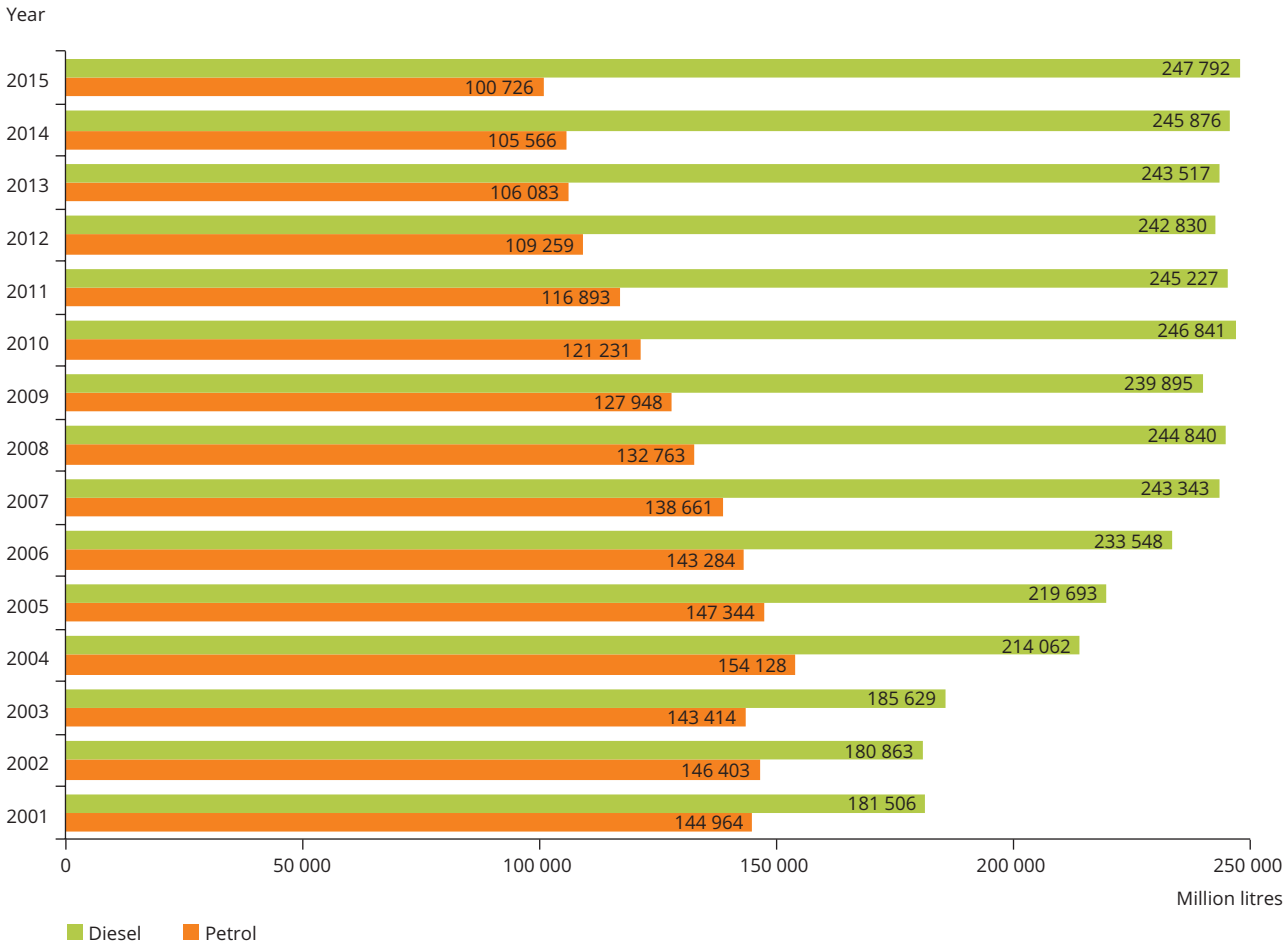
Most of these issues could be solved directly with the Member States during the communication process, by means of them completing missing information, correcting erroneous values or providing the necessary clarifications to comments. Following the QA/QC procedure, 19 Member States submitted revised datasets.

There are three outstanding issues that were not resolved during the QA/QC procedure. These are briefly described below.

- Romania did not provide a fuel quality report.
- The Netherlands has not performed sampling and analysis of summer grade fuels.
- The United Kingdom provided only the analytical and statistical results for the full year for each fuel grade without providing the relevant information for summer and winter fuel. The United Kingdom stated that it used its own national system for fuel quality monitoring, which takes a large number of samples at service stations, as well as at distribution and import terminals and refineries, and that this approach provides a degree of confidence equivalent to that provided by European Standard EN 14274:2003.
- Finland reported a large number of exceedances in the aromatics content of petrol fuel.

Figures 3.1, 3.2, 3.3 and Table 3.1 summarise the main information on the FQMS collected from Member States' submissions, including fuel sold, model used, country size and sampling method, as well as the number of samples and the number of measurements outside the tolerance limits.

Figure 3.1 EU petrol and diesel fuel sales in 2015 (million litres)



Note: Data for Romania refer to 2014, as no data were submitted for 2015.

Figure 3.2 2015 EU petrol and diesel fuel sales

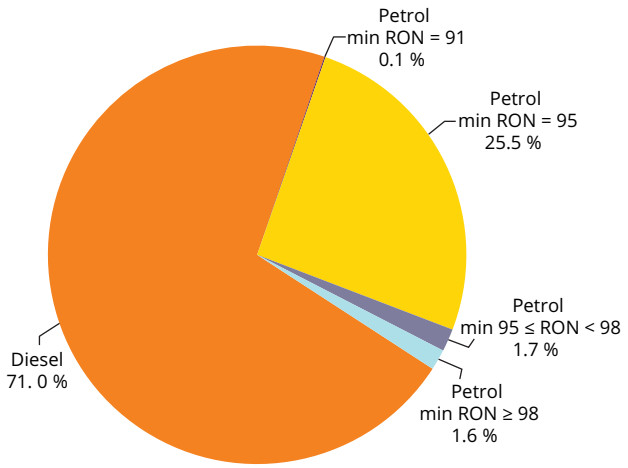
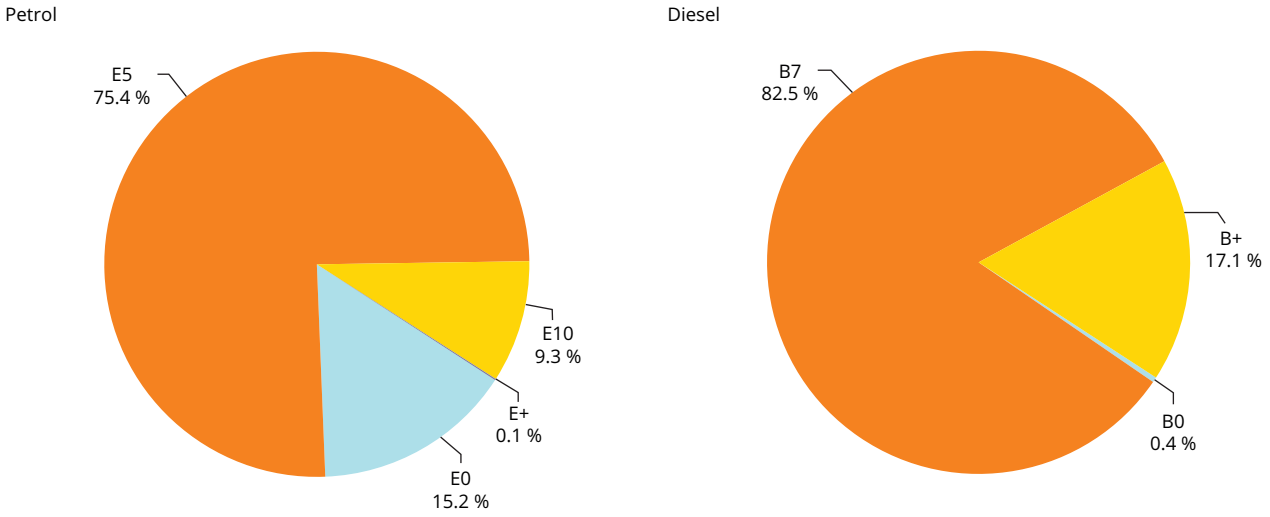


Figure 3.3 shows the percentage of fuel with and without any biocomponents for petrol and diesel sold in the EU. It is evident that almost all diesel sold in the EU contains biodiesel, whereas the majority of petrol sold contains bioethanol.

The average percentage content of biodiesel and bioethanol in diesel and petrol sales has not been calculated because most countries have not reported the exact biofuel content in the various fuel grades.

Figure 3.3 Use of biocomponents in petrol and diesel



Note: B+, diesel fuel with > 7 % (v/v) biodiesel content; B0, diesel fuel with no biodiesel content; B7, diesel fuel with up to 7 % (v/v) biodiesel content; E+, petrol with > 10 % ethanol content; E0, petrol with no ethanol content; E5, petrol fuel with up to 5 % (v/v) ethanol content; E10, petrol with up to 10 % ethanol content.

Table 3.1 FQMS summary

Member State	FQMS model	Country size	Summer and winter sampling	Total samples required [a]	
				Petrol	Diesel
Austria	A	S	Yes	108	105
Belgium	National	S	Yes	200	100
Bulgaria	A	S	Yes	106	100
Croatia	C	S	Yes	104	100
Cyprus	C	S	Yes	106	100
Czech Republic	C	S	Yes	104	105
Denmark	C	S	Yes	200	100
Estonia	C	S	Yes	201	100
Finland	A	S	Yes	200	100
France	A	L	Yes	606	200
Germany	B	L	Yes	837	400
Greece	A	S	Yes	105	100
Hungary	C	S	Yes	104	100
Ireland	C	S	Yes	100	100
Italy	A	L	Yes	200	200
Latvia	National	S	Yes	112	200
Lithuania	C	S	Yes	104	100
Luxembourg	C	S	Yes	200	100
Malta	C	S	Yes	100	100
Netherlands	A	S	No	101	100
Poland	B	L	Yes	444	400
Portugal	C	S	Yes	108	100

Table 3.1 FQMS summary (cont.)

Member State	FQMS model	Country size	Summer and winter sampling	Total samples required ([a])	
				Petrol	Diesel
Romania	N/A	N/A	N/A	N/A	N/A
Slovakia	C	S	Yes	101	100
Slovenia	C	S	Yes	111	100
Spain	A	L	Yes	216	200
Sweden	National	S	Yes	103	100
United Kingdom	National	L	No	210	200

Note: L, large country (i.e. total automotive road fuel sales of > 15 million tonnes per annum); S, small country (i.e. total automotive road fuel sales of < 15 million tonnes per annum).

([a]) Based on EN 14274:2003.

A short description of the different FQMS models follows.

European Standard EN 14274 Statistical Model 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 different 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 and destructive or other circumstances 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 Statistical Model 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 geographic and administrative criteria. To ensure that fuel variability is reliably captured, a large number of samples per grade is required: 100 for small countries and 200 for large countries.

European Standard EN 14274 Statistical Model 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.

3.1.1 Minimum number of samples

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 3.2.

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 shall be calculated proportionally from the number of samples for the corresponding parent grade, using the following equation:

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

Table 3.2 Minimum number of samples per fuel grade in each winter and summer period

Model	A	B	C
Small country			
Petrol, per grade	50	100	50
Diesel fuel	50	100	50
Large country			
Petrol, per grade	100	200	N/A
Diesel fuel	100	200	N/A

Note: N/A, not applicable.

Table 3.3 Sampling summary

Member State	Samples taken (and samples required in brackets, from Table 3.1)		Non-compliant		Parameters outside tolerance limits for non-compliant samples
	Petrol	Diesel	Petrol	Diesel	
Austria	106 (108)	100 (105)	0	0	None
Belgium	1 011 (200)	4 283 (100)	15	63	RON, MON, petrol distillation, diesel density, diesel distillation, diesel sulphur content
Bulgaria	142 (106)	164 (100)	0	0	None
Croatia	158 (104)	196 (100)	2	0	Vapour pressure
Cyprus	310 (106)	171 (100)	2	5	Vapour pressure, diesel sulphur content
Czech Republic	1 025 (104)	1 218 (105)	12	2	Vapour pressure, RON, MON, oxygen content, diesel sulphur content
Denmark	208 (200)	101 (100)	15	1	Vapour pressure, aromatics, diesel sulphur content
Estonia	350 (201)	200 (100)	N/A	N/A	RON, MON, vapour pressure, petrol sulphur content, diesel distillation, diesel sulphur content
Finland	227 (200)	117 (100)	58	0	Petrol distillation, aromatics, oxygen content, ethanol content, petrol sulphur content
France	416 (606)	222 (200)	8	0	Vapour pressure, oxygen content, ethanol content
Germany	843 (837)	400 (400)	22	1	Vapour pressure, oxygen content, ethanol content, FAME content
Greece	114 (105)	100 (100)	0	11	FAME content
Hungary	120 (104)	120 (100)	N/A	0	RON, MON, vapour pressure, petrol sulphur content, aromatics
Ireland	97 (100)	97 (100	1	0	Vapour pressure
Italy	200 (200)	200 (200)	N/A	0	RON, MON, olefins content
Latvia	70 (112)	175 (200)	4	0	RON
Lithuania	106 (104)	100 (100)	0	0	None
Luxembourg	206 (200)	100 (100)	18	0	Vapour pressure, petrol distillation, olefins content, aromatics
Malta	103 (100)	100 (100)	0	2	Diesel Sulphur content
Netherlands	62 (101)	68 (100)	N/A	N/A	RON, MON, oxygen content, petrol sulphur content, diesel distillation
Poland	526 (444)	407 (400)	9	8	RON, aromatics, petrol sulphur content, diesel distillation, diesel sulphur content
Portugal	265 (108)	370 (100)	7	2	RON, vapour pressure, oxygen content, petrol sulphur content, diesel sulphur content, FAME content

Table 3.3 Sampling summary (cont.)

Member State	Samples taken (and samples required in brackets, from Table 3.1)		Non-compliant		Parameters outside tolerance limits for non-compliant samples
	Petrol	Diesel	Petrol	Diesel	
Romania	N/A	N/A	N/A	N/A	N/A
Slovakia	146 (101)	116 (100)	2	1	Vapour pressure, diesel distillation
Slovenia	134 (111)	151 (100)	0	0	None
Spain	400 (216)	200 (200)	7	0	RON, Vapour pressure, oxygen content
Sweden	597 (103)	705 (100)	N/A	0	Vapour pressure
United Kingdom	1 351 (210)	2 414 (200)	33	1	Vapour pressure, oxygen content, aromatics, diesel density

Note: FAME, fatty acid methyl ester; MON, motor octane number; N/A, not available (not reported by Member States); RON, research octane number. The numbers of samples required per country are also shown in Table 3.1.

The number of samples taken for petrol and diesel and the number of exceedances found are summarised in Table 3.3 for all EU Member States. The fuel parameters outside the respective tolerance limits are also included.

On the basis of the information presented above, the following general remarks can be made.

- Most Member States are using one of the Statistical Models A, B or C. Four Member States are using a national monitoring system.
- Most key fuel parameters in the samples taken are within the tolerance limits. Some exceedances are observed.
- Almost all Member States — with the exception of the Netherlands and the United Kingdom — have provided information for both summer and winter fuel grades. Romania did not submit a report.
- For petrol reporting, exceedances of the summer vapour pressure were reported in 15 Member States, exceedances of the RON were reported in 10 Member States and exceedances of aromatics, oxygen content or distillation parameters were reported in 14 Member States.
- For diesel reporting, of the seven fuel parameters that require testing and analysis, the most common parameters falling outside the specifications were sulphur content (in eight Member States) and fatty acid methyl ester (FAME) content (in three Member States).
- It should be noted that the number of non-compliance issues reported by the different Member States cannot be verified.

3.2 Fuel availability for 2015

Table 3.4 summarises fuel sales for the EU-28 for the different petrol grades and for diesel.

On the basis of Table 3.4, the following general remarks can be made:

- Diesel fuel consumption is dominant in most of the EU-28 (> 60 % of total fuel sales), with the exception of Cyprus, Greece, Malta and the Netherlands.
- The eight Member States with the highest volumes of fuel sold account for more than 80 % of total EU sales.
- The 15 Member States with the lowest volumes account for less than 10 % of total EU fuel sales.
- The number of different fuel grades and biofuel blends sold in the EU Member States is increasing and, therefore, the reporting and monitoring processes are becoming increasingly complex.

Table 3.4 Fuel sales (petrol and diesel for 2015, in million litres)

Member State	Minimum RON = 91	Minimum RON = 95	Petrol sales 95 ≤ RON < 98	RON ≥ 98	Total petrol	Total diesel
Austria	26		2 091	83	2 199	7 705
Belgium		1 542	268		1 811	8 467
Bulgaria		576		37	614	1 902
Croatia		726	18	14	758	1 911
Cyprus			444	25	469	316
Czech Republic	7	2 035		56	2 098	5 433
Denmark	262	1 533			1 795	3 122
Estonia	1		285	33	318	793
Finland		1 246		733	1 979	2 907
France		7 736		1 987	9 723	41 240
Germany		23 235		1 065	24 300	43 243
Greece		3 144	4	141	3 288	2 916
Hungary		1 651		64	1 715	3 810
Ireland		1 690			1 690	3 170
Italy		10 427			10 427	29 461
Latvia		238	26		264	1 036
Lithuania		266		11	277	1 442
Luxembourg		328	70		398	1 844
Malta			95		95	120
Netherlands		5		0	5	7
Poland		4 442		489	4 931	14 038
Portugal			1 345	102	1 448	5 803
Romania	N/A	N/A	N/A	N/A	N/A	N/A
Slovakia		805		12	817	1 805
Slovenia			517	55	572	166
Spain		5 743		453	6 196	25 602
Sweden		3 313		113	3 427	5 785
United Kingdom		16 586	821		17 407	28 953

4 Summary of Member States' submissions

4.1 Austria

4.1.1 Country details

Responsible organisations:	Austrian Environment Agency
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model A
Location of sampling:	Refuelling stations

4.1.2 Fuel quality monitoring service

Sampling
This information was provided in the national language in the accompanying report.

Fuel Quality Monitoring System administration
This information was provided in the national language in the accompanying report.

National legislation that transposed the Fuel Quality Directive

The transposition of the Fuel Quality Directive (FQD) into national law, as well as the Renewable Energy Directive (RED), was carried out by an amendment of the Austrian Fuel Ordinance, which was published in 2012 (BGBl. II No 398/2012).

Reporting periods
There is no arctic weather condition in Austria. The transition periods are defined as between 1 and 31 October and between 1 March and 30 April. Samples taken within the transition periods are regarded as 'winter' samples and are part of the Fuel Quality Monitoring System (FQMS).

4.1.3 Sales

Table 4.1 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Regular unleaded petrol (minimum RON = 91) (Normal E0)	0.0	5 376	4			
Regular unleaded petrol (minimum RON = 91) E5 (Normal)	4.8	25 548 256	19 049	0	3	13 of 20
Unleaded petrol (minimum 95 ≤ RON < 98) (Super E0)	0.0	43 011	32			
Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Super)	4.9	2 090 488 855	1 558 668	50	50	13 of 20
Unleaded petrol (minimum RON ≥ 98) (Super Plus E0)	0.0	10 618	8			
Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus)	4.8	83 306 984	62 030	0	3	12 of 20
Total petrol		**2 199 403 100**	**1 639 792**	**50**	**56**	
Diesel fuel (Diesel B0)	0.0	372 816 591	310 556	49	49	10 of 10
Diesel fuel B7 (Diesel)	6.6	7 332 304 447	6 166 468	1	1	8 of 10
Total diesel		**7 705 121 038**	**6 477 024**	**50**	**50**	

4.1.4 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.

4.2 Belgium

4.2.1 Country details

Responsible organisations:	Fapetro
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	National system
Location of sampling:	Refuelling stations and depots

4.2.2 Fuel quality monitoring service

Sampling
The International Organization for Standardization (ISO) EN 17020 certified organisation, Fapetro, is responsible for the reporting of fuel quality in Belgium. Belgium uses a national system instead of the statistical models and takes samples at refuelling stations, depots and pumps with private owners. Only samples for refuelling stations and depots are reported here. Petrol at depots is not sampled due to blending issues.

Belgium controls many more parameters than are imposed by the European Commission to ensure the quality of the fuel sold. A template is available that shows in detail the parameters analysed and methods used for every fuel type.

Only a very small number of samples were non-compliant, due to involuntary contamination.

Belgium has used ISO 4259 for the interpretation of analysis results since 1 January 2009. Samples were taken in compliance with EN 14275 (latest version). All samples were analysed by laboratories that were ISO 17025 certified. All test methods used were accredited (or a demand for accreditation was being progressed at the time of testing).

Moreover, Fapetro performed a biannual audit of the laboratories to reassure itself of the quality of the reported samples analysed.

Pump labelling is regulated by national legislation.

Fuel Quality Monitoring System administration
All the information can be found above.

National legislation that transposed the Fuel Quality Directive
Transposition into national law was effected by the Ministerial decree of 24 January 2002 (latest version) and needs to be viewed in relation to Fapetro's ISO 17020 procedures.

Reporting periods
Concerning the results provided for petrol, Fapetro drew attention to the Belgian annex of the Bureau for Standardisation (NBN) EN 228, in particular for the vapour pressure parameter.

National specifications for vapour pressure (minimum-maximum) were:

- in summer: 45.0–60.0 kPa;
- in winter: 65.0–95.0 kPa;
- in the two transition periods (April and October): 45.0–95.0 kPa.

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

The transition periods are used to give the fuel producers the ability to adapt the production of fuel in order to meet the specifications for summer or winter fuel quality.

However, every year Fapetro has noticed a rise in Dry Vapour Pressure Equivalent (DVPE) infringements in the month of May. These infringements are involuntary and attributable to low stock rotation, primarily in small retail stations (at the end of the chain). At these stations, the 'winter' grade petrol stays in stock longer, as they do not sell a great deal. As a result, during the transfer period from 'winter' to 'summer' petrol quality is altered as the petrol is mixed. All these infringements were small, harmless to the environment and involuntary.

Non-compliant petrol samples for vapour pressure were attributed to low stock rotation in the transition periods between winter and summer grades.

4.2.3 Sales

Table 4.2 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Essence95/Benzine95)	4.0	1 542 480 268	1 153 004	535	369	16 of 19
Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Essence98/Benzine98)	4.0	268 074 916	200 386	44	63	16 of 19
Total petrol		**1 810 555 184**	**1 353 390**	**579**	**432**	
Diesel fuel B7 (Diesel10S)	6.0	8 466 551 351	7 048 404	2 043	2 240	6 of 7
Total diesel		**8 466 551 351**	**7 048 404**	**2 043**	**2 240**	

4.2.4 Exceedances of the fuel quality limits

Petrol fuel grades

Tables 4.3 and 4.4 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.3 Unleaded petrol (minimum RON = 95) E5 (Essence95/Benzine95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95	95.0	96.9	2	302
Motor octane number	–	> 85	84.6	88.8	6	904
Distillation						
— evaporated at 100 °C	% v/v	> 46	46.9	68.8	1	904
— evaporated at 150 °C	% v/v	> 75	80.8	97.5	1	904

Table 4.4 Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Essence98/Benzine98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95	97.0	99.4	4	21
Distillation — evaporated at 150 °C	% v/v	> 75	79.5	91.9	1	107

Diesel fuel grades
Table 4.5 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.5 Diesel fuel B7 (Diesel10S)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Density at 15 °C	kg/m^3	< 845	823.2	843.8	3	4 283
Distillation — 95 %-point	°C	< 360	251.6	365.0	4	4 283
Sulphur content	mg/kg	< 10	3.0	11.2	56	4 283

4.3 Bulgaria

4.3.1 Country details

Responsible organisations:	1. Ministry of Environment and Water 2. State Agency for Metrology and Technical Surveillance to Ministry of Economy and Energy
Country size:	Small
Summer period:	16 April to 15 October
FQMS used:	EN 14274 Statistical Model A
Location of sampling:	Refuelling stations

4.3.2 Fuel quality monitoring service

Sampling
Control of liquid fuel quality is performed by the President of the State Agency for Metrological and Technical Surveillance (SAMTS), via the Directorate-General 'Quality Control of Liquid Fuels' (DG QCLF). The DG QCLF officials are authorised by the President of SAMTS to carry out the following activities: taking samples of liquid fuels, testing them and reporting results.

Bulgarian legislation introduced Directive 98/70/EC, as amended by Directive 2009/30/EC, Directive 2009/28/EC and Directive 1999/32/EC. The fuel quality monitoring model for 2015 was Statistical Model A (small country), in accordance with EN 14274 (Statistical Model B was in use until 2014).

The DG QCLF staff inspected liquid fuels in refineries, petroleum depots and terminals, refuelling stations and mobile tanks for liquid fuel transport.

In fulfilment of the requirements of EN 14274, a minimum of 200 locations were established for control, providing 50 petrol samples and 50 diesel fuel samples during the summer and winter periods. The number of samples of petrol of RON ≥ 98 was calculated by means of a formula, in accordance with EN 14274, whereby the market share of petrol of RON ≥ 98 was around 6 %.

The locations were chosen by region, proportionally determined on the basis of the annual fuel consumption in each region, and using randomisation software. Each location has a unique identification number.

Liquid fuel samples were collected every week, in accordance with EN ISO 3170 and EN 14275. Samples were tested only in the permanently sited laboratory, pursuant to European Directive 98/70/EC; methods were in accordance with EN 228 and EN 590.

Fuel Quality Monitoring System administration
The organisations responsible for the management and implementation of the FQD are the Ministry of Environment and Water and SAMTS, via the DG QCLF.

The DG QCLF takes samples of transport and heating liquid fuels while the Executive Agency Maritime Administration takes samples from vessels; both then send them for testing in an accredited laboratory. Control is carried out by inspections of distributed fuels, inspections of their accompanying documents and by imposing administrative measures when non-compliance is identified.

The DG QCLF is a public body, responsible for taking action where non-compliance is found in liquid fuel control. Every month, every 3 months and every year the DG QCLF provides data on the SAMTS website on the number of inspections, the number of cases of non-compliance and the number and type of imposed administrative measures for the reference period.

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

National legislation that transposed the Fuel Quality Directive

European liquid fuel quality legislation has been introduced into Bulgarian legislation by the Clean Ambient Air Act, the Energy from Renewable Sources Act and the regulation on the quality requirements, conditions, order and control of liquid fuels. The Clean Ambient Air Act and the regulation on the quality requirements, conditions, order and control of liquid fuels implement the requirements of Directive 98/70/EC and standards EN 228 and EN 590. The Energy from Renewable Sources Act imposes requirements for the blending of liquid fuels with a biocompetent for transport. According to Article 47 of the Energy from Renewable Sources Act, those who provide the market with liquid fuels are obliged to provide diesel fuel with a minimum of 6 % (v/v) biodiesel.

A key difference from last year's report (for 2014) is that, from 1 March 2015 and in accordance with the Energy from Renewable Sources Act, those who provide the market with liquid fuels are obliged to provide petrol fuel with a minimum 7 % (v/v) content of bioethanol, or ethers produced from bioethanol. Two months later these percentages for blending liquid fuels were also made obligatory for refuelling stations.

Reporting periods

The 'summer period' in Bulgaria is from 16 April to 15 October; the 'winter period' is from 16 October to 15 April.

The following transition periods have been determined:

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

Samples taken during transition periods were not used for monitoring and were not included in the annual fuel quality report.

By implementing the Decision of the European Commission of 7 April 2014 for derogation from the requirements for the vapour pressure of petrol fuels, in accordance with Article 3(4) and (5) of Directive 98/70/EC on petrol and diesel fuel quality, Bulgaria was granted derogation from the requirements for the vapour pressure of petrol fuels, as follows:

- from 1 September 2014, for 6 % bioethanol in petrol, the permitted vapour pressure waiver is 8.0 kPa;
- from 1 March 2015, for 7 % bioethanol in petrol, the permitted vapour pressure waiver is 7.9 kPa.

4.3.3 Sales

Table 4.6 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (Unleaded petrol RON 95 E10)	7.0	576 276 281	432 207	50	79	19 of 19
Unleaded petrol (minimum RON ≥ 98) E10 (Unleaded petrol RON≥ 98 E10)	7.0	37 411 157	28 058	6	7	18 of 19
Total petrol		**613 687 438**	**460 265**	**56**	**86**	
Diesel fuel B7 (Diesel fuel B7)	6.0 FAME	1 901 965 730	1 616 670	83	81	6 of 7
Total diesel		**1 901 965 730**	**1 616 670**	**83**	**81**	

4.3.4 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.

4.4 Croatia

4.4.1 Country details

Responsible organisations:	Croatian Agency for the Environment and Nature
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Refuelling stations and terminals

4.4.2 Fuel quality monitoring service

Sampling
The FQMS in Croatia is based on EN 14274, using Statistical Model C (small country).

Distributors are obliged to submit annual reports for the previous year (2015) to the Croatian Agency for the Environment and Nature. They may do so until 31 March of the current year (2016).

Control and sampling is performed by the legal entity that is certified in accordance with HR EN ISO/IEC 17020 and HR EN ISO/IEC 17025.

Samples of petrol, diesel fuel and gas oil were taken each month at refuelling stations and terminals, in accordance with the 'Fuel quality monitoring programme', which is under the responsibility of the Ministry of Environmental and Nature Protection. According to national legislation that transposed the FQD, distributors are penalised in the case of any exceedance of prescribed fuel quality. Enforcement is under the responsibility of Market Inspection (Ministry of Economy). Penalties are included in the Air Protection Law (Official Gazette No 130/11, 47/14). Distributors are also penalised in the event that they do not submit data to the national database. Enforcement in this case is the responsibility of Environmental Inspection (Ministry of Environmental and Nature Protection). In 2015, five petrol samples (unleaded petrol RON 95 Eurosuper) were analysed for methylcyclopentadienyl manganese tricarbonyl (MMT).

Fuel Quality Monitoring System administration
The Republic of Croatia submitted the annual fuel quality report on 30 June 2015. This report covered the years 2013 and 2014 (Croatia became a full Member State in July 2013).

National legislation that transposed the Fuel Quality Directive
The Fuel Quality Directive (Directives 98/70/EC, 2003/17/EC, 2009/30/EC, 2011/63/EU and 2014/77/EC) were transposed into Croatian legislation by the Regulation on the quality of petroleum-derived liquid fuels (Official Gazette No 113/2013, 76/2014, 56/2015).

Reporting periods
Seasonal periods in Croatia are as follows:

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

Samples were taken and tested regardless of the transition periods and the results of analyses were reported as usual throughout the year.

4.4.3 Sales

Table 4.7 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) (RON = 95)		726 028 437	548 151	77	71	19 of 19
Unleaded petrol (minimum 95 ≤ RON < 98) (RON = 98)		17 847 912	13 475	4	2	11 of 19
Unleaded petrol (minimum RON ≥ 98) (RON = 100)		13 992 894	10 565	3	1	18 of 19
Total petrol		**75 869 243**	**572 191**	**84**	**74**	
Diesel fuel B7 (B7)		1 910 583 551	1 614 443	109	87	6 of 7
Total diesel		**1 910 583 551**	**1 614 443**	**109**	**87**	

4.4.4 Exceedances of the fuel quality limits

Petrol fuel grades
Table 4.8 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.8 Unleaded petrol (minimum RON = 95) (RON =95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	51.8	66.2	2	62

Diesel fuel grades
No exceedances of the diesel fuel quality limits were reported.

4.5 Cyprus

4.5.1 Country details

Responsible organisations:	Energy Service, Ministry of Service, Commerce, Industry and Tourism
Country size:	Small
Summer period:	16 April to 15 October
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Petrol stations, the depot at Larnaca

4.5.2 Fuel quality monitoring service

Sampling
The Ministry of Energy, Commerce, Industry and Tourism is responsible for sampling, analysis, and reporting. Analysis of samples is performed by the laboratory of the Cyprus Petroleum Storage Company (CPSC). Samples of all fuel grades were taken from petrol stations, the Larnaca depot, vehicles and other private installations of large consumers by the inspectors of the Energy Service on a daily basis. The number of samples taken from the Larnaca depot was determined by the number of petroleum shipments imported. All petroleum products held by the CPSC were tested in order to secure their compliance with EU specifications. However, only samples from retail sites are included in the statistical and analytical results of the 2015 fuel quality report. The mobile laboratory of the Energy Service carried out almost all the tests required for monitoring fuel quality in 2015 at petrol stations. The CPSC laboratory conducted only a limited number of tests, for verification purposes.

Fuel Quality Monitoring System administration
The Energy Service of the Ministry of Energy Commerce Industry and Tourism is the competent authority for monitoring the quality of fuels marketed

in the government-controlled area of Cyprus. Retail site samples were taken by the inspectors of the Energy Service on a daily surveillance programme prepared by the Chief Inspector and/or the Assistant. If non-compliant samples are discovered, the Chief Inspector, who is appointed by the Minister of Energy, Commerce, Industry and Tourism, is responsible for forbidding the sale of off-specification fuels from retail sites, or the use of off-specification fuels from private installations, and for enacting the prosecution of those responsible for the tank. Cyprus is considered as a single region. The supply of petroleum products is carried out by three companies and distribution and retail are carried out by six marketing companies. Cyprus has no refinery.

National legislation that transposed the Fuel Quality Directive

The provisions of the FQD relating to fuel specifications have been transposed into national law 148(I)/2003 as amended by decrees (KDP) P.I.252/15, P.I.200/16, P.I.102/15, P.I.326/13, P.I.327/13 and P.I.328/13.

Reporting periods

The summer period is from 16 April to 15 October and the winter period is from 16 October to 15 April. The transition period from summer to winter and vice versa is set at 6 weeks. Samples are taken and tested during these transition periods. Modifications in vapour pressure within the transition period are monitored to ensure that results comply with seasonal specifications, and are reported within the annual fuel quality report.

4.5.3 Sales

Table 4.9 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 ≤ RON < 98) (Unleaded gasoline-petrol RON 95)		443 883 600	326 385	72	85	18 of 19
Unleaded petrol (minimum RON ≥ 98) (Unleaded gasoline-petrol RON 95)		24 928 800	18 330	72	81	18 of 19
Total petrol		**468 812 400**	**344 715**	**144**	**166**	
Diesel fuel B7(Eurodiesel)	7.0	316 033 200	263 361	81	90	7 of 7
Total diesel		**316 033 200**	**263 361**	**81**	**90**	

4.5.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 4.10 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.10 Unleaded petrol (minimum 95 ≤ RON < 98) (Unleaded Gasoline-Petrol RON 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	55.3	74.6	2	157

Diesel fuel grades

Table 4.11 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.11 Diesel fuel B7 (Eurodiesel)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Sulphur content	mg/kg	< 10	3.8	907.3	5	159

4.6 Czech Republic

4.6.1 Country details

Responsible organisations:	Ministry of Industry and Trade of the Czech Republic
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Service stations

4.6.2 Fuel quality monitoring service

Sampling

The FQMS is coordinated by the Ministry of Industry and Trade of the Czech Republic (MIT) for the whole country. The Czech Trade Inspection Authority (CTIA), which acts under the jurisdiction of the MIT, 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 used in transport over the year 2015. The fuel samples were tested monthly throughout 2015. The controlling process of all fuel samples was carried out in accordance with European standards EN 228 and EN 590 and also the amendments of Czech standards ČSN EN 228:2013 and ČSN EN 590:2014.

Fuel Quality Monitoring System administration

Fuel sampling was performed in accordance with the requirements of national and European legislation and standards of the FQMS in general. The FQMS is used as a controlling system in accordance with the Czech standard ČSN EN 14274:2013 and its versions of European Standards EN 228:2012 and EN 590:2013 for petrol and diesel, namely ČSN EN 228:2013 and ČSN EN 590:2014. If the Czech Trade Inspection Authority controller finds exceedances in the fuel quality at a service station, the sale of fuels is banned until the exceedances are rectified. There is also the possibility of financial sanctions in accordance with Act No 311/2006 Coll. for fuels and petrol stations. The national legislation is transposed by the rules and obligations of the FQD. The CTIA is an administrative government institution, which comes under the jurisdiction of the MIT. The collected annual data from the fuel quality monitoring of the previous calendar year are provided by CTIA in the form of an annual report to the coordinating office, the MIT, Department of Gas Industry and Liquid Fuels. This department of the MIT is responsible for the corresponding working agenda and for reporting to the European Commission. In the Czech Republic, the FQMS has been carried out since 2001 under the management of the Department of Gas Industry and Liquid Fuels at the MIT. Since the Czech Republic's accession to the European Union in May 2004, the national FQMS has adapted to the conditions of the EU control system and is compatible with it. In addition, it has been developed in accordance with the current requirements of the FQMS.

Currently, there are two refineries in the Czech Republic and around 31 distribution terminals. The annual fuel analysis data taken from service stations that sold to the Czech trade market in the previous year were provided by the Department of Raw Material and Energy Security of MIT in cooperation with the Czech Statistical Office.

National legislation that transposed the Fuel Quality Directive

The FQD is transposed by national legislation in accordance with Air Protection Act No 201/2012 Coll. and national energy legislation. Fuel quality has been monitored by Decree No 133/2010 Coll. on requirements for fuels, monitoring of fuel composition and fuel quality and their records, as amended, combined with Act No 311/2006 Coll. for fuels and petrol stations, as amended, in accordance with Trade Licensing Act No 455/1991 Coll., as amended, and Act No 353/2003 Coll. on Excise Duties, as amended.

The MIT is responsible for the implementation of Directive 98/70/EC as subsequently amended and for the coordination of all work at national level in 2015.

Reporting periods

In 2015, 2 723 samples were checked at service stations across the whole country. In total, there were 417 samples of petrol and 560 samples of diesel checked in the summer period and 608 samples of petrol and 658 samples of diesel plus two samples of arctic diesel checked in the winter period. The results of sampling in the transition periods have been included in the two basic seasonal periods.

4.6.3 Sales

Table 4.12 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Regular unleaded petrol (minimum RON = 91) E5	5.11	6 655 000	5 000	11	9	19 of 19
Unleaded petrol (minimum RON = 95) E5	4.95	2 035 139 000	1 529 200	565	386	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5	0.56	40 596 000	30 500	32	22	19 of 19
Unleaded petrol (minimum RON ≥ 98) E+ (E85)	61.88	15 763 000	12 300			
Total petrol		**2 098 153 000**	**1 577 000**	**608**	**417**	
Diesel fuel B7 (Motorova nafta)	2.57	5 155 210 000	4 304 600	658	560	7 of 7
Diesel fuel B+ (> 7 % FAME ≤ 30%) (Smesna motorova nafta)	28.41	154 491 000	129 000			
Diesel fuel B+ (FAME > 30 %) (FAME)	100	122 944 000	108 400			
Total diesel		**5 432 645 000**	**4 542 000**	**658**	**560**	

4.6.4 Exceedances of the fuel quality limits

Petrol fuel grades

Tables 4.13 and 4.14 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.13 Regular unleaded petrol (minimum RON = 91) (Special BA-91)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	56.0	74.0	1	9

Table 4.14 Unleaded petrol (minimum RON = 95) E5 (Super BA-95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95.0	94.0	100.0	2	951
Motor octane number	–	> 85.0	83.9	88.6	3	951
Vapour pressure, DVPE required for summer period only	kPa	< 60.0	54.3	75.3	5	386
Oxygen content ([a])	% (m/m)	< 2.7	0.4	2.9	1	565

Note: ([a]) Petrol with 5 % (v/v) or less ethanol content.

Diesel fuel grades
Table 4.15 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.15 Diesel fuel B7 (Motorova nafta)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Sulphur content	mg/kg	< 10	4.9	29.5	2	1 218

4.7 Denmark

4.7.1 Country details

Responsible organisations:	Danish Environmental Protection Agency
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	National system
Location of sampling:	EN 14274 Statistical Model C Service stations

4.7.2 Fuel quality monitoring service

Sampling
Sampling and analysing is carried out by an accredited laboratory for the Danish Petroleum Association (EOF). The results are sent to the Danish Environmental Protection Agency (EPA). The laboratory is accredited in accordance with EN 14274 and EN 14275. Sampling takes place in service stations and is carried out three times a year, in spring, summer and autumn. Sampling in spring and autumn covers the winter period. The number of samples is 50 in the summer period and 50 in the winter period for each grade of petrol, if the marked proportion is at least 10 %. The same principle is also applied for diesel fuel.

Approximately 50 % of the samples are taken east of the Great Belt and approximately 50 % west of the Great Belt. The populations east and west of the Great Belt are approximately the same. The laboratory sends a proposal of sampling locations for approval by the Danish EPA. The Danish EPA makes sure that sampling takes place at all petrol companies across the country.

Fuel Quality Monitoring System administration
The Danish EPA is responsible for the implementation of articles relating to the FQMS in the Danish legislation. There are 18 terminals and two refineries in Denmark. More than 99 % of the fuels used for road transport in Denmark are distributed from the two Danish refineries or from terminals owned by members of the Danish Petroleum Association (EOF), which have to meet the Association's exchange 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, which 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. Some samples are not analysed for RON, MON, oxygen and oxygenates, because of their small impact on the environment. Lead was not analysed because it has not been added to Danish petrol for many years.

National legislation that transposed the FQD
Part of the FQD is implemented in Danish Statutory Order No 1311 of 4 December 2014.

Reporting periods
Denmark was granted the 'arctic' derogation in Article 3(4) and (5).

4.7.3 Sales

Table 4.16 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Regular unleaded petrol (minimum RON = 91) E5 (Oktan 92 unleaded)	5.0	262 046 000	196 536	50	54	19 of 19
Unleaded petrol (minimum RON = 95) E5 (Oktan 95 unleaded) [a]	5.0	1 532 630 000	1 149 474	50	51	19 of 19
Total petrol		**1 794 676 000**	**1 346 010**	**100**	**105**	
Diesel fuel B7(Miljødiesel (< 0.01 % S))	7.0	3 122 413 000	2 341 810	50	51	6 of 7
Total diesel		**3 122 413 000**	**2 341 810**	**50**	**51**	

Note: [a] In Denmark there is only one company marketing petrol with RON > 98. For competitive reasons, the sale of RON 99 is included in the sale figures for RON 95. RON 99 forms < 10 % of the total petrol sales in Denmark.

4.7.4 Exceedances of the fuel quality limits

Petrol fuel grades

Tables 4.17 and 4.18 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.17 Regular unleaded petrol (minimum RON = 91) E5 (Oktan 92 unleaded)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	65.2	79.7	10	54
Hydrocarbon analysis — aromatics	% v/v	<35	27.0	36.1	1	104

Table 4.18 Unleaded petrol (minimum RON = 95) E5 (Oktan 95 unleaded)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	64.3	71.5	1	51
Hydrocarbon analysis — aromatics	% v/v	< 35	31.1	36.1	3	101

Diesel fuel grades

Table 4.19 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.19 Diesel fuel B7 (Miljødiesel (< 0.01 % S))

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Sulphur content	mg/kg	< 10	5.3	11.4	1	101

4.8 Estonia

4.8.1 Country details

Responsible organisations:	Ministry of Environment, Estonian Environmental Research Centre
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Retail fuel stations

4.8.2 Fuel quality monitoring service

Sampling
Sampling is undertaken in accordance with standard EN 14275 by the Estonian Environmental Research Centre, which is also responsible for the analysis and reporting of results. Samples are taken only from retail fuel stations. Sampling points are selected so that most of the refuelling stations are covered within a period of 2 years. Sampling is undertaken so that summer/winter period samples are evenly distributed throughout a particular period.

Fuel Quality Monitoring System administration
The Estonian Ministry of Environment is responsible for managing and implementing the FQD. Fuel sampling and analysis is contracted privately to the Estonian Environmental Research Centre and the annual report deadline is 30 May each year. When non-compliant samples occur, the public bodies responsible for taking action are the Estonian Environmental Inspectorate and the Estonian Tax and Customs Board. These two bodies are informed immediately by email and by post. If necessary, new samples are taken by the Tax and Customs Board. The system was designed in 2004–2005 using EN 14274 Statistical Model C.

National legislation that transposed the Fuel Quality Directive
Elements of the FQD requirements are described in Ministry of the Environment Regulation No 45 of 21 June 2013.

Reporting periods
The winter period is from 1 December to 28/29 February. The summer period is from 1 May to 30 September. Transition periods are from 1 October to 30 November and from 1 March to 30 April. No samples were taken during the transition periods.

4.8.3 Sales

Table 4.20 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Regular unleaded petrol (minimum RON = 91)		826 667	620			
Unleaded petrol (minimum 95 ≤ RON < 98) E5	1.86	284 923 676	212 268	90	90	13 of 19
Unleaded petrol (minimum RON ≥ 98) E5	0.2	32 647 321	24 322	85	85	13 of 19
Total petrol		**317 570 997**	**237 210**	**175**	**175**	
Diesel fuel B7		792 577 057	660 217	100	100	6 of 7
Total diesel		**792 577 057**	**660 217**	**100**	**100**	

4.8.4 Exceedances of the fuel quality limits

Petrol fuel grades
Tables 4.21 and 4.22 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.21 Unleaded petrol (minimum 95 ≤ RON < 98) E5

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	--	> 95	94.1	96.9	N/A	180
Motor octane number	--	> 85	84.3	85.9	N/A	180
Vapour pressure, DVPE required for summer period only	kPa	< 60	64.0	93.9	N/A	180
Sulphur content	mg/kg	< 10	3.3	11.9	N/A	180

Note: N/A, information not available (not reported by the Member States).

Table 4.22 Unleaded petrol (minimum RON ≥ 98) E5

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	58.0	88.3	N/A	170

Note: N/A, information not available (not reported by the Member States).

Diesel fuel grades
Table 4.23 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.23 Diesel fuel B7

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Distillation — 95 %-point	°C	< 360	314.4	399.2	N/A	200
Sulphur content	mg/kg	< 10	0.0	84.9	N/A	200

Note: N/A, information not available (not reported by the Member States).

4.9 Finland

4.9.1 Country details

Responsible organisations:	Finnish Customs Laboratory
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	EN 14274 Statistical Model A
Location of sampling:	Retail sites

4.9.2 Fuel quality monitoring service

Sampling

According to the agreement (38/481/2001) between Finnish Customs and the Ministry of Environment, Customs is responsible for fuel sampling and the analysis and reporting of results. Sampling was undertaken in 2015 across the whole country according to the sampling plan following the guidelines of standard EN 14274:2003 Model A. The country was divided into three macro-regions with approximately the same sales volumes and variability factors. In 2015, there were two refineries and 19 terminals in operation. The number of retail sites in each macro-region was approximately 650, 750 and 490, making a total of around 1 890. The sampling places were selected randomly, however, to ensure that all distribution chain companies were included. All samples were taken in retail sites. The division of the consumption per macro-region is based on the total annual consumption of 95 (95 E10) and 98 (98 E5) octane grades. Diesel fuel consumption figures per macro-region are also for the whole year. The sampling was split into winter and summer periods in order to obtain minimum sample amounts in both periods.

The grades investigated were unleaded RON 95 (95 E10) and RON 98 (98 E5) octane sulphur-free (maximum 10 mg/kg) petrol and sulphur-free (maximum 10 mg/kg) diesel fuel. The fuels were furthermore divided into summer and winter grades. Since sales for RON 99 octane petrol were small (less than 2 %) it was excluded from sampling. There was no fuel of a quality below RON 95 octane on the market. The sampling aimed to comply with the requirements of standard EN 14274:2013.

In 2015, the Customs Laboratory took part in the Round Robin Finland testing, which performs national inter-laboratory fuel examinations and proficiency tests organised by the Institute of Interlaboratory Studies. The results of the parameters measured in the tests (sulphur content, density, distillation, vapour pressure, lead, olefins contents, benzene, oxygenates and oxygen) were acceptable. In 2001–2014, the laboratory also took part in these tests with acceptable results.

Fuel Quality Monitoring System administration

The Ministry of the Environment is responsible for transposition of FQD into national legislation, and approves plans and gives general guidance. Finnish Customs is responsible for the practical implementation of fuel quality monitoring. In the case of non-compliant samples, the analyses are repeated as soon as possible. If non-compliance is confirmed, Customs contacts the fuel supplier/oil company to obtain a detailed account. If no clear reason for non-compliance is found, if there are no signs of intentional action, and if the case is not a serious one, a written procedure is often considered appropriate and sufficient. When non-compliant samples are repeatedly found, remarks or formal complaints may also be given. According to paragraph 175 (Rectification of a violation or negligence) of the Environmental Protection Act 527/2014 (previously 86/2000), a supervisory authority may prohibit a party from continuing or repeating a procedure that violates existing regulations or may order a party to fulfil its duty in some other way. The Ministry of Environment is informed of any actions taken. If there is a risk that non-compliant fuel may 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 Environment may prohibit the manufacturer, importer or other market supplier from continuing operations that contradict existing regulations, may prohibit the trading, sale or other supply of products that are in violation of the existing regulations and may 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 that is contravening the existing regulations to remove the product from the market.

National legislation that transposed the Fuel Quality Directive

The supervision of fuel quality is based on Environmental Protection Act 527/2014 (previously 86/2000), the Government Decree on the quality requirements for petrol and diesel fuel (1206/2010) and an agreement between the Ministry of Environment and Finnish Customs (38/481/2001). According to the agreement, Finnish Customs prepares a yearly sampling plan, which is to be approved by the Ministry of Environment. Finnish Customs is in charge of the practical realisation of the supervision. Customs' national district organisation takes liquid fuel samples in accordance with the sampling plan, and the samples are analysed at the Customs laboratory or by subcontractors whose competence is confirmed. The supervision aims to comply, when applicable, with the requirements of standard EN 14274:2003.

Reporting periods
An 'arctic' derogation was granted in 2011. The summer period runs from 1 June to 31 August, during which time the maximum vapour pressure allowed is 70 kPa. For details, see Commission decisions K(2011) 714 final and K(2011) 3772 final and the Finnish notification letter on Fuel Quality Vapour Pressure Derogation (original notification dated 17 February 2010, supplementary information 26 June 2010 and 6 September 2010). The sampling is split into winter and summer periods in order to take minimum sample amounts in both periods. The results of samples taken during the transition period are reported within the annual fuel quality report.

4.9.3 Sales

Table 4.24 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (Moottoribensiini 95 E10)	max. 10	1 245 505 000	934 129	56	59	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Moottoribensiini 98 E5)	max. 5	733 325 000	549 994	54	58	19 of 19
Total petrol		**1 978 830 000**	**1 484 123**	**110**	**117**	
Diesel fuel B7 (Dieselöljy)	FAME max. 7 % v/v	2 906 594 000	2 456 072	57	60	6 of 7
Total diesel		**2 906 594 000**	**2 456 072**	**57**	**60**	

4.9.4 Exceedances of the fuel quality limits

Petrol fuel grades
Tables 4.25 and 4.26 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.25 Unleaded petrol (minimum RON = 95) E10 (Moottoribensiini 95 E10)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Distillation — evaporated at 100 °C	% v/v	> 46.0	41.4	66.4	3	115
Hydrocarbon analysis — aromatics	% v/v	< 35.0	20.8	38.3	11	114
Oxygen content	% (m/m)	< 3.7	2.4	4.0	1	114
Oxygenates — ethanol	% v/v	< 10.0	0.0	10.7	1	114
Sulphur content	mg/kg	< 10.0	0.3	12.0	1	114

Table 4.26 Unleaded petrol (minimum RON ≥ 98) E5 ([a]) (Moottoribensiini 98 E5)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Distillation — evaporated at 100 °C	% v/v	> 46	40.7	61.8	4	112
Hydrocarbon analysis — aromatics	% v/v	< 35	29.2	39.1	37	108

Note: ([a]) Petrol with 5 % (v/v) or less ethanol content.

Diesel fuel grades
No exceedances of the diesel fuel quality limits were reported.

4.10 France

4.10.1 Country details

Responsible organisations:	Ministry of Ecology, Sustainable Development and Energy Directorate General for Energy and Climate Ministère de l'environnement, de l'énergie et de la mer
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model B
Location of sampling:	Service stations

4.10.2 Fuel quality monitoring service

Sampling
This information was provided in the national language.

Fuel Quality Monitoring System administration
This information was provided in the national language.

National legislation that transposed the Fuel Quality Directive
This information was provided in the national language.

Reporting periods
This information was provided in the national language.

4.10.2 Sales

Table 4.27 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (SP 95)	5.0 max	4 451 602 900	3 360 960	101	122	19 of 19
Unleaded petrol (minimum RON = 95) E10 (SP 95-E 10)	10.0 max	3 198 054 500	2 414 531	95	98	19 of 19
Unleaded petrol (minimum RON = 95) E+ (E 85)	85.0 max	86 373 900	68 064			
Unleaded petrol (minimum RON ≥ 98) E5 (SP 98)	5.0 max	1 987 390 600	1 500 480	101	122	19 of 19
Total petrol		**9 723 421 900**	**7 344 035**	**297**	**342**	
Diesel fuel B+ (> 7 % FAME ≤ 30%) (gazole)	8.0 max	41 240 185 700	34 847 957	100	122	6 of 7
Total diesel		**41 240 185 700**	**34 847 957**	**100**	**122**	

4.10.3 Exceedances of the fuel quality limits

Petrol fuel grades
Tables 4.28 and 4.29 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.28 Unleaded petrol (minimum RON = 95) E5 (SP 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	49.6	65.2	2	122

Table 4.29 Unleaded petrol (minimum RON = 95) E10 (SP 95-E10)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60.0	57.1	62.8	3	98
Oxygen content	% (m/m)	< 3.7	2.2	6.8	2	193
Oxygenates — ethanol	% v/v	< 10.0	4.2	18.6	1	193

Diesel fuel grades
No exceedances of the diesel fuel quality limits were reported.

4.11 Germany

4.11.1 Country details

Responsible organisations:	Federal Environment Agency (UBA)
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model B
Location of sampling:	Refuelling stations

4.11.2 Fuel quality monitoring service

Sampling
No changes have been made to the system. The organisations responsible for the sampling, analysis and reporting at regional level are the 16 governments of the federal states or their federal state agencies.

The results of the regional sampling are forwarded to the Federal Environment Agency (UBA), where data are collected and subsequently consolidated into one report. Sampling was carried out at refuelling stations only. Selection of the sampling points is the responsibility of each federal government and differs from state to state. The quality of petrol and diesel fuels is tested by the competent authorities of the states. The overall monitoring of fuel quality also falls within the responsibilities of the competent state 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 an alternative, taking into account population distribution and regional aspects.

Fuel Quality Monitoring System administration
No changes have been made to the system; however, the competent authorities of the 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 out that Statistical Model B applies to Germany (non-macro-region): Germany is divided into 16 political regions (Bundesländer), which do not comply with fuel distribution patterns. As Germany is categorised as a large country with regard to the FQMS, the minimum number of samples is 200 per fuel and period (summer or winter). The proportion of sampling for the various regions and the resulting number of samples is stipulated in the General Administrative Regulation on the Tenth BImSchV, Annex 20. For the fuels with a ≤ 10 % market share, DIN EN 14274–2003 (D) defines a smaller number of samples. The states have to convey their results to the UBA by 30 April of the year following sampling, when a general report is produced. The UBA passes this report on to the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety and to the European Commission. The governments of the German 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 14274–2003 (D). It was adopted into legislation by the German Tenth BImSchV in 2008. The number of refineries in Germany was 13. The number of refuelling stations in Germany was 14 531 at the end of 2015.

National legislation that transposed the Fuel Quality Directive
No changes have been made to the system.

The elements of the FQD are transposed into the German Tenth Ordinance Implementing the Federal Immission Control Act (Tenth BImSchV).

Reporting periods
For petrol, the summer period is from 1 May to 30 September. The winter period is from 16 November to 15 March. Transition periods are from 1 October to 15 November and from 16 March to 30 April. For diesel, the summer period starts on 15 April and ends on 30 September. The winter period starts on 16 November and ends on 28 February. Transition periods are 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. For diesel fuel only, a small number of samples were taken during the transition period in March, but since CPFF is not reported none of the parameters reported should be influenced.

4.11.3 Sales

Table 4.30 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Super)	max. 5.0	19 937 000 000	14 952 750	210	192	18 of 19
Unleaded petrol (minimum RON = 95) E10 (Super E10)	max. 10.0	3 298 308 000	2 473 731	195	197	18 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Super plus)	max. 5.0	1 064 578 667	798 434	22	27	18 of 19
Total petrol		**24 299 886 667**	**18 224 915**			
Diesel fuel B7 (Dieselkraftstoff)		43 242 820 000	36 756 397	202	198	6 of 7
Total diesel		**43 242 820 000**	**36 756 397**			

4.11.4 Exceedances of the fuel quality limits

Petrol fuel grades
Tables 4.31, 4.32 and 4.33 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.31 Unleaded petrol (minimum RON = 95) E5 (Super)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60.0	50.4	76.3	3	188
Oxygen content ([a])	% (m/m)	< 2.7	1.3	3.5	2	280
Oxygenate — ethanol	% v/v	< 10.0	2.1	9.9	9	400

Note: ([a]) Petrol with 5 % (v/v) or less ethanol content.

Table 4.32 Unleaded petrol (minimum RON = 95) E10 (Super E10)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60.0	52.0	63.1	4	196
Oxygen content	% (m/m)	< 3.7	1.9	4.2	1	278
Oxygenate — ethanol	% v/v	< 10.0	4.6	11.0	1	392

Table 4.33 Unleaded petrol (minimum RON ≥ 98) E5 (Super Plus)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	55.1	64.1	2	26

Diesel fuel grades

Table 4.34 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.34 Diesel fuel B7 (Dieselkraftstoff)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
FAME content	% v/v	< 7	0.0	11.4	1	400

4.12 Greece

4.12.1 Country details

Responsible organisations:	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

4.12.2 Fuel quality monitoring service

Sampling

Greece is classified as a small country under the criteria in Article 3.2 of the Hellenic Organization for Standardization (ELOT) EN 14274, taking into account fuel sales levels. Statistical Model A applies to Greece. In this model, in order 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 Sterea Ellada, 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 of the Ministry of the Environment and Energy. For Regions B and C, the competent bodies for taking fuel samples are the inspection teams from the Chemical Services of the General Chemical State Laboratory, working in collaboration with the regional Customs Authorities. 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) is at least 50 for each grade of fuel with annual sales accounting for at least 10 % of the fuel market.

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 an entire year. The competent authorities send the samples to the central fuel inspection laboratories of the General Chemical State Laboratory, which are ISO 17025 accredited. The samples received from Regions A and C are examined by the Chemical Service of Piraeus and the Aegean, while the samples from Region B are examined by the Macedonia-Thrace Chemical Service. The laboratories monitor compliance with the requirements of Decision No 316/2010 (as amended) relating to petrol and diesel fuels, based on analytical methods set out in ELOT EN 228 and ELOT EN 590. 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. The Directorate of Energy Industrial and Chemical Products uses the results in the sample testing reports for statistical purposes, in order to prepare and submit the annual fuel quality report to the European Commission.

Fuel Quality Monitoring System administration

The Competent Authority for the system that monitors 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 ELOT EN 14274, taking into account fuel sales levels. ELOT has adopted EN 14274 without making changes. The system was implemented in Greece with State Supreme Chemical Council Decision No 316/2010, as amended by Supreme Chemical Council Decision No 77/2016 (Government Gazette 501/B/2012). Fuel sampling is carried out by public authorities. If non-compliant samples are discovered, the sampling authority is responsible for taking action. Failure to comply with the provisions of the legislation results in the sanctions specified in Article 10 of State Supreme Chemical Council Decision No 316/2010, as amended by Supreme Chemical Council Decision No 77/2016 (Government Gazette 501/B/2012). In Greece, there are four refineries and approximately 7 000 refuelling stations.

National legislation that transposed the Fuel Quality Directive

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

Reporting periods

The monitoring system is implemented twice a year, once for the summer period (from 1 May to 30 September) and once for the winter period (from 1 October to 30 April). No arctic derogation has been granted.

4.12.3 Sales

Table 4.35 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) (95 RON)	0.0	3 143 813 579	2 350 001	50	50	15 of 19
Unleaded petrol (minimum 95 ≤ RON < 98) (LRP (96 RON))	0.0	3 560 615	2 662	4	4	13 of 19
Unleaded petrol (minimum RON ≥ 98) (Super unleaded (100 RON))	0.0	140 503 077	105 026	3	3	14 of 19
Total petrol		**3 287 877 271**	**2 457 688**	**57**	**57**	
Diesel fuel B7		2 916 122 246	2 427 672	50	50	7 of 7
Total diesel		**2 916 122 246**	**2 427 672**	**50**	**50**	

4.12.4 Exceedances of the fuel quality limits

Petrol fuel grades
No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades
Table 4.36 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.36 Diesel fuel B7

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
FAME content	% v/v	< 7	5.8	8.8	11	100

4.13 Hungary

4.13.1 Country details

Responsible organisations:	AMEI Petroleum Products Quality Inspection Company
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Refuelling stations

4.14.2 Fuel quality monitoring service

Sampling
The organisation responsible for sampling, analysis and reporting is AMEI Petroleum Products Quality Inspection Company, which has a contract with the Ministry of National Development. Refuelling stations to be sampled were randomly selected from a list of refuelling stations compiled by the National Tax and Customs Administration (NAV). Hungary's system is equivalent to the system proposed by CEN.

Fuel Quality Monitoring System administration
The Ministry of National Development is responsible for managing and implementing the FQD. Fuel sampling has been managed and carried out by the AMEI Petroleum Products Quality Inspection Company on the basis of a contract with the Ministry of National Development. This company provides annual data for the Ministry by 31 March each year. The public body is responsible for taking action where non-complaint samples are discovered. In such cases, the AMEI informs the Ministry, the National Custom and Tax Administration and the Hungarian Authority for Consumer Protection. During design and implementation, the system used Statistical Model C (small country). There is one refinery and several distribution terminals in Hungary. Since import via direct trucking to retail stations is considerable, retail stations were also sampled.

National legislation that transposed the Fuel Quality Directive
There is a decree on fuel quality requirements in Hungary (30/2011 NFM) (valid from 28 June 2011). This decree is based on the FQD.

Reporting periods
In Hungary, the transition periods are from 1 March to 30 April, and from 1 October to 14 November. No samples are taken during these transition periods.

4.13.3 Sales

Table 4.37 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (ESZ-95)	max 5.0	1 651 000 000	1 233 000	50	50	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (ESZ-98)	max 5.0	64 000 000	48 000	10	10	19 of 19
Total petrol		**1 715 000 000**	**1 281 000**	**60**	**60**	
Diesel fuel B7 (Diesel)	max 7.0	3 810 000 000	3 193 000	60	60	6 of 7
Total diesel		**3 810 000 000**	**3 193 000**	**60**	**60**	

4.13.4 Exceedances of the fuel quality limits

Petrol fuel grades

Tables 4.38 and 4.39 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.38 Unleaded petrol (minimum RON = 95) E5 (ESZ-95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95	92.8	97.8	N/A	100
Motor octane number	–	> 85	83.6	86.5	N/A	100
Vapour pressure, DVPE required for summer period only	kPa	< 60	53.4	62.1	N/A	50
Sulphur content	mg/kg	< 10	2.9	16.3	N/A	100

Note: N/A, information Not Available (not reported by the Member States).

Table 4.39 Unleaded petrol (minimum RON ≥ 98) E5 (ESZ-98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Hydrocarbon analysis — aromatics	% v/v	< 35	25.6	36.2	N/A	20

Note: N/A, information not available (not reported by the Member States).

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

4.14 Ireland

4.14.1 Country details

Responsible organisations:	Department of Communications, Climate Action and Environment
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Service stations

4.14.2 Fuel quality monitoring service

Sampling

Samples of petrol and diesel are taken by the Irish Petroleum Industry Association and are analysed by ITS Testing Services (UK) Ltd. Reporting is the responsibility of the Department of Communications, Climate Action and Environment. 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: RON: EN ISO 5164; MON: EN ISO 5163; vapour pressure: ISO 3405; olefins and aromatics: ASTM D1319; benzene: EN 238; other oxygenates, methanol, ethanol, isopropanol, isobutanol, tert-butanol, ethers (five or more carbon atoms) and other oxygenates: EN 13132; sulphur content: IP 490; 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; FAME: BS EN 14078.

Fuel Quality Monitoring System administration

The Department of Communications, Climate Action and Environment has responsibility for managing and implementing the FQD. Samples are taken from refuelling stations. Selection of sampling points is on a random basis and is carried out throughout a given year. Annual data are provided by the Irish Petroleum Industry for the winter period in January of each year and for the summer period in September of each year. When non-compliant samples are discovered, it is the responsibility of the Department of Communications, Climate Action and Environment to report, manage and monitor the non-compliance. All non-compliances are reported on the annual fuel quality report and follow-up action is also reported. Ireland uses EN 14274 Statistical Model C as it is a small country. Whitegate Oil Refinery in Cork is Ireland's only refinery. There are five distribution terminals in Ireland. There are no reasons why the annual fuel quality report cannot be provided by the annual deadline of 31 August.

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 (S.I. No 155 of 2011).

Reporting periods

The summer period is from June to August. The winter period is from September to May. An 'arctic' derogation has been granted.

4.14.3 Sales

Table 4.40 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5	3.0	1 689 765 214	1 251 670	50	47	18 of 19
Total petrol		**1 689 765 214**	**1 251 670**	**50**	**47**	
Diesel fuel B7	4.0	3 169 795 275	2 679 470	50	47	6 of 7
Total diesel		**3 169 795 275**	**2 679 470**	**50**	**47**	

4.14.4 Exceedances of the fuel quality limits

Petrol fuel grades
Table 4.41 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.41 Unleaded petrol (minimum RON = 95) E5

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 70	68.0	73.5	1	47

Diesel fuel grades
No exceedances of the diesel fuel quality limits were reported.

4.15 Italy

4.15.1 Country details

Responsible organisations:	Ministry of Environment, Land and Sea
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model A
Location of sampling:	Refuelling stations

4.15.2 Fuel quality monitoring service

Sampling
Samples were taken monthly during winter and summer periods (summer period for petrol: 1 May to 30 September). The 2015 monitoring system was set up using the Statistical Model A of EN 14274 (large country, five macro-regions). A total of 200 petrol samples and 200 diesel fuel samples were analysed. The distribution of samples throughout the national territory was: 23 % north-west; 19.5 % north-east; 23.2 % centre; 23.8 % south and 10.5 % 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 for each grade.

Fuel Quality Monitoring System administration
Italy established a FQMS, in accordance with the requirements of the European standard EN 14274:2003, by a decree of 3 February 2005. The 2015 national report was drawn up on the basis of a monitoring system at sales outlets distributed throughout the Italian territory. The monitoring system (sampling and measurements) was carried out by independent supervisory bodies on behalf of the main oil companies.

National legislation that transposed the Fuel Quality Directive
The FQD was transposed into national law by the Legislative Decree of 21 March 2005, No 66.

Reporting periods
- Summer period: 1 May to 30 September.
- Winter period: 16 November to 15 March.

4.15.3 Sales

Table 4.42 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) (Unleaded petrol (< 10 ppm sulphur))		10 426 666 667	7 820 000	100	100	19 of 19
Total petrol		**10 426 666 667**	**7 820 000**	**100**	**100**	
Diesel fuel B7 (Diesel fuel (< 10 ppm sulphur))		29 461 176 471	25 042 000	100	100	6 of 7
Total diesel		**29 461 176 471**	**25 042 000**	**100**	**100**	

4.15.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 4.43 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.43 Unleaded petrol (minimum RON = 95) (unleaded petrol (≤ 10 ppm sulphur))

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 5	94.5	98.6	N/A	199
Motor octane number	–	> 85	83.4	87.9	N/A	199
Hydrocarbon analysis — olefins	% v/v	< 18	0.0	22.1	N/A	145

Note: N/A, information not available (not reported by the Member States).

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

4.16 Latvia

4.16.1 Country details

Responsible organisations:	Ministry of Economics of the Republic of Latvia
Country size:	Small
Summer period:	1 June to 31 August
FQMS used:	National system
Location of sampling:	Terminals and refuelling stations

4.16.2 Fuel quality monitoring service

Sampling
Organisations responsible for sampling, analysis and reporting of fuel quality are the Ministry of Economics of the Republic of Latvia and the State Revenue Service.

Locations of sampling: terminals and refuelling stations.

Time/frequency of sampling: samples were taken every month throughout the year in 2015.

Test methods: in compliance with Directive 98/70/EC.

Fuel Quality Monitoring System administration
The Ministry of Economics of the Republic of Latvia is responsible for managing and implementing the FQD. The State Revenue Service is responsible for supervision of the fuel market in accordance with Article 24 of the Consumer Rights Protection Law, Article 15 of Cabinet Regulation No 332, adopted on 26 September 2000 ('Requirements for Conformity Assessment of Petrol and Diesel Fuel') and Article 27 of Cabinet Regulation No 772, adopted on 18 October 2005 '(Regulations Regarding Requirements for Biofuel Quality, Conformity Assessment, Market Supervision and Procedures for Consumer Information').

Fuel circulation supervision institutions supervise the fuel conformity in accordance with the test methods specified in standard EN 228:2013 'Automotive fuels — Unleaded petrol — Requirements and test method' and EN 590:2014 'Automotive fuels — Diesel — Requirements and test methods' as well as the requirements of Cabinet Regulation No 332.

Fuel circulation supervision institutions, which perform the supervision of the fuel market within their competence in accordance with regulatory enactments, submit information regarding detected infringements to the State Revenue Service once a month. If the State Revenue Service needs additional information for ensuring the supervision of the fuel market, it is provided upon written request by the State Revenue Service.

The importer, producer, wholesaler or retailer shall present documents attesting conformity of fuel quality upon the request of the fuel circulation supervision institution.

National legislation that transposed the Fuel Quality Directive
Republic of Latvia Cabinet Regulation No 332 adopted 26 September 2000 ('Requirements for Conformity Assessment of Petrol and Diesel Fuel') determines the technical specifications, on health and environmental grounds, for fuels that are placed on the Latvian market to be used with positive ignition and compression-ignition engines of motor vehicles, non-road mobile machinery (including inland waterway vessels when not at sea), agricultural and forestry tractors, and recreational craft when not at sea, taking account of the technical requirements of those engines.

Republic of Latvia Cabinet Regulation No 772 adopted 18 October 2005 ('Regulations Regarding Requirements for Biofuel Quality, Conformity Assessment, Market Supervision and Procedures for Consumer Information') prescribes the quality requirements for biofuel, the procedures by which the conformity assessment of biofuel and the transfer thereof for processing shall be carried out, the procedures by which the production of biofuel and blending thereof with fossil fuel shall be controlled, the procedures by which biofuel not conforming to quality requirements shall be destroyed 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.

Republic of Latvia Cabinet Regulation No 545, adopted on 5 July 2011, outlines the sustainability criteria for biofuels and bioliquids and the procedure by which they shall be supervised and monitored.

Reporting periods
The summer period begins on 1 June and ends on 31 August. There is no transition period between summer and winter grade fuels. Samples were taken every month throughout the year. An 'arctic' derogation has been granted.

4.16.3 Sales

Table 4.44 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (A-95 E5)	4.5–5	237 705 882	181 845	47	4	19 of 19
Unleaded petrol (minimum RON = 95) E+ (E85)	70–85	44 247	35			
Unleaded petrol (minimum 95 ≤ RON < 98) (A-98)	0.0	26 006 535	19 895	15	4	19 of 19
Total petrol		**263 756 664**	**201 775**	**62**	**8**	
Diesel fuel (DD)	0.0	621 699 401	519 119	81	8	6 of 7
Diesel fuel B7 (DD B5)	4.5–5	414 615 568	346 204	40	46	6 of 7
Total diesel		**1 036 314 969**	**865 323**	**121**	**54**	

4.16.4 Exceedances of the fuel quality limits

Petrol fuel grades
Table 4.45 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.45 Unleaded petrol (minimum RON = 95) E5 (A-95 E5)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95	93.1	96.7	4	51

Diesel fuel grades
No exceedances of the diesel fuel quality limits were reported.

4.17 Lithuania

4.17.1 Country details

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

4.17.2 Fuel quality monitoring service

Sampling
The State Non-Food Products Inspectorate under the Ministry of Economy is responsible for sampling and analysis. The organisation responsible for reporting is the Ministry of Energy. A total of 106 samples of petrol A-95 (A-98) were taken at service stations in 2015.

Fuel Quality Monitoring System administration
The Ministry of Energy has the responsibility for managing and implementing the FQD. Fuel sampling was carried out by the State Non-Food Inspectorate under the Ministry of Economy. The State Non-Food Inspectorate under the Ministry of Economy is responsible for taking action where non-compliant samples have been identified. The system has been designed using Statistical Model C (EN 14274).

National legislation that transposed the Fuel Quality Directive
Standards EN 228 for petrol and EN 590 for diesel are transposed into national legal acts. All acts are related to the research of parameters of fuel and diesel samples and are fully transposed into Lithuanian legislation.

Reporting periods
Samples are taken during transition periods, as there are no filtering and cloud temperatures in provided 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.

4.17.3 Sales

Table 4.46 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E10 (A-95 (RON 95))	5.0	266 343 000	200 200	50	50	19 of 19
Unleaded petrol (minimum RON ≥ 98) (A-98 (RON 98))		10 712 000	8 000	3	3	19 of 19
Total petrol		**277 055 000**	**208 200**	**53**	**53**	
Diesel fuel B7 (Diesel)	7.0	1 442 459 000	1 205 900	50	50	7 of 7
Total diesel		**1 442 459 000**	**1 205 900**	**50**	**50**	

4.17.4 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.

4.18 Luxembourg

4.18.1 Country details

Responsible organisations:	Environmental Administration of Luxembourg
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Depots and public refuelling stations

4.18.2 Fuel quality monitoring service

Sampling
For 2015, sampling, analysis and reporting of fuel quality was managed by three organisations. The samples were taken at depots and public refuelling stations. The sampling points were selected by a random generator. Test methods are those specified in EN 228 and EN 590.

The samples have to be taken in accordance with the methods described in the European standards:

- EN 14275, if taken at the fuel station; and
- EN ISO 3170, if taken at the terminal.

Fuel Quality Monitoring System administration
The FQMS is under the responsibility of the Environmental Administration of Luxembourg, which is part of the Department of Environment of the Ministry of Sustainable Development and Infrastructures.

Fuel sampling, analyses and reporting were each carried out by an agreed organisation. Within 1 week, the results of the analysed parameters were transmitted to the Environmental Administration of Luxembourg.

In case of non-compliant samples, the agreed organisation had to inform the Environmental Administration of Luxembourg at once. After a written warning by the Environmental Administration of Luxembourg, the provider or operator had 48 hours to take the necessary measures. The provider or operator had to inform the Environmental Administration of Luxembourg of the measures taken. A new sample then had to be taken within 3 working days of the written warning.

In 2009, the Luxembourgish Environmental Administration worked out, in collaboration with the Austrian federal Environment Agency, a concept to establish a national FQMS for Luxembourg.

A 2-day workshop was held with the aim of bringing all stakeholders together in order to discuss different proposals, as well as to create a possible way forward. Besides the project partners, various representatives, for instance from the mineral oil industry, fuels laboratories or other EU countries where a FQMS was already established, attended the meeting.

The main outcomes were:

- it is possible to reduce the number of samples for diesel to a minimum of 86 samples a year instead of 100 (EN 14274); and
- it is possible to reduce the number of samples for petrol grades (RON 95, RON 98) to a minimum of 66 samples instead of 2 × 100 (EN 14274);

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

- country-specific data such as population, surface, number of passenger cars and buses, number of petrol stations, fuel sales/grade;
- economy;
- supply points and distribution patterns of fossil fuel.

Luxembourg has no own refinery on its territory, therefore it is dependent on imports of petrol and diesel from other Member States, mainly from Belgium, the Netherlands and Germany (by truck, train or ship). Fuel stations in the border regions receive deliveries directly by truck from terminals in Belgium (Liege, Feluy/Brussels) and from terminals in Germany (Treves) and a few are supplied by the terminal in Mertert, whereas midland fuel stations normally receive deliveries from a terminal in Bertrange (composed of several big tanks). The inland terminals in Bertrange and Mertert receive deliveries 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 was 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.

Reporting periods
The summer period extends from 1 May to 30 September and the winter period from 1 October to 30 April. No 'arctic' derogation has been granted.

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 no samples were taken or tested.

4.18.3 Sales

Table 4.47 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Euro 95)	5.0	327 652 702	242 463	57	46	19 of 19
Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Euro 98)	5.0	69 900 801	52 426	53	50	19 of 19
Total petrol		**397 553 503**	**294 889**	**110**	**96**	
Diesel fuel B7 (Diesel)	7.0	1 844 461 552	1 549 348	50	50	7 of 7
Total diesel		**1 844 461 552**	**1 549 348**	**50**	**50**	

4.18.4 Exceedances of the fuel quality limits

Petrol fuel grades
Tables 4.48 and 4.49 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.48 Unleaded petrol (minimum RON = 95) E5 (Euro 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number (RON)	-	< 95	94.3	97.5	1	103
Vapour pressure, DVPE required for summer period only	kPa	< 60	55.6	72.5	6	46
Hydrocarbon analysis — benzene	% v/v	< 1	0.5	2.3	1	103

Table 4.49 Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Euro 98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	54.4	78.0	8	50
Hydrocarbon analysis — aromatics	% v/v	< 35	19.8	37.0	2	103

Diesel fuel grades
No exceedances of the diesel fuel quality limits were reported.

4.19 Malta

4.19.1 Country details

Responsible organisations:	Regulator for Energy and Water Services
Country size:	Small
Summer period:	Normal
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Refuelling stations

4.19.2 Fuel quality monitoring service

Sampling
Organisation responsible for sampling and reporting:

- 1 January 2015 to 31 July 2015: Malta Resources Authority (MRA)
- 1 August 2015 to present: Regulator for Energy and Water Services (REWS)

Organisation responsible for analysis: independently contracted laboratory.

Statistical Model C was used and sampling was carried out randomly at refuelling stations.

Fuel Quality Monitoring System administration
In 2015, Malta fully adopted EN 14274 Statistical Model C, taking a minimum of 50 samples per period (winter/summer) per fuel grade, which exceeded the 10 % market share of the parent grade. A total of 203 samples were collected by REWS compliance officers from fuel dispensing sites and then analysed at an independent contracted laboratory.

National legislation that transposed the Fuel Quality Directive
From August 2015, all actions formerly carried out by the MRA are now undertaken by the REWS. Due to this update, the National Subsidiary Legislation, Quality of Fuels Regulations, is no longer S.L.423.29 but S.L.545.18.

Reporting periods
Malta applies the 'normal' seasonal periods, taking 1 October to 30 April as 'winter' and 1 May to 30 September as 'summer'. Monthly fuel samples were taken throughout the whole calendar year, including the transition period.

4.19.3 Sales

Table 4.50 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 ≤ RON < 98) (EN 228)	0.0	94 959 000	70 340	50	53	19 of 19
Total petrol		**94 959 000**	**70 340**	**50**	**53**	
Diesel fuel B7 (EN 590)	max 7.0 FAME	120 337 935	101 551	50	50	7 of 7
Total diesel		**120 337 935**	**101 551**	**50**	**50**	

4.19.4 Exceedances of the fuel quality limits

Petrol fuel grades
No exceedances of the petrol fuel quality limits were reported.

Diesel fuel grades
Table 4.51 summarises the parameters for which exceedances were reported for the diesel fuel grades measured

Table 4.51 Diesel fuel B7 (EN 590)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Sulphur content	mg/kg	< 10	3.4	34	2	100

4.20 Netherlands

4.20.1 Country details

Responsible organisations:	Human Environment and Transport Inspectorate
Country size:	N/A
Summer period:	N/A
FQMS used:	N/A
Location of sampling:	Fuel service stations

4.20.2 Fuel quality monitoring service

Sampling
Samples were taken by inspectors of the Dutch Inspectorate at fuel service stations. The laboratory of the Dutch Customs is responsible for analysis.

Fuel Quality Monitoring System administration
This information was not provided.

National legislation that transposed to the Fuel Quality Directive
This information was not provided.

Reporting periods
This information was not provided.

4.20.3 Sales

Table 4.52 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5		5 215 000	3 911	62	0	12 of 19
Unleaded petrol (minimum RON ≥ 98) E5		63 000	47			
Total petrol		**5 278 000**	**3 959**	**62**		
Diesel fuel B7		6 664 000	5 664	68	0	6 of 7
Total diesel		**6 664 000**	**5 664**	**68**		

4.20.4 Exceedances of the fuel quality limits

Petrol fuel grades
Table 4.53 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.53 Unleaded petrol (minimum RON = 95) E5

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95.0	85.5	99.2	N/A	62
Motor octane number	-–	> 85.0	83.9	96.0	N/A	62
Oxygen content ([a])	% (m/m)	< 3.7	1.5	11.6	N/A	62
Sulphur content	mg/kg	< 10.0	3.0	12.8	N/A	62

Notes: N/A, information not available (not reported by the Member States).

([a]) Petrol with 5 % (v/v) or less ethanol content.

Diesel fuel grades
Table 4.54 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.54 Diesel fuel

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Distillation — 95 %-point	°C	< 360	344.6	380.2	N/A	100

Note: N/A, information not available (not reported by the Member States).

4.21 Poland

4.21.1 Country details

Responsible organisations:	Office of Competition and Consumer Protection
Country size:	Large
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model B
Location of sampling:	Refuelling stations

4.21.2 Fuel quality monitoring service

Sampling
This information was provided in the national language.

Fuel Quality Monitoring System administration
This information was provided in the national language.

National legislation that transposed to the Fuel Quality Directive
This information was provided in the national language.

Reporting periods
This information was not provided.

4.21.3 Sales

Table 4.55 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (RON 95)	5.0	4 441 500 000	3 375 000	62	61	18 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (RON 98)	5.0	489 376 000	373 000	201	202	18 of 19
Total petrol		**4 930 876 000**	**3 748 000**	**263**	**263**	
Diesel fuel B7 (ON)	7.0	14 037 665 000	11 747 000	201	206	6 of 7
Total diesel		**14 037 665 000**	**11 747 000**	**201**	**206**	

4.21.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 4.56 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.56 Unleaded petrol (minimum RON = 95) (RON 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95	94.4	96.8	1	403
Hydrocarbon analysis — aromatics	% v/v	< 35	1.91	40.0	1	357
Sulphur content	mg/kg	< 10	3.0	24.0	7	403

Diesel fuel grades

Table 4.57 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.57 Diesel fuel B7 (ON)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Distillation — 95 %-point	°C	< 360	336.1	380.1	7	407
Sulphur content	mg/kg	< 10	3.5	12.6	1	407

4.22 Portugal

4.22.1 Country details

Responsible organisations:	Directorate-General for Energy and Geology
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Service stations

4.22.2 Fuel quality monitoring service

Sampling
The bodies performing analysis are selected through a public tender held by Entidade Nacional para o Mercado de Combustíveis (ENMC) and sampling is performed by ENMC itself. ENMC collects samples in filling stations across the country and throughout the year. The selection of filling stations is undertaken by ENMC.

The methods of analysis used are those described in the FQD. The method used for each parameter can be found in the 'Test methods and analyses' tables of the 'reporting results' tables, where the number of exceedances and their values are reported in the row corresponding to the method of analysis used.

Fuel Quality Monitoring System administration
The body responsible at national level for the FQMS is the Ministry of Economy. The Directorate-General for Energy and Geology coordinates, prepares and submits the annual reports. Analyses are performed by entities selected through public tender held by the ENMC.

The consumption or marketing of fuels that do not meet the specifications in force constitutes an infraction punishable by fine, which involves reporting to the authority responsible for the prosecution, so non-compliant samples are reported to the Food Safety and Economic Authority.

There are two refineries that supply the market, one in the north (Matosinhos Refinery) and the other in the south (Sines Refinery).

National legislation that transposed the Fuel Quality Directive
The transposition of FQMS is set out in Articles 13 and 14 of Decree-Law No 89/2008 of 30 May 2008, amended by Decree-Law No 142/2010 of 31 December 2010 and Decree-Law No 214-E/2015, of 30 September 2015.

Reporting periods
- Summer period: 1 May to 30 September.
- Winter period: 1 November to 31 March.
- Transition period: April and October.

Analyses were performed at filling stations during transition periods and were not considered for the purposes of FQMS for 2015.

4.22.3 Sales

Table 4.58 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Gasolina IO 95)	3.2	1 345 473 190	1 003 723	126	123	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Gasolina IO 98)	3.2	102 430 159	76 413	2	14	19 of 19
Total petrol		**1 447 903 349**	**1 080 136**	**128**	**137**	
Diesel fuel B7 (Gasóleo)		5 803 353 887	4 329 302	130	240	6 of 7
Total diesel		**5 803 353 887**	**4 329 302**	**130**	**240**	

4.22.4 Exceedances of the fuel quality limits

Petrol fuel grades

Table 4.59 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.59 Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Gasolina IO 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95	94.3	97.0	1	249
Vapour pressure, DVPE required for summer period only	kPa	< 60	45.0	67.7	3	246
Oxygen content ([a])	% (m/m)	< 2.7	1.5	3.0	1	249
Sulphur content	mg/kg	< 10	0.7	13.3	2	249

Note: ([a]) Petrol with 5 % (v/v) or less ethanol content.

Diesel fuel grades

Table 4.60 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.60 Diesel fuel B7 (Gasóleo)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Sulphur content	mg/kg	< 10	3.0	12.4	1	370
FAME content	% v/v	< 7	0.05	9.6	1	370

4.23 Romania

4.23.1 Romania has not provided a report for 2015.

4.24 Slovakia

4.24.1 Country details

Responsible organisations:	VURUP, a.s. (Accredited Testing Laboratories and Accredited Inspection Body)
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Refuelling stations

4.24.2 Fuel quality monitoring service

Sampling
The organisation responsible for sampling, analysis and reporting is VURUP, a.s. (Accredited Testing Laboratories and Accredited Inspection Body). Fuel sampling was carried out at refuelling stations only. Fuel sampling was carried out during both summer and winter periods, and the sampling locations were selected from a database of refuelling stations and on the basis of suggestions made by the Slovak Environmental Inspectorate. 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 (VURUP), accredited in accordance with EN ISO/IEC 17020 and EN ISO/IEC 17025 and selected by public competition. The annual data for sales of petrol and diesel in 2015 were provided by the Ministry of Environment at the end of April 2016. When non-compliant samples were discovered, the Slovak Environmental Inspectorate was responsible for taking action and imposing financial penalties. The Slovak Environmental Inspectorate is responsible for all processes, i.e. to report, manage and monitor all non-compliant samples discovered during monitoring. EN 14274 Statistical Model C has been applied since August 2004. There is one national refinery and two distribution terminals.

National legislation that transposed to the Fuel Quality Directive
The FQD has been transposed into Slovak national law in the form of Directive of Ministry of Environment No 367 (3 November 2015) and No 228 (11 August 2014).

Reporting periods
Fuel samples were taken and tested only during the summer period (from 1 May to 30 September) and the winter period (from 15 November to 28/29 February), and no fuel samples were taken or tested during the transition period. Therefore only the results of fuel samples taken during the summer and the winter periods are reported within the annual fuel quality report.

4.24.3 Sales

Table 4.61 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Super 95)	max. 5.0	805 167 344	604 198	60	55	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (SuperPlus 98)	max. 2.9	11 885 908	8 931	16	15	19 of 19
Total petrol		**817 053 252**	**613 129**	**76**	**70**	
Diesel fuel B7 (Diesel)	max. 7.1	1 804 595 256	1 514 777	61	55	6 of 7
Total diesel		**1 804 595 256**	**1 514 777**	**61**	**55**	

4.24.4 Exceedances of the fuel quality limits

Petrol fuel grades
Table 4.62 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.62 Unleaded petrol (minimum RON = 95) E5 (Super 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	54.4	64.3	2	55

Diesel fuel grades
Table 4.63 summarises the parameters for which exceedances have been reported for the diesel fuel grades measured.

Table 4.63 Diesel fuel B7 (diesel)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Distillation — 95 %-point	°C	< 360	341.9	371.7	1	116

4.25 Slovenia

4.25.1 Country details

Responsible organisations:	Slovenian Environment Agency
Country size:	Small
Summer period:	1 May to 30 September
FQMS used:	EN 14274 Statistical Model C
Location of sampling:	Depots and refuelling stations

4.25.2 Fuel quality monitoring service

Sampling
Monitoring is carried out by the legal entities that obtain authorisation from the Ministry of the Environment and Spatial Planning. The main condition for authorisation 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 according to EN ISO/IEC 17025:2005), and collecting and processing the data. The publicly available information on legal entities is on the website of the Slovenian Environment Agency.

The Slovenian Environment Agency receives quarterly and annual reports from two independent inspection bodies. The samples of petrol fuels, diesel fuel, and gas oil are taken each month throughout the year at refuelling stations and depots.

Fuel Quality Monitoring System administration
Legislation, implementation and reporting: Slovenian Environment Agency, under the Ministry of the Environment and Spatial Planning.

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

The FQMS in Slovenia is based on European Standard EN 14274:2003, using Statistical Model C (small country).

National legislation that transposed to the Fuel Quality Directive
The FQD was transposed into national law by the Environmental Protection Act and the following regulations:

- Decree on the physical and chemical properties of liquid fuels (OJ/Uradni list RS, št. 74/11);
- Decree amending the Decree on the physical and chemical properties of liquid fuels (OJ/Uradni list RS, št. 64/14);
- Rules on the monitoring of physical and chemical properties of liquid fuels (OJ/Uradni list RS št. 76/11);
- Rules amending the Rules on the monitoring of physical and chemical properties of liquid fuels (OJ/Uradni list RS št. 56/14).

Reporting periods
Not reported.

4.25.3 Sales

Table 4.64 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum 95 ≤ RON < 98) E10 (NMB 95)	1.64	517 319 205	390 576	53	55	19 of 19
Unleaded petrol (minimum RON ≥ 98) E10 (NMB 98/100)	6.61	54 594 702	41 219	14	12	19 of 19
Total petrol		**571 913 907**	**431 795**	**67**	**67**	
Diesel fuel B7 (B7)	0.62	1 658 080 796	1 416 001	85	66	6 of 7
Total diesel		**1 658 080 796**	**1 416 001**	**85**	**66**	

4.25.4 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.

4.26 Spain

4.26.1 Country details

Responsible organisations:	N/A
Country size:	Large
Summer period:	N/A
FQMS used:	EN 14274 Statistical Model A
Location of sampling:	Terminals and service stations

4.26.2 Fuel quality monitoring service

Sampling
In Spain, there are nine refineries. Samples were taken from more than 30 terminals, covering the whole country and including samples from every refinery. When fuels came into the country by ship this was taken into account.

Samples taken from service stations are collected from a substantial area of the country.

Fuel Quality Monitoring System administration
Statistical Model A was used. The country was divided into regions based around the refineries and terminals. In some regions there is greater potential for variation because some fuels arrive by ship.

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 were transposed in Article 7 of RD 61/2006.

Reporting periods
Samples from transition periods were taken and reported in 2015.

4.26.3 Sales

Table 4.65 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Gasolina 95)	3.8	5 742 776 000	4 307 082	100	100	19 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Gasolina 98)	3.8	453 197 333	339 898	100	100	19 of 19
Total petrol		**6 195 973 333**	**4 646 980**	**200**	**200**	
Diesel fuel B7 (Gasóleo A)	3.6	25 601 629 412	21 761 385	100	100	6 of 7
Total diesel		**25 601 629 412**	**21 761 385**	**100**	**100**	

4.26.4 Exceedances of the fuel quality limits

Petrol fuel grades
Table 4.66 summarises the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.66 Unleaded petrol (minimum RON ≥ 98) E5 (Gasolina 98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Research octane number	–	> 95.0	95.3	99.7	3	173
Vapour pressure, DVPE required for summer period only	kPa	< 60.0	52.5	77.5	3	186
Oxygen content ([a])	% (m/m)	< 2.7	1.75	2.9	1	177

Note: ([a]) Petrol with 5 % (v/v) or less ethanol content.

Diesel fuel grades
No exceedances of the diesel fuel quality limits were reported.

4.27 Sweden

4.27.1 Country details

Responsible organisations:	The Swedish Petroleum and Biofuels Institute (SPBI)
Country size:	Small
Summer period:	South Sweden: 1 May to 15 September; North Sweden: 16 May to 31 August
FQMS used:	National System
Location of sampling:	Fuel dispensing sites

4.27.2 Fuel quality monitoring service

Sampling
The Swedish fuel quality model is based on a national system. The Swedish Petroleum and Biofuels Institute compiles the fuel data at the depots (stockages) for the annual fuel quality report. The Swedish Transport Agency sends, after verification, the report to the European Commission. The quality assessment system at the terminals consists of the compilation of quality data of all batches produced in Sweden as well as import batches for the Swedish market. In 2015, there were 512 samples of unleaded petrol RON 95, 85 samples of unleaded petrol RON 98 and 705 samples of diesel at the terminals. Unleaded petrol RON 98 represents only around 3.5 % of the total sales of petrol in Sweden. The reported data from the depots represents > 98 % of the sales of petrol and diesel in Sweden.

In 2015, the Swedish Transport Agency, as an assessment of the national monitoring system's equivalency to the CEN system, carried out sampling of summer quality at fuel dispensing sites with the help of an accredited test laboratory. Five samples of unleaded petrol RON 95 and five samples of diesel were taken at five fuel dispensing sites in five cities across Sweden. The fuel dispensing sites also represented five different fuel companies. The samples from the fuel dispensing sites were then analysed according to the same test methods as in the FQD standard template for reporting. The samples from the fuel dispensing sites showed good equivalency with this report for both petrol and diesel, based upon quality data of the deliveries to the depots. The analysis report for the crosschecking at fuel dispensing sites in 2015 is available from the Swedish Transport Agency upon request.

Fuel Quality Monitoring System administration
The Swedish Transport Agency is responsible for managing and implementing most parts (including fuel quality) of the FQD except for the parts of the directive dealing with reductions in greenhouse gas emissions and sustainability criteria for biofuels (i.e. Article 7(a)–7(d)). The Swedish Energy Agency is responsible for Article 7(a)–7(d) of the FQD. The Swedish Biofuels Institute assists the Swedish Transport Agency to compile fuel quality data for the annual fuel quality

report. Sampling and subsequent analysis for the additional national monitoring is carried out by accredited test laboratories.

The Swedish Transport Agency verified the reliability of the Swedish Petroleum and Biofuels Institutes compilation for the 2015 fuel quality report. Sampling at fuel dispensing sites in 2015 showed good conformity for both petrol and diesel with data at the depots (stockages) in this 2015 Fuel Quality Monitoring Report.

Fuels and fuel quality are managed through national Swedish legislation, Drivmedelslag (2011:319), the law, and Drivmedelsförordning (2011:346), the regulation. According to section 14 in Drivmedelsförordning (2011:346), the Swedish Transport Agency supervises most national fuel regulation, including fuel quality, and is thereby the authority responsible for taking action if non-compliant samples are discovered.

The main reason Sweden chose this national system is the considerable costs associated with extensive sampling in a large, sparsely populated Member State with large 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 used by European Standard EN 14274:2003. This was agreed by the European Commission, the Directorate-General for 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.

National legislation that transposed the Fuel Quality Directive

The legislation of the FQD has been transposed into national law (Drivmedelslag (2011:319), a national regulation (Drivmedelsförordning (2011:346) and regulations adopted by the Swedish Transport Agency. The latter requires appropriate information to be supplied to consumers concerning biofuels, in particular the FAME content of diesel fuel in accordance with Article 4.1 of the FQD. This is according to EU-pilot 6321/14/CLIM. The law Drivmedelslag (2011:319) was also amended in 2015 to incorporate the limit of 2 mg per litre of methylcyclopentadienyl manganese tricarbonyl (MMT) in diesel fuel. This is in accordance with Article 8(a)2 of the FQD.

The Swedish Energy Agency is responsible for Article 7(a)–7(d) of the FQD. There is a national law and a national regulation concerning sustainability criteria for biofuels.

The law, Drivmedelslag (2011:319), contains, among other things the fuel specifications (Article 3 and 4 in the FQD 98/70/EC) and standard references among them SS-EN 228 in sections 4(g) and 6(g). There are two environmental classes for petrol in Sweden. Petrol environmental class 1 (former national standard SS 155422 and now included as a national appendix of EN 228) and petrol environmental class 2 (EN 228 and Annex 1 of the FQD (98/70/EC)). The Swedish law includes three environmental classes for diesel, although, in recent years, mainly diesel environmental class 1 has been available on the market. Environmental classes 1 and 2 for diesel are equivalent to the national standard SS 155435. Diesel environmental class 3 in the law, equals EN 590 and Annex II of the latest amendment to the FQD (98/70/EC).

The regulations (TSFS 2011:66 and TSFS 2015:14) adopted by the Swedish Transport Agency contain regulations regarding information supplied to consumers about additives (especially ethanol content, as covered in Article 3.3, FAME content, as covered in Article 4.1 and metallic additives, as covered in Article 8(a) of the FQD).

Reporting periods

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

Transition periods for petrol between summer and winter grades vary between the north and south parts of Sweden. The summer and winter periods are regulated in the national law Drivmedelslag (2011:319) and the transition periods were taken into account in the 2014 fuel quality report.

Sweden has the same quality of diesel fuel the whole year round. 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 Member States.

4.27.3 Sales

Table 4.67 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Blyfri 95)	up to 5.0	3 313 445 355	2 491 508	246	266	13 of 19
Unleaded petrol (minimum RON ≥ 98) E5 (Blyfri 98)	up to 5.0	113 075 177	85 026	29	56	13 of 19
Total petrol		**3 426 520 532**	**2 576 534**	**275**	**322**	
Diesel fuel B7 (Diesel Mk1)	up to 7.0	5 784 709 000	4 708 753	339	366	6 of 7
Total diesel		**5 784 709 000**	**4 708 753**	**339**	**366**	

4.27.4 Exceedances of the fuel quality limits

Petrol fuel grades

Tables 4.68 and 4.69 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.68 Unleaded petrol (minimum RON = 95) E5 (Blyfri 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	57.0	70.0	N/A	512

Note: N/A, information not available (not reported by the Member States).

Table 4.69 Unleaded petrol (minimum RON ≥ 98) E5 (Blyfri 98)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60	63.7	70.0	N/A	85

Note: N/A, information not available (not reported by the Member States).

Diesel fuel grades

No exceedances of the diesel fuel quality limits were reported.

4.28 United Kingdom

4.28.1 Country details

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

4.28.2 Fuel quality monitoring service

Sampling
Sampling is done at refineries, terminals and refuelling stations. Samples are taken routinely throughout the year and across all regions of the United Kingdom. For unleaded petrol and diesel, the number of samples taken from retail stations goes beyond the requirements of any of the statistical models of EN 14274. Samples for super unleaded petrol fall just short of these requirements, but this fuel sells in smaller volumes. Sample results from refineries and terminals contribute an extra 3 000 results. The test methods used for each parameter are in accordance with current EN 228 and EN 590 standards and are performed by certified refinery laboratories or independent test labs.

Fuel Quality Monitoring System administration
The Department for Transport has responsibility in the United Kingdom for implementing the FQD, and also oversees the FQMS. The United Kingdom FQMS makes use of industry quality analyses on batches of fuel produced in, or imported into, the United Kingdom, plus samples taken at distribution terminals and service stations (to check for contamination in the distribution network). Owing to the very large number of samples involved, this approach provides the equivalent of a greater degree of confidence to EN 14274. There were six operational fuel refineries and approximately 50 distribution terminals within the United Kingdom in 2015.

National legislation that transposed the Fuel Quality Directive
The FQD was transposed into United Kingdom law under the Motor Fuel (Composition and Content) Regulations 1999 (SI No 3107) with amendments in 2001, 2003, 2007, 2010, 2012, 2013 and 2015.

Reporting periods
The United Kingdom has been granted the 'arctic' derogation for vapour pressure in petrol during the summer period. The summer period is between 1 June and 31 August, during which time the maximum vapour pressure for petrol is 70 kPa. Vapour pressure samples are taken during the transitional period but are excluded from the fuel quality report because they are transitional.

4.28.3 Sales

Table 4.70 Total sales and sample number

Fuel grade (name)	Bioethanol content (% v/v)	Total sales		Samples		Parameters measured
		Litres	Tonnes	Summer	Winter	
Unleaded petrol (minimum RON = 95) E5 (Unleaded 95)	5.0 maximum	16 585 504 911	12 109 077	0	0	19 of 19
Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Super unleaded)	5.0 maximum	821 047 697	604 209	0	0	19 of 19
Total petrol		**17 406 552 608**	**12 713 286**			
Diesel fuel B7 (Diesel)	7.0 maximum	28 953 219 914	24 251 217	0	0	6 of 7
Total diesel		**28 953 219 914**	**24 251 217**			

4.28.4 Exceedances of the fuel quality limits

Petrol fuel grades

Tables 4.71 and 4.72 summarise the parameters for which exceedances were reported for the petrol fuel grades measured.

Table 4.71 Unleaded petrol (minimum RON = 95) E5 (Unleaded 95)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60.0	53.6	80.5	10	437
Oxygen content ([a])	% (m/m)	< 2.7	0.0	3.0	4	821

Note: ([a]) Petrol with 5 % (v/v) or less ethanol content.

Table 4.72 Unleaded petrol (minimum 95 ≤ RON < 98) E5 (Super unleaded)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Vapour pressure, DVPE required for summer period only	kPa	< 60.0	59.9	75.8	14	97
Hydrocarbon analysis — aromatics	% v/v	< 35.0	20.4	36.9	3	256
Oxygen content ([a])	% (m/m)	< 2.7	0.0	3.0	2	228

Note: ([a]) Petrol with 5 % (v/v) or less ethanol content.

Diesel fuel grades

Table 4.73 summarises the parameters for which exceedances were reported for the diesel fuel grades measured.

Table 4.73 Diesel fuel B7 (diesel)

Parameter	Unit	Limit value	Minimum value measured	Maximum value measured	Number of samples outside TL	Total number of samples
Density at 15 °C	kg/m^3	< 845	820.9	848.6	1	2 414

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